

# **Sustainable Development, Systems Thinking and Professional Practice**

**STEPHEN MARTIN**

## **Abstract**

This article explores the impact of the sustainable development (SD) agenda on the occupational and professional needs of those who have undergone educational and training programmes in the environmental field either at the undergraduate or the postgraduate level or through relevant professional institutions' continuing professional development programmes. It also describes a one-day workshop for the professions on sustainable development based on systems thinking and practice. The workshop provides a model for developing greater understanding and effective action in professional practices by using dialogue and interprofessional learning to explore approaches to sustainability in a variety of business and professional contexts. It introduces the principles underpinning the concept of sustainability and provides tools to support the integration of SD into professional practices and organisational change.

## **INTRODUCTION**

**T**here is growing consensus that we need development with significantly lower social and environmental costs if we are to meet people's needs today without

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**Stephen Martin** is Visiting Professor at the Centre for Complexity and Change, Open University and the Centre for Active Learning, University of Gloucestershire, and an Honorary Professor of the University of Worcester. Email: [esm@esmartin.demon.co.uk](mailto:esm@esmartin.demon.co.uk).

compromising the ability of future generations to meet their needs. *Securing the Future* (DEFRA 2005: 39), the UK government's strategy, recognises the need for a change in direction to embrace the concept of sustainable development (SD):

The goal of sustainable development is to enable people throughout the world to satisfy their basic needs and enjoy a better quality of life, without compromising the quality of life of future generations... Government must promote a clear understanding of, and commitment to, sustainable development so that all people can contribute to the overall goal through their individual decisions.

Building the capacity for such change is an essential objective of our education system, particularly to help those who are about to enter employment from higher education or those in employment who are taking postgraduate or other forms of training as part of continuing professional development programmes. Building the 'sustainability literacy'<sup>1</sup> of our graduates means developing the knowledge and the skills necessary to change to a more sustainable way of doing things, both individually and collectively.

Sustainable organisations such as businesses, public institutions, nongovernmental organisations, trade unions and professional bodies can be powerful drivers for more sustainable consumption and production. Most studies show a positive correlation between good environmental and social governance and a company's financial performance.

Effective management of an organisation's sustainability performance has often been shown to improve cost savings, reputation and communication with all its stakeholders as well as enhance risk management. Innovative business models are now emerging which are both more resource efficient and ethical.

Local authorities in the United Kingdom also recognise that services need to be delivered in more sustainable ways. Public authorities are responsible for vital areas of people's lives such as education, health, housing, waste disposal, transport and planning. More sustainable communities can only be achieved by creating the capacity of staff to manage SD. Twenty-five per cent of graduates aged 21–25 years are now employed in the public sector.

Many professionals must increasingly deal with complex social, environmental and economic issues (Martin and Hall 2002). Many employers are seeking new kinds of competency in ethics, human ecology, conflict resolution and environmental management. There is an urgent demand for people with interdisciplinary problem-solving capabilities as opposed to workers with specialised scientific or technical competence. This has a major bearing on curricula in higher education because many professional bodies rely on accredited degrees as the main route for membership. Trade Unions in the Trade Union Congress (TUC) representing some 6.5 million members in every sector of the UK economy also recognise the need to build capacity within their membership to manage SD. Through their 'Greening the Workplace Programme' and membership of the Trade Union Sustainable Development Advisory Committee (TUSDAC), they are beginning to make a positive contribution to policy and practices in SD in the workplace and the wider community.

A wide range of skills, knowledge and attributes are required to create an action-orientated, sustainability-literate graduate body. Some examples of these requirements are described by Martin, Dawe and Jucker (2006):

- An appreciation of the importance of environmental, social, political and economic contexts of their discipline;
- A broad and balanced foundation knowledge of SD, its key principles and the main debate within them, including its contested and expanding boundaries;
- Problem-solving skills in a nonreductionist manner for highly complex real life problems;
- Ability to think creatively and holistically and to make critical judgements;
- Ability to develop high level of self-reflection (both personal and professional);
- Ability to identify, understand, evaluate and adopt values conducive to sustainability;
- Ability to bridge the gap between theory and practice, in SD only transformational action counts;
- Ability to participate creatively in interdisciplinary teams;
- Ability to manage change.

## ISSUES FOR THE PROFESSIONS

Some of the issues and implications of the emerging SD policy framework and its impact on professional practice (and by implication the undergraduate curriculum) are summarised below (Essence 2001):

- Relatively few attempts have been made to relate environmental higher education to the changing needs of the labour market;
- The qualifications required for many jobs in the emerging labour market are very different to those previously required;
- New kinds of competencies in business, economics, law, politics and public administration, sociology, communications, ethics, human ecology, environmental management, as well as in more traditional natural sciences are being sought by employers;
- There is a need for people with an interdisciplinary problem-solving capability, in addition to or even rather than, traditional, often overly specialised scientific competence;
- Graduates from undergraduate and postgraduate environmental programmes in science, engineering and management are finding getting employment difficult, largely because their curriculum is insufficiently differentiated from traditional programmes to meet the needs of employers. Handling interdisciplinary projects in an economic, environmental and social context is

an essential requirement of employers (Martin et al. 2004; The Egan Review 2004);

- The issue of academic quality is closely connected to the more general issue of professional competence in the new and emerging environmental labour market;
- Many of the tasks of company/organisation environment officers and managers are often company or brand specific, hence general education programmes are difficult to devise;
- The skills most often required by employers are of the softer kind, such as communication, leadership and organisational skills. These skills are notoriously difficult to teach in a formalised university setting;
- Conflict management skills and an understanding of cultural differences in an international context are also highly desired.

The challenge of SD has potentially profound implications for professions across a range of disciplines—engineering, geography, urban design and planning, environmental accounting, manufacturing. Professional engineers, for example, are responsible not only for the safety, technical and economic performance of their activities, but also for using resources sustainably, minimising the harmful environmental impact of projects, wastes and emissions, and using their influence to ensure that their work brings social benefits which are equitably distributed.

Many of these skills are not easy to teach by traditional methods, but there are a growing number of new teaching approaches that support the development of skills such as interdisciplinary thinking, problem solving and teamwork. Their emphasis is on action learning, dialogue, inquiry, participation and interprofessional partnership (Scott and Gough 2003). Rather than strictly following a national syllabus or curriculum, these new approaches allow the exploration of issues and problems through open-ended enquiry and learning. Effective sustainability change systems must themselves be innovative learning models aimed at changing organisational culture and behaviour.

### **PROFESSIONAL PRACTICE FOR SUSTAINABLE DEVELOPMENT (PP4SD)**

It was in this context that a new initiative, Professional Practice for Sustainable Development (PP4SD), was launched in 1999 (Martin and Hall 2002). This initiative set out to work in partnership with 14 professional institutions to create a common curriculum framework for SD from which to test and publish training materials. PP4SD is funded through the UK government's Environment Action Fund and from corporate sponsorship. The material developed was aimed at professionals from varying backgrounds including business, academia and consultancy. While the primary focus is on

working professionals, it was also mindful of 'future' professionals coming through the university system. Hence, the PP4SD process also sought to address how sustainability might be taught in undergraduate and postgraduate programmes. Background information and training materials can be downloaded from [www.pp4sd.org.uk](http://www.pp4sd.org.uk).

Since the term 'organisational learning' became popular in the 1990s, organisations have become aware of the need to develop their human capital to manage change and remain competitive. The PP4SD approach recognises this as one of the principal ways in which it can engage in the process of partnership and influence behaviour and attitudes within organisations. It recognises that many organisations, in transforming the way they work, will also have to transform the way they learn in order to sustain their competitive advantage.

PP4SD has developed and successfully tried a number of new ways of exploring how SD can be a vehicle for influencing organisational cultures. The PP4SD workshops demonstrate what can be done by challenging existing beliefs and values by a process based on appreciative inquiry. This process focuses not on what is wrong with an organisation but rather on how, by using the principles of sustainability, it can develop new and positive ways of organising its activities sustainably. Appreciative inquiry assumes that doubt and negation undermine constructive intent. It recognises that inquiry and change occur simultaneously. Inquiry is intervention. The seeds of change, that is, the things people think and talk about, the things people discover and learn, and the things that inform dialogue and inspire action, are implicit in the very first question asked. Hence, rather than criticising an organisation's activities, the PP4SD workshops set about questioning how things might be done differently.

The PP4SD process thus influences organisational culture and behaviour through interventions and facilitated conversations between professionals. It recognises that culture is not static but is something that is constantly being created, affirmed and expressed. These discussions involve a continuous process of agreeing, sometimes explicitly, usually tacitly, about the 'proper' way to do things and how to interpret the events of the world around them. In order to change a culture, we have to change all of these conversations, or at least a majority of them (Isaacs 1999).

The PP4SD process has a number of implications for undergraduate and postgraduate programmes. The most significant is to offer more opportunities to develop the skills of dialogue and inquiry in an interdisciplinary and participatory way. Few can argue with the goals of sustainability, but many should contest and explore how sustainability can be achieved. Hence, to develop these skills it is critical that environmental programmes accommodate approaches to dialogue, systems thinking and practice, principles of sustainability, values and ethics in a professional and personal context and, above all, emphasise the importance of achieving systemic change.

The next section of this paper describes the design and delivery of a PP4SD one-day workshop in SD (Baines, Brannigan and Martin 2001).

## THE WORKSHOP STRUCTURE

The workshop structure is based on five overlapping themes:

- Principles of sustainability
- Introduction to systems thinking and practice
- Tools and techniques for taking a future perspective
- The business benefits of SD
- Action planning

### Principles of Sustainability—A Systems Perspective

Tolstoy wrote that the greatest threat to life is habit. Habit, he argued, destroys everything around us, because it familiarises us to a point where we no longer really see things. We become incapable of bringing the familiar furniture of our lives into focus.

A similar argument can be made about ideas and concepts, and about the intellectual frameworks that shape them. Concepts such as the environment, nature and civil society are often taken for granted. Yet they are difficult to define, partly because they carry a variety of implicit assumptions which influence the way we think about them.

Professionals are no different. Their beliefs and values are largely defined by long education and training in their basic discipline. Consequently, one of the first steps in designing the workshop was to create an intellectual framework within which to explore the concept of sustainability with representatives of the professions. The framework (Martin and Hall 2002) has a number of key characteristics:

- It sees the Earth as a sustainable system dependent on the activities of a number of well-defined biogeochemical cycles.
- It sees the Earth as a sustainable system open to flows of energy and closed to matter (based on the first and second laws of thermodynamics).
- It considers that there are four principal ways of undermining the biogeochemical cycles (Porritt 2000).
- It is set in a futurist perspective.

By setting the sustainability agenda in an 'Earth as a system' context, it became much easier for professionals to engage with what needs to be done, rather than focusing on measuring, managing and mitigating the downstream environmental impact, as environmental scientists tend to do (Martin 2002). The framework provides a mental model for defining what a sustainable world might look like (see Table 1). Thus, it critically supports the process of interprofessional dialogue and reflection about issues and solutions.

**Table 1** The PP4SD Framework for Sustainability

<p>In a sustainable society:</p> <ul style="list-style-type: none"> <li>• Any materials mined from the Earth should not exceed the environment's capacity to disperse, absorb, recycle or otherwise neutralise their harmful effects to humans and the environment.</li> <li>• The same limitations apply to the development and use of synthetic substances.</li> <li>• The biological diversity and productivity of ecosystems is not endangered.</li> <li>• A healthy economy is maintained, which accurately represents the value of natural, human, social and manufactured capital.</li> <li>• Individual human skills, knowledge and health are developed and deployed to optimum effect.</li> <li>• Social progress recognises the needs of everyone and embodies principles of social justice.</li> <li>• There is equity for future generations.</li> <li>• Structures and institutions promote stewardship of natural resources and the development of people.</li> </ul>
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The framework was derived from a number of key sources, including The Rio Declaration and the World Business Council on Sustainable Development (SIGMA 2003). This framework has been accepted by all involved in the PP4SD process.

### **Systems Thinking and Practice**

The workshop begins by asking the participants to draw what they understand by the term SD. Using these drawings as a way of opening up a wide-ranging dialogue has been an invaluable technique for promoting and facilitating the interprofessional dialogue. It also avoids the superficial and often sterile debate on definitions of SD.

Drawings provide a useful way of gathering information about complex situations and are a key element of the approach to systems thinking and practice developed by Peter Checkland (1999). Using pictures to help think about issues is common to several problem-solving methods because our intuitive consciousness communicates more easily in symbols than in words.

The diagrams used explore the relationships or boundaries between systems of interest such as sustainability and SD. While these terms are often used interchangeably, they mean different things as used here. In simple terms, sustainability means the capacity for continuance into the long-term future. SD is the journey or the means of achieving the goal of sustainability. In systems thinking, both represent separate but connected systems of interest. To an individual or an organisation, SD represents a 'sphere' of influence and action over which they have some control and direction, whereas sustainability represents a 'sphere' of concern over which an individual or organisation exerts only limited impact indirectly through their sphere of influence. Identifying a professional's sphere(s) of influence facilitates a focused and productive dialogue on achievable actions and outcomes.

### **Tools and Techniques for Taking a Futurist Perspective**

The workshop uses a number of techniques to help the participants think in a futurist perspective because one of the challenges of SD is developing resilient and adaptive decision-making tools that can cope with risk and uncertainty. These techniques include simple scenarios that exemplify two approaches we can take to the future and, importantly, how these approaches influence the way we act. The usual way of approaching the future is through forecasting by starting from where we are and projecting trends over relatively short time intervals, for example, one to three years. A major limitation of forecasting is that many trends are clearly unsustainable. The alternative approach is 'backcasting', which starts by taking a 20 to 30 year perspective based on scenarios or on the sustainability framework outlined earlier (Ison and Blackmore 1998). The idea is to think imaginatively about your business or organisation and seek to explore a range of fundamental changes that will make it fit more closely the sustainability framework in the future. From each alternative future created, you then work your way backwards towards the present in stages, asking such questions as: What barriers did we overcome? Who helped us? Who did we need to persuade?

The differences between forecasting and backcasting are critical to how we act in response to the issues of sustainability. Forecasting at best offers a short-term future, but if these trends fail, then the prediction fails. In contrast, like experienced mountain climbers who start planning from the summit and work backwards, backcasting starts from your anticipated destination and plots a course of action towards it.

### **Business Benefits**

The next phase of the workshop uses case studies from business and industry to illustrate how SD principles have been applied and to provide the participants with an opportunity to develop their own thinking around practical examples. The case studies are based on businesses such as banking (The Co-operative Bank, [www.cooperativebank.co.uk](http://www.cooperativebank.co.uk)), construction (Carillion plc., [www.carillion.co.uk](http://www.carillion.co.uk)) and textiles (Interface, [www.interfaceinc.com](http://www.interfaceinc.com)). They all feature the business benefits of taking a more sustainable approach to business practice.

Other case studies in land use such as farming and horticulture (<http://www.growingforthefuture.com/pages/welcome.html>) and in the financial services sector are being prepared. Case studies ground the systems theory of the workshop in real-world examples, allowing the participants to reflect on the progress made by some substantial businesses. They also highlight the issues surrounding organisational change, emphasising that organisational change based on the principles of sustainability is not a steady process, but rather a dynamic and complex state of affairs.

### **Action Planning**

Throughout the workshop an emphasis is placed on putting sustainability into practice. The final section re-emphasises this aspect through a short action-planning

session. All the participants are asked to prioritise a set of organisational and personal actions that they can set in motion within the next month.

The PP4SD process has now been trialed in a variety of business and public sector contexts, from banks and utility companies to agricultural colleges. All the participants have valued the experience and initial evaluations elicit positive comments. For example, our evaluation of a workshop as part of Barclays Bank's graduate leadership programme in 2003–04 indicated:

- A highly motivated response to the sustainability agenda.
- A readiness to put the concepts into action.
- A willingness to incorporate the principles of sustainability into both personal and professional practice.
- A recognition that the *whole* organisation needs to address the agenda at all levels and in all forms of decision making.
- A need for even greater in-depth analysis of how a bank can contribute positively to this agenda.
- A recognition that inquiry through dialogue is a positive approach to this agenda for both internal and external stakeholders.
- An awareness of the range and scale of the environmental and social impacts of the bank and a willingness to contribute to their resolution.
- A realisation that a sustainability framework is a helpful device for decision-making.

## Note

- 1 Sustainability literacy is about learning how human actions affect the immediate and long-term future of the economy and ecology of our communities. In short, how we must learn to live and work on a planet whose resources are finite.

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