Higher Education and Sustainable Development

Paradox and possibility

Stephen Gough and William Scott

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Foreword

Higher Education and Sustainable Development: Paradox and Possibility by Gough and Scott is a significant contribution to the continuing debates within higher education. The authors raise a fundamental question: what is the purpose of higher education? It is a question that is continually asked and debated in a variety of higher education contexts, but this book adds significantly to this debate by problematising both the notion and the meaning of sustainable development and its significance for higher education. Such a challenge is essential given the current uncertainties associated with higher education's purpose, position and outputs in a global economy.

Gough and Scott argue that universities are open systems: that is they are discrete entities, capable of planning their actions and coordinating their internal components, which, at the same time, have fluid and permeable boundaries across which they interact with a wide range of external agencies and groups. The exploration of these interactions in the book poses further questions, and draws the reader to reflect on the current policy context of higher education and the tensions to which the sector must respond. Such reflection is aided by the distinction made between the 'real world' and 'ivory tower' conceptions that exist about universities.

A key aspect of this book is its discussion of the significance of sustainable development for higher education practice. One key argument is that sustainable development has particular potential, not as a specialism within departments of economics, environmental science, sociology or politics but as a fresh and necessary challenge to the way that ideas are classified into those, and other, disciplines. Here, sustainable development is conceptualised as something that occurs at the intersection of quite diverse areas of disciplinary concern and institutional competence, and this notion of intersection gives the reader a fresh perspective on the debate about universities and their roles in the global economy.

This book is particularly timely in the context of debates surrounding sustainability, and clearly contributes to the traditions of the series Key Issues in Higher Education. The book offers readers the opportunity both to challenge current conceptions of the relationship between higher education and sustainable development and to develop original and challenging perspectives of their own.

Gill Nicholls

Preface

This book sets out to clarify, and contribute to, a particular worldwide debate about the nature and purpose of higher education. It asks whether it is possible for higher education to produce educated, innovative, independent, self-determining, critical individuals while at the same time achieving wider policy goals. The book examines this question in the context of a contemporary international policy issue – sustainable development – which is now seen by many across the globe as a necessary and urgent response to a range of social and environmental issues that threaten the integrity of the biosphere and human well-being. For some, indeed, the pursuit of sustainable development is the most pressing global issue of the coming 50 years, since it may very well be argued that long-term issues of social injustice, environmental degradation and resource scarcity provide the underpinnings of faster-moving events such as wars, famines and natural disasters that are more likely to capture the daily headlines.

However, the relationship between higher education and sustainable development is a contested one. On one side, it is often argued or assumed that universities exist to provide future society with the skills base it will require. In another view, universities exist not (merely) to service the economy but to contribute to the intellectual and moral improvement of the human condition. An example of this second position, which is increasingly encountered in higher education policy-making forums around the world, is that which proposes that universities, through their teaching, research and self-management, should promote the sustainable development policy agenda. At its heart, the distinction between these two positions comes down to one of confidence. If we are secure in our estimation of the worth of what we already know, and clear about what we want to happen next, then we can certainly decide what the next generation needs to know, and universities can teach it to them. On the other hand, if we recognise and acknowledge our human failures, and are nervous about the future, then we need universities to prepare a generation that will understand, and act, better than any of us presently do.

This book explores the relationship between higher education and sustainable development in the light of seven international case studies and the literatures of sustainability, learning, and higher education teaching and management. It argues that sustainable development presents universities with a wide range of opportunities to fulfil their proper functions in teaching and research, that higher education

has an essential role if any sort of sustainable development is to be achieved, but that the realisation of this shared potential is likely to be fraught with pitfalls.

This book is of relevance to all those who have responsibility for and/or who take an interest in: the management of universities; the environmental management of universities; research, teaching and learning in universities related to environmental/sustainability issues; the regulation of universities; international policy arenas where university education is considered; and the interaction between professional groups and universities, especially in relation to the accreditation of courses.

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In writing this book we set out to bring together a range of research, literature and practice, not only from across the world but also from contrasting sources. We are grateful to many people and institutions, too numerous to list here, although a particular mention needs to be made of the following:

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- Editors within Taylor & Francis, who not only put so much into this book but also provide great support for the development of *Environmental Education Research* and cognate academic journals as vehicles for exploring the important ideas that we are discussing here.
- The people with whom we worked to develop the seven case studies around which this book is based. Without their enthusiastic participation none of this would have been possible. We owe a particular debt of thanks to: Wyn Calder and Rick Clugston of University Leaders for a Sustainable Future (ULSF); Akpezi Ogbuigwe of the United Nations Environment Programme (UNEP) and the Mainstreaming Environment and Sustainability in African Universities (MESA) initiative; Chuck Hopkins and Rosalyn McKeown of UNESCO's Re-orienting Teacher Education to Address Sustainability programme – and the many colleagues across the world with whom we worked on this; Joanna Simpson and Steve Egan of the Higher Education Funding Council for England (HEFCE); Nikolai Kasimov and Yuri Mazurov of Moscow State M.V. Lomonosov University, who wrote Chapter 8; Helen Walker of the University of Bath and Darian McBain of the UK National Health Service's Purchasing and Supply Agency; David Foxley and Richard Dodds of the Royal Academy of Engineering's visiting professors scheme.

And finally, but absolutely, there are Pam and Jean, to whom this book is dedicated with love in perpetuity.

Stephen Gough and William Scott
Bath, 2007

Introduction

This book sets out to clarify, and contribute to, a particular worldwide debate about the nature and purpose of higher education. On one side, it is often argued or assumed that universities exist to provide future society with the skills base it will require. In another view, universities exist not (merely) to service the economy but to contribute to the intellectual and moral improvement of the human condition. An example of this second position, which is increasingly encountered in higher education policy-making forums around the world, is that which proposes that universities should promote sustainable development through their teaching, research and self-management. The book explores the relationship between higher education and sustainable development in the light of seven international case studies and the literatures of sustainability, learning, and higher education teaching and management.

The book is organised in four sections. The first (Chapters 1–3) begins in Chapter 1 with an examination of a fundamental question – that of what higher education is for. Here, we outline debates about the proper purpose of higher education in a free society, and set out both a real world view and an ivory tower view as two rough and ready ways of characterising and describing the purposes of universities. These two takes on the role of higher education are then used throughout the book as a means of commenting on issues that arise, as together they provide usefully opposed vantage points from which to consider the purpose of universities. Given our focal question, our concern is the proper place of sustainable development in what a university does, rather than the role of universities in implementing (any particular conception of) sustainable development. Our position in taking the argument forward is one of openness both to competing conceptions of the purpose of higher education and to multiple definitions of sustainable development.

We continue in Chapter 2 by examining the links between conceptions of sustainable development and the idea of a free society. It is quite uncontroversial to say that higher education is likely to be influential in the creation and maintenance of both a free society and sustainable development, whatever either is taken to be. However, consensus ends at this point. First, it is not absolutely clear that sustainable development and a free society are compatible. Second, it is questionable

whether the pursuit of sustainable development (at least in some conceptions) is an appropriately educational goal for universities. A 'free society', as we use the term here, is one in which choices about how each individual life should be lived are best left to the individuals concerned, and general propositions about how everyone should collectively behave require collective consent. We see education (including higher education) as a means of helping individuals make better personal choices (in their own judgement) and give intelligent consent to collective behaviour. These conceptions of a free society and the role of education within it underlie the arguments of this book. In this chapter we introduce a range of ways of thinking about sustainable development in relation to higher education, which may serve as reference points in the discussions that follow. Although they clearly overlap to some degree, for the sake of simplicity they are presented here as a series of seven discrete perspectives.

This section closes with Chapter 3, which critically examines the idea of 'sustaining' development. In this we ask what it might mean to sustain development and explore further whether and how this might be the proper business of universities. We argue that sustaining development has different implications depending on which of the perspectives one takes of sustainable development and whether one takes a real world or ivory tower view of the purpose of universities. We argue that whatever sustaining development actually means, it is unthinkable that the work of universities does not or should not bear upon it. The chapter ends with the point that such work cannot be simply described because a university embodies two elements that run counter to each other: the necessity that certain things are learned and the necessity of being free to question or even ignore those very same things.

The next section (Chapters 4–10) comprises seven case studies of practice relating to sustainable development and higher education. Chapter 4 examines an international initiative in higher education management, University Leaders for a Sustainable Future (ULSF), which was founded in 1992 to promote sustainability in colleges and universities worldwide and to serve as the secretariat for signatories of the Talloires Declaration. Its stated mission is to make sustainability a major focus of higher education teaching, research, operations and outreach, and it has sought to achieve this through advocacy, education, research, resource development, assessment, membership support and international partnerships.

Chapter 5 details an initiative of the United Nations Environment Programme (UNEP): Mainstreaming Environment and Sustainability in African Universities (MESA). This poses crucial questions including 'Can African universities play a role in fostering an increase in the quality of teaching and learning for sustainable development?' and 'What is the purpose of education if it cannot produce answers to Africa's problems?' One particularly striking aspect of this initiative is its ambitious pan-African reach, which is reflected in the partnerships and networks that the project has formed.

Chapter 6 examines a UNESCO initiative to re-orientate teacher education to address sustainability that created an international network of 30 teacher-education institutions across 28 countries. A report from the International Network

setting out guidelines and recommendations was published by UNESCO as a resource for the United Nations Decade of Education for Sustainable Development. In this initiative, sustainable development is conceived as an essentially cross-disciplinary project, which has implications for the organisation of both teacher education and higher education itself.

Chapter 7 focuses on sustainable development and the management of higher education, specifically on the work of the Higher Education Funding Council for England (HEFCE), examining how it responded to a policy mandate on sustainable development provided through the UK government's sustainable development action planning process. HEFCE sought to build on previous university-focused initiatives to develop work around sustainable development by engaging universities in discussions about what the sector's proper role is in relation to sustainable development in terms of teaching, research and management.

Chapter 8 is an examination of the Russian interpretation of sustainability and its reflection in higher education. This has been written by Nikolai Kasimov and Yuri Mazurov of Moscow State M.V. Lomonosov University, and sets out how, over the past 40 years, Russian academicians and policy-makers have addressed the concept of rational nature management – the Russian analogue of the Brundtland Commission's ideas around sustainable development. The authors explore why the broad support for this concept nevertheless failed to ensure sustainable development in Russia.

Chapter 9 examines a UK-based initiative that focused on sustainability in management education, specifically in relation to the training of health sector professionals in sustainable procurement, i.e. the pursuit of sustainable development objectives through the purchasing decisions that organisations make. Here, we encounter higher education in a formative and developmental context. The learning and teaching innovations described were instigated, studied and refined in response to a challenge to find innovative ways to develop skills that had acquired new significance following changes in a particular task environment.

Chapter 10 examines another UK-based sustainability education initiative, this time in relation to undergraduate engineering education. In line with its multidisciplinary philosophy, the UK Royal Academy of Engineering believes that the requirements of sustainable development should eventually come to underlie the way in which all engineering is taught. This chapter provides an account of its attempt to operationalise this belief through the work of specially appointed visiting professors to university engineering departments across the UK, and focuses on the work that they did with both staff and students.

Section three (Chapters 11–20) begins with a review of the case studies. Chapter 11 starts by examining the extent to which our seven perspectives on sustainable development can be found in each of the cases. Both richness and a degree of confusion are found, and we identify a number of tensions within the work that the studies report. We then move to a consideration of the extent to which our case studies are representative of real world and ivory tower views, where we find the further difficulty of tensions arising between competing views of higher education and its purposes. In every case the basic issue is the same: how does one pursue

purposeful action in higher education in relation to sustainable development while leaving enough room for, in Hayek's terms, 'accidents to happen'? Across all of these issues there is a lack of clarity and consistency about the meaning of key terms and about the relationships between them. It is not just that definitions of sustainable development have proliferated. Rather, underlying this proliferation are a range of particular confusions and controversies about meanings. The rest of the book explores all of these points in detail, with reference both to the existing literature and to the case studies already described.

Chapter 12 focuses on environment. The word 'environment', because it can mean different things to different people, may often be a source of misunderstanding, even when those involved are well-informed and in good faith. One particular difficulty concerns the relationship of 'the environment' to 'Nature'. In addition, the terms 'environment' and 'Nature' are combined in particular ways by different individuals and communities to generate a range of meanings. These meanings powerfully affect what people are likely to do in any given circumstance, and may provide individuals with a sense of belonging to a larger group or a sense of personal distinctness from such groups. Taken together, the relationship between environment and Nature, and the impacts that this relationship has on humans, comprise a very substantial component of what universities teach and research.

Chapters 13 and 14 argue that sustainable development requires a better understanding of social and economic processes at all levels, and suggest that universities have a key role in determining whether such understandings arise. Chapter 13 focuses on society and argues that it is useful to make a distinction between society as the object of sustainable development and society as its agent. This separates out sustainability innovations undertaken as part of the wider process through which universities respond to changes in social conditions, and such innovations undertaken in a deliberate attempt to initiate or drive particular social changes. We argue that universities have an important role in the critical examination of the causal links proposed between particular sets of actions and their expected outcomes, and conclude that even were a whole society to be united in the pursuit of sustainable development it would still be essential for universities to maintain a critical distance from that mission – in the interests of its being achieved. We explore the work of Amartya Sen, to argue for rationality in our approach to sustainable development, and that of Isaiah Berlin, to argue for negative freedom to explore issues that matter to us all.

Chapter 14 focuses on economy, natural capital and the idea of investment. We examine the 'net present value' and 'real options' methods of valuing assets, and explore the latter in making investment decisions in a university context in ways that mean that future possibilities for development are preserved as part of that investment. We argue that the real options approach embodies a learning orientation to the future, exploring this from the perspective of both higher education and natural capital, itself an important aspect of sustainable development.

Chapters 15 and 16 consider learning at individual and collective levels, respectively, and argue that educational processes can be better understood in terms of a number of analytical categories that seek to capture the learner's personal

and social contexts. Chapter 15 examines the influence of a number of frames of reference in relation to individual learning. We draw on ideas around institutions, practices and literacies to ask how one might, as a teacher in higher education with a concern for sustainable development, arrive at a representation of particular students' positionalities. One very clear implication of our developing argument is that student (and teacher) learning in higher education in relation to sustainable development cannot be solely based on a process that begins with personal experience in the Kolbian sense; rather, learners need to be challenged by the experiences and perceptions of others. We put forward a model of learning in relation to sustainable development and provide instances from the case studies of the model in operation. We argue that learning by individuals will continue to be significant, even though learning at the institutional level is growing in importance.

Chapter 16 explores the idea of 'collective learning', which represents a range of conceptualisations such as organisational learning, social learning and network learning and which sees learning as a process that can occur at any level, from the team to the organisation as a whole, and beyond to inter-organisational networks. We argue that learning across all levels is essential for organisations and groups of organisations to adapt to major internal and external environmental shifts and challenges such as those presented by sustainable development, and that learning (however conceptualised) within and between networks of individuals, groups and organisations is likely to be an important feature of any successful initiative linking higher education and sustainable development. We provide examples from the case studies showing one or more networks, all of which assume that these networks will learn from each other. We present a network analysis and design tool that can be used as a means of both classifying existing networks and, potentially, custom designing new ones to meet particular learning purposes.

Chapter 17 examines the significance of links between learning and research, and proposes a possible system of classification of learning interventions in relation to sustainable development that vary in the assumptions made about the nature of the problems under investigation. We explore this classification in relation to issues raised by Jared Diamond's analyses of factors underlying social collapse or survival. We argue that human learning (whether individual or institutional) will be essential because we cannot depend exclusively for guidance about how to behave on either the extrapolations of present trends into the future (regardless of whether these indicate catastrophe or abundance) or our understanding of the past, arguing that times past should be seen as points on a continuum of change, not as natural equilibrium positions capable of restoration by one means or another.

Chapter 18 sets out a number of issues relating to the management of sustainable development in higher education. We explore the current work of the HEFCE to stimulate interest in sustainable development within higher education in the context of previous attempts to do this, and conclude that sustainable development cannot be introduced and embedded into higher education institutions just by establishing its relevance, importance or necessity because of the nature of universities as institutions. We consider issues raised by the UK's 2006 Leitch Review of long-term skills needs, in particular its instrumentalist, real world view

of the work of universities, and comment on this from the vantage points of our seven perspectives on sustainable development. We note the inadequacy of the skills approach if the proper purpose of higher education is to facilitate the rational self-development of human beings.

Chapter 19 considers the significance of uncertainty in the management of sustainable development in higher education. We draw on 'cultural theory', with its idea of plural rationalities, to offer an explanatory framework within which to consider apparently contradictory behaviours by individuals and institutions. This helps in classifying different accounts of higher education purposes and practices, and equips us to cope with inconsistent behaviour. Further, it suggests that, where uncertainty is present, it is useful to pursue a wide range of initiatives and to be tolerant of apparent incoherence between them. We then use our case studies to explore this framework of ideas. We examine the role of management at all levels within the university, in particular, focusing on the connective role of head of department. We conclude that, although mission statements and declarations do have a place in the leadership of institutions, sustainable development, however exactly it is understood, has real implications for real people, and managers need to understand them if they are to make progress. We end by supporting Duke's notion of the learning university.

Chapter 20 focuses on universities as open systems requiring management across the organisational boundary, involving external groups and stakeholders, and we explore this idea in the light of our case studies. We draw on current work in English universities to explore how appropriately to conceptualise sustainable development research (and teaching), noting that research and teaching can contribute to sustainable development even if they do not themselves seem to focus directly on it. In thinking about teaching we distinguish between courses that are essentially about sustainable development in some form and those that are about something else but which incorporate important sustainability principles, seeing the latter as particularly important because a sustainable world will require more than just sustainable development specialists. We then consider the idea that universities have a central role in the development of citizens, and that ideas of sustainable development are implicit in this, returning to our classification of learning interventions to do this.

Finally, in Chapter 21 we summarise our arguments and return to our core question: 'What is a university for?' We acknowledge the tension between stability and change, and between certainty and speculation, fuelled by the imperative to archive, apply and bequeath existing knowledge, to challenge that knowledge, and to go beyond problem solving into comprehensive problem redefinition. The expectation that everyone will face new, presently unimaginable, circumstances in their lifetimes with which, in one way or another and for better or worse, they will learn to deal means that the tension between the known and the unknown is just as strong in teaching – particularly university teaching – as it is in research. We argue that there is a danger that sustainable development in higher education will be imprisoned at the intersection of established artefacts of the academy. As an alternative we advance a model in which the role of higher education is in

accord with Sen's account of rational behaviour as the continuing development of preferences over what preferences to have, and freedom as the capability to choose a life one has reason to value. Universities, we think, should promote rationality and freedom and, in our view, following Berlin, these qualities are inalienably associated with tolerance for a plurality of values. We conclude that higher education and sustainable development do enjoy an identity of interest.

Chapter 1

What is higher education for?

Underlying the arguments of this book is a simple question: 'What is the purpose of a university?' No doubt many today would respond that the answer is obvious – so obvious, perhaps, that the question isn't worth asking. Surely (they might say) the purpose of a university is to help society meet its skills needs for the future; and it might do that both by teaching established skills to students and by carrying out research that elaborates new technological and socio-economic responses to meet the future problems and opportunities we expect to face. After all (they might continue), haven't universities done this in one form or another for a long time?

Looked at from the other end this must mean that the individual student goes to university to learn a sample of skills for which, it is anticipated, there will be demand in years to come. The arrangement is a symmetrical and mutually beneficial one between the individual student (who will have weighed the likely benefits of possessing particular abilities against the cost of obtaining them) and society (which will have weighed the net costs of supplying suitable instruction against the future benefits of having the right skills mix available at the right time, and the potential costs of *not* having them in place). It is now common, for example, for designers of university teaching programmes to have to specify learning outcomes, not only in relation to knowledge and understanding but also in terms of intellectual, professional and practical competences, and in terms of transferable/key skills. For the sake of simplicity we shall refer to this account of things as the 'real world view' of the purpose of higher education.

So far, so good; but there also exists an eminently respectable alternative view, which the philosopher Michael Oakeshott has expressed as follows:

> This, then, to the undergraduate, is the distinctive mark of a university; it is a place where he has the opportunity of education in conversation with his teachers, his fellows and himself, and where he is not encouraged to confuse education with training for a profession, with learning the tricks of a trade, with preparation for future particular service in society, or with the acquisition of a kind of moral or intellectual outfit to see him through life. Whenever an ulterior purpose of this sort makes its

> appearance, education (which is concerned with persons, not functions) steals out of the back door with noiseless steps.
>
> (Fuller 1989: 101)

Perhaps (without being in any way disparaging) we might call this sort of position the 'ivory tower view'. The essence of higher education is seen not as social but as personal. Its value is not instrumental but intrinsic. It is not for as many people as are needed for some ulterior purpose, but for just as many as can thrive in its rich soil. A curiosity, at least in the UK, is that although senior policy-makers tend publicly to incline to the real world view they are very likely to have themselves been educated in institutions (particularly, in the UK, the universities of Oxford and Cambridge) that remain strongholds of the ivory tower view. This is significant for the argument of this book because our particular focus, sustainable development, lies at the nexus of public policy and private conduct.

These two views of higher education are not necessarily in opposition, however. It is possible to argue that the objectives of the real world view (i.e. enhanced current and future economic prospects at both the social and personal levels) are actually best served by the hands-off, follow-your-inspiration-where-it-takes-you approach of the ivory tower view. Such a synthesis is broadly consistent with the ideas of liberal thinkers such as F.A. Hayek, who writes:

> We must recognise that the advance and even the preservation of civilisation are dependent upon a maximum opportunity for accidents to happen.
>
> Progress by its very nature cannot be planned.
>
> In discovering the best use of our abilities, we are all entrepreneurs.
>
> Hayek (1960: 29, 41, 81)

It is also consistent with an influential strand in management theory that, at least since Tom Peters' contribution (Peters and Waterman, 1995), has argued that business success depends on the ability of employees not merely to apply what is known but also to add value through their creative and unscripted explorations of what is not.

These are, of course, difficult messages for state bureaucracies accountable for public funds. At the same time, however, it is clearly pointless to insist on the real world view's linear planning approach to research and teaching in universities if this *cannot* in fact, by its very nature, deliver the outcomes that are desired. In the same way, we should note, it would be self-defeating to insist on the ivory tower view if the resulting education proved incapable of sustaining (in the modern world, rather than at any historical time) the basis of economic wealth that makes universities possible.

One obvious difficulty with the real world view is that the skills-needs of any future economy are not only largely unknown in the present but are also, to a significant degree, unknowable. Indeed, it seems likely that such skills needs will be

partly a *consequence* of the university curriculum of the present. If so then, ironically, too close a focus on society's *present* expectations for the future – based on presently available knowledge – may have the effect of limiting that future, through a failure to encourage students to test or challenge those expectations. Under these circumstances higher education would have failed not only society but also its students, although input/output evaluations of the higher education sector would still mysteriously show that targets had been met – and provide, therefore, a refuge for ministers in the face of critical questioning. It is interesting to note in parentheses that this point was once foundational, in a general way, to the West's case against communism. Of course, contemporary higher education policy in Western countries is very far removed from Soviet-style planning; but it is surely not going too far to suggest that the underlying principles of a free society are in danger of being forgotten if a culture of central initiatives and performance targets gain too prominent an influence.

And here, perhaps, lies the heart of the matter. 'Enhancing economic prospects' is not the same thing as 'creating and sustaining a free society'. It may quite well be argued that one of the advantages of free societies is that they tend, over time and in general, to result in economic enhancement. But there is no credible basis at all for the view that, from the perspective of the present, whatever seems good for economic performance must also be compatible with a free society. We return, therefore, now more sharply, to our original question: 'What is a university for?'

One possible tool for thinking about higher education's role in building the future, while taking account of its personal, societal, economic and – as we shall see in due course – environmental implications, is the metaphor of *investment*, along with the associated idea of *capital*. Drawn originally from economics, these words are now routinely used to describe a wide range of wholly or partially non-economic behaviours and entities. It certainly seems quite natural to describe higher education as 'investment'. To do so implies that it is similar to more tangible capital assets (machinery, for example) in particular ways: it requires a commitment of financial and/or other resources; it will result in an opportunity cost in the present; and this cost will be justified by a flow of returns over a number of future time periods. In these terms our discussion so far has pointed to questions about:

- what counts as 'justification';
- what counts as a 'return';
- how different kinds of return may or may not trade-off against each other;
- what, for purposes of present consideration, is an appropriate range of 'future time periods'.

Other important questions, such as the distribution across society of present costs and future benefits, remain implicit for now.

It may be objected at this point that this is an excessively *economic* frame for thinking about matters that are, rather, essentially educational, moral or social in nature. But this is to miss the point. We would certainly want to argue that the

notion of 'investment' provides one useful instrument for exploring these matters. More importantly, however, is that this intellectual instrument *actually is in extensive use* in policy discourse with – very often – little or no recognition of its implications, contradictions, full possibilities or limitations. We should also note that there is nothing new about economic concepts acquiring a degree of influence beyond their actual field of operation in this way. The great twentieth-century economist John Maynard Keynes put it like this:

> The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back . . . . Soon or late, it is ideas, not vested interests, which are dangerous for good or evil.
>
> (Krugman 1994: vii)

The results of applying the 'investment' metaphor to higher education might look something like this. Each university department competes for resources within the institution, and within departments there will be further competition of this kind. The institution itself competes for resources with other higher education institutions, and the sector as a whole competes for resources with other sectors, both educational and non-educational. When a particular student selects a particular course they are setting aside other possibilities for the best use of their own time, energies and, in some cases, money. In all of this there are opportunity costs at the societal, institutional and personal levels. The person, the institution and society as a whole will normally all tend to justify these costs – at least in part – in terms of expected future returns.

Such 'expected returns' for students are anything but homogenous. At the individual student level exact hopes and plans will of course vary, but there is likely to be an overall preference for larger rather than smaller incomes; incomes that are expected to increase over time or offer other opportunities for advancement over those that are more fixed; and incomes that increase sooner rather than later. The size and security of these expected returns will depend on a wide range of parametric factors, and so students in particular disciplines may quickly acquire a direct interest (which may be either positive or negative) in, for example, particular subsidies, policy initiatives, regulatory frameworks, accounting conventions and social or technological innovations. Because government-allocated resources are inevitably scarce, and decisions about regulation/de-regulation usually controversial, this means that students of some disciplines may tend to develop interests that are at odds with those of others. At the same time, correspondences of interest and, perhaps, incipient alliances may form. In parenthesis, it should be clear that to say this is *not* to assume that people act only in their own self-interest, and it is certainly not to argue that the pursuit of self-interest is synonymous with rational

choice (as we shall see). It is, however, to say that people often do act in their own perceived interest and that this is not necessarily *irrational*.

The returns that *society* expects from investment in higher education are rather different. They are also rather more difficult to generalise, even if we allow terms like 'nation state', 'government' or 'taxpayers' to act as a proxy for 'society'. It *may* be that higher education is generally (or even primarily) seen by decision-makers as a means to help students help themselves in the anticipated future. It may be seen as promoting the interests of some corporate entity ('the people', 'the nation', 'the economy') in that future, or, rather differently, as directly advancing some ideal ('the free society', 'social equality'). Further, in each of these cases 'the future' is likely to be conceived somewhat differently. It might be thought of in relation to a specific census point ('15% more engineers by the end of the decade') or a historical continuity ('conserving our freedoms for posterity'). But in all cases, the returns expected will be accounted in terms of benefit to society as a whole rather than as simply benefit to the student. By contrast, the concerns of a university when choosing to invest in the provision of particular courses seem quite prosaic. Expected future returns might include increased student recruitment, increased income from teaching, regulatory compliance, efficient staff deployment, and so on.

A further group that often considers itself to be an investor in higher education is business and industry, which may provide direct inputs of expertise or real resources. They usually pay taxes and a number of professional associations often exert significant influence on what is taught through degree accreditation processes. Their expected returns from the higher education process are useable research and a suitably capable pool of graduates – the suitability of which is likely to be assessed as much when labour demand occurs as when courses are delivered. Finally, they may have a pragmatically variable attitude to both long-term social ideals and learned occupational behaviours. For example, they are likely to extol free markets in general but seek to corner them in particular; and they may appreciate the general need for individual risk-taking but have little sympathy for specific failures.

The real world view and the ivory tower view, then, have provided usefully opposed vantage points from which to begin our consideration of the purpose of universities. However, it would seem that, from the well-established perspective of higher education as investment, neither will do by itself. Key terms upon which the real world view depends for its instrumental clarity – 'society', 'skills-needs', 'future', for example – atomise under close scrutiny. By contrast, the ivory tower view is quite comfortable with indeterminacy but it struggles to accommodate the urgency that specific educational (and institutional) needs have for real people in a mass-participation, high-value-added society. There is an acute paradox here: the more it seems that we know about the purpose of universities, the less we can say with certainty.

Chapter 2

Sustainable development and the free society

If the purpose of higher education is a matter for debate, the meaning of 'sustainable development' is even more so. A large number of proposed definitions exist, each having in common the basic premise that, on a global scale, the present is being managed with insufficient regard for the future. Different definitions combine concerns about perceived environmental, social and economic problems in different ways, sometimes also adding other frames of reference as well – the cultural, for example. Particular definitions are often linked, loosely or quite tightly, to particular disciplinary perspectives or particular socio-economic practices. This is to say that, for example, biologists and economists are likely to give the term different emphases, and so are engineers and health sector procurement managers.

In relation to any sort of deliberate action, definitions of sustainable development may result in (or alternatively be favoured because they lend themselves to) a focus at a particular temporal and/or geographical scale. So, for example, sustainable development results may be required immediately, in 5–10 years, or in 50 years; and in terms of anything from (again, for example) increases in the volume of locally produced goods traded within a rich-country locality to increases in the value of internationally traded goods from poor countries to rich ones. We should note in passing that:

- What is required for quick results may be at odds with longer term indications; and for some of the problems identified within the sustainability discourse (global warming, intergenerational poverty, depletion of non-renewable resources, for example), even 50 years, although an eternity in policy terms, is really not long at all.
- What is useful at the local level may be damaging on a wider scale and vice versa. Thus we might reasonably ask if sustainable development would be served if the USA shifted to production of organic cotton, or only if it ended domestic cotton production completely. Or, again, would the closure of the North Sea cod fisheries improve sustainability if it resulted in the demise of Scottish fishing communities with all their culture, heritage and employment opportunities?

Finally (for now, at least) it is important to note that there are significant numbers of people in society who currently *contribute* to sustainable development while remaining oblivious, indifferent, or even hostile, to it. For instance, among the community of biodiversity activists there is considerable suspicion of the term; and, more generally, there remain many in society who cling to thrifty habits and simple solutions in the face of the swathe of sometimes frivolous new choices that technology and marketing combine to offer. Given all of this we would wish to reiterate an argument that we have presented in more detail elsewhere (Scott and Gough 2003): that, at a general level, it is better to accept the existence of a multiplicity of definitions of sustainable development – even if they are not entirely consistent with each other – as opposed to seeking to settle on any one as final and correct.

Importantly, however, this definitional position does not merely represent a shrug of the shoulders in the face of unmanageable complexity. On the contrary we would argue that it is consistent with a developed notion of a free society. In his (not entirely unrelated) work on the ethics of genetic engineering, Jürgen Habermas writes: 'In complex societies one culture can assert itself against other cultures only by convincing its succeeding generations – who can also say no – of the advantages of its world-disclosive, semantic and action-orienting powers' (Habermas 2003: 2–3).

Sustainable development is a fully international cultural artefact of primarily intergenerational power. In Habermas's terms it contributes, we suggest, to a possible moral standpoint from which the *collective* good may be considered. But Habermas continues:

> What ought I, or what ought we, to do? But the 'ought' has a different sense once we are no longer asking about rights and duties that everyone ascribes to one another from an inclusive we-perspective, but instead are concerned with our own life from the first-person perspective and ask what is best 'for me' or 'for us' in the long run and all things considered. Such ethical questions regarding our own weal and woe arise in the context of a *particular* life history or a *unique* form of life. They are wedded to questions of identity: how we should understand ourselves, who we are and want to be. Obviously there is no answer to such questions that would be independent of the given context and thus would bind all persons in the same way.
>
> (Habermas 2003: 3, original emphasis)

In the smallest of nutshells, a 'free society', as we use the term here, is one in which choices about how each individual life should be lived are best left to the individuals concerned, and general propositions about how everyone should collectively behave require collective consent. Education (including higher education) is a means of helping individuals make better personal choices (in their own judgement) and give intelligent consent to collective behaviour.

These conceptions of a free society and the role of education within it un-

derlie the arguments of this book. Our focal question is 'What is a university for?' Our concern, therefore, is the proper place of sustainable development in what a university does, rather than the role of universities in implementing (any particular conception of) sustainable development. Underlying this position is a further hypothesis: that members of a society that was, in these terms, both free and educated would not only be unlikely to choose destruction and misery but would also be better placed than any prescriptive present-day planner to identify the sequence of best choices in the face of their own unfolding biographies.

In summary, our position in taking the argument forward is one of openness both to competing conceptions of the purpose of higher education and to multiple definitions of sustainable development. But we should note that this is not an approach that is shared by everyone. In concluding this chapter, therefore, we introduce a range of other possible ways of thinking about sustainable development in relation to higher education that have been identified through our own previous work (Gough and Scott 2006). These may serve as reference points in the discussions that follow. Though they clearly overlap to some degree, for the sake of simplicity they are presented here as a series of possible *perspectives*.

The technocratic perspective

The identification of a technocratic (or 'technocentric') approach to environmental issues, and the explication of its relationship to other strands of environmentalism, is mainly associated with O'Riordan (1981, 1989, 1990) who describes a radical or manipulative perspective in which human ingenuity and the spirit of competition dictate the terms of morality and conduct (O'Riordan 1989: 82). In the extreme, this technocratic view depends upon a reductionist, mechanistic view of the natural world, and exhibits confidence in the ability of human beings to develop scientific and technological solutions to environmental problems as they emerge.

In this view the operational focus for higher education in achieving sustainable development is therefore on 'getting the job done', without much consideration of how 'the job' came to be defined in particular ways, or whose interests are served. This seems effectively unproblematic in cases in which almost everyone would agree about the issue: for example having the skills to safely decommission existing nuclear reactors is in everyone's interests. It is much more problematic, however, in more complex and contested cases, especially where different values or worldviews are in play.

The 'paradigm shift' perspective

The 'paradigm shift' perspective is very different. It builds its case upon an interpretation of the work of Thomas Kuhn (1996), whose key insight was that scientists do not (in fact) normally seek new discoveries or pursue a rigorous challenging of assumptions. Rather they seek evidence to support an overall framework of ideas that is generally assumed to be true. This overall framework (paradigm)

guides the questions that they ask, the evidence that they choose to observe and the arguments that they take seriously. However, over time a given paradigm may become untenable. Evidence may accumulate that it cannot explain or accommodate, and a new framework (paradigm), if it makes possible the explanation of the anomalies, is then likely to be embraced, even if it cannot yet be fully empirically supported. This is a 'paradigm shift'. The movement from Newton's to Einstein's physics is an example of such a shift.

Of course, society is not a science, and the paradigm shift approach to higher education and sustainable development is a metaphorical, not a literal, application of Kuhn's thesis. The idea it embodies is that society is informed by a paradigmatic way of thinking. One social paradigm shift occurred, it is argued, at the onset of the industrial revolution when, whatever it had been like before, society became newly predicated on a reductionist, mechanistic, industrialist, materialist, utilitarian and masculine set of assumptions (see, for example, Bowers 1993; Fien 1993; Greenall Gough 1993; Robottom and Hart 1993; Sterling 1993, 2001).

In the present, the argument put forward is that a further social paradigm shift is now needed (or is actually emerging), made necessary by phenomena such as:

- the failure of science and technology to solve problems of poverty, starvation, disease and environmental degradation;
- the emergence of risks that appear to have been 'manufactured' through the industrial application of science and technology (Beck 1992, 1999);
- environmental crises on unprecedented scales;
- growing disillusionment with consumerism and/or globalisation.

In this view higher education's role is to promote the new paradigm. Two particular controversies inevitably arise, however, and often become conflated. The first is about the nature of intellectual progress and academic rigour. The second is about whose prerogative it should be to determine, for operational purposes, the answer to the first.

Task-based perspectives: social, environmental and educative

A further possible perspective focuses on human social, environmental and/or educational actions. In practice, particular individuals and institutions have tended to emphasise one or other of these alternatives, and for that reason they are treated separately in what follows.

The social change focus

It is possible to begin with the assumption that the key factors to be addressed in any move towards sustainable development are social rather than environmental in origin. Thus, if biogeophysical nature is threatened then this does not arise from the laws of science but rather from the behaviour of humans in contexts that those

laws govern. Such a view is likely to cast higher education in an important role because it is one way through which people can be trained, empowered, cajoled or manipulated the better to respond and/or act.

The environmental change focus

In such a view higher education staff are expected to take a specific form of environmental action, usually justified in human welfare terms: we need to understand environmental threats to human life through the application of science, and to change people's behaviour appropriately through education so that it becomes 'pro-environmental'. This is clearly at odds with the view of higher education taken in this book. A further problem is that it doesn't seem to work. In an extensive review of research findings, Kollmuss and Aygeman (2002) note the lack of evidence for a simple, linear relationship between knowledge and behaviour, as well as the persistence in the minds of policy-makers that such a relationship must exist despite compelling contrary indications.

The educative focus

Typically, in governments around the world, the strongest promotion of sustainable development through education originates in ministries with responsibility for aspects of environmental management and/or development (Hindson *et al*. 2001). Ministries of education have a concern for matters such as literacy, numeracy and the development of skills, but tend to be bombarded with demands from others (e.g. those concerned with peace, sporting performance, consumer education, animal welfare, nation-building, health, etc.) who think that education should be a means through which their own areas of interest are advanced. 'Environment' in general, and 'sustainable development' in particular, may with justification be seen as no more than additions to this wish list, unless it can be shown that what is being proposed is inherently educative. That said, however, interest in sustainable development among education administrators does appear to be growing somewhat, perhaps particularly so in higher education where, for example, the Higher Education Funding Council for England (HEFCE) is committed to sustainable development, and to encouraging universities to share this perspective, and organisations such as UNESCO and the United Nations Economic Commission for Europe (UNECE) are bringing universities together to encourage the sharing of practice and international collaboration.

Globalisation perspectives

It is possible to argue that the relationship between education and sustainable development can be properly understood only in the context of wider political debate about globalisation. 'Globalisation', however, is contested as to its meaning and its value. Those who think that globalisation is both real and beneficial, such as Ohmae (1990) and Reich (1991), tend to see it as a process capable of

liberating individuals from the vagaries of national government policy decisions and resource management so that they can compete freely in a global marketplace. Here, the role of higher education is to equip learners to compete (Edwards 1997). An alternative view is that globalisation leads to loss of cultural diversity (Pieterse 1995) and the destruction of traditional communities while offering the world's poor next to nothing (Martin and Schumann 1997; UNDP 1999). In this case higher education's key role is seen as enabling people to better resist or survive globalisation, typically through equipping them to instigate or participate in local-scale organisation and/or production. There is a third view, which is that globalisation is a myth (Hirst and Thompson 1999).

In fact, this strongly polarised debate probably tells us more about the West's adversarial political processes than it does about globalisation. As Dicken (1998) notes, this polarisation is probably not justified by the evidence. There is globalisation, but it is not uniform and its effects are not consistently the same from place to place or time to time. Sometimes the poor benefit and sometimes they do not. Sometimes the environment is threatened in new ways, and sometimes globalisation reduces such threats. As a result sustainable development may be seen as an antidote to globalisation at one extreme, while at the other globalisation is regarded as an opportunity – even a precondition – for sustainable development; and at particular times and places either may prove to be true. Given the ever-increasing internationalisation of both teaching and research it is clear that universities have an important place in all this. And at the same time they will have the responsibility – within the political context they inhabit as institutions – of determining for operational purposes what 'all this' actually amounts to.

Metaphorical perspectives

Andrew Ross (1994) points out that two contrasting metaphors of Nature are equally embedded in Western thinking. The first of these (Nature 'red in tooth and claw') sees humans embarked upon a battle for survival in a hostile world. Nature is there to be explored, discovered, conquered and used, and we survive through individual and collective ingenuity. The governing principle is that of the survival of the fittest, and the devil take the hindmost. Of course, these sentiments may be particularly associated with the period of Western colonial expansion, but they are nevertheless far from dead. Indeed, they are central to neo-Malthusian arguments for conservation, which argue that the Earth's resources are finite and that if we go on as we are its 'carrying capacity' must be exceeded.

The second metaphor identified by Ross (Nature the 'web of life') emphasises Nature as interdependent and mutually self-sustaining. So, where the first metaphor uses the natural world as a justification for activities ranging from marketplace competition to war – seeing these as being 'only natural' – the second employs exactly the same device to abhor aggression and self-seeking of all kinds, appealing for love, peace and social justice. Much hinges on this. Sustainable development might involve resistance to nature on the one hand, or surrender to it on the other. Responsible higher education might thus be predicated on wholly

different conceptions about what it makes sense to learn or research – in short, about what constitutes a 'good question'. However, whether for the natural or social sciences, or for the humanities, the issue remains the same: 'How do we decide what it is important to know?'

The pragmatic perspective

There are now many people whose jobs require them to engage with sustainable development. They may have a range of disciplinary backgrounds and professional qualifications, and work in national or local government, the private sector or non-governmental organisations (NGOs), with responsibility for environmental management systems, green procurement, social inclusion, waste management, water quality, etc. They may themselves struggle not only to make sense of the term 'sustainable development' and political initiatives relating to it but also to convey its significance to professional colleagues. Sustainable development may perhaps be only a small, and even unwelcome, addition to their responsibilities. Finally, they may feel strongly that not only do they need to learn something more about sustainable development but also that others should learn from them. They may, therefore, both receive further training in universities and contribute to such training or to research. This is important because these are people who have no choice but to act in the here and now. They cannot wait for all of the 'i's to be dotted and the 't's to be crossed. They are likely to demand respect from, and perhaps be suspicious of, higher education staff – that is, to return to our earlier terminology, they are likely to have a strongly real world view and, perhaps, be suspicious of ivory towers. And yet, at the same time, they may sometimes provide the very best opportunities for the ivory tower view to achieve results, through mutual engagement and a widening and deepening of understanding.

In the rest of this book we shall encounter all of these perspectives, both separately and in their engagements with each other.

Chapter 3

Sustaining development

On the face of it, at least, one would suppose that any conception of sustainable development must anticipate that development of some sort will continue in the future. In this chapter we ask what it might mean to 'sustain development' and explore further whether and how this might be the proper business of universities. However, before embarking on these endeavours we should briefly note that there are at least three vantage points from which such attempts would be judged to be self-evidently futile.

The first of these takes exception to the word 'sustain', arguing that it is nothing more than a meaningless appendage to a process ('development') that is inherently sustainable – at least over any timescale that anyone in the present might conceivably care about – given only that economic processes favourable to the appropriate and timely substitution of manufactured capital for natural capital are allowed to operate. In relation to global warming, for example, climate scientist Patrick J. Michaels puts the following view, writing for a mass audience on behalf of the Cato Institute, a policy think tank:

> The stark reality is that if we really want to alter the warming trajectory of the planet significantly, we have to cut emissions by an extremely large amount, and – a truth that everyone must know – we simply do not have the technology to do so. We would fritter away billions in precious investment capital in a futile attempt to curtail warming.
>
> Consequently, the best policy is to live with some modest climate change now and encourage economic development, which will generate the capital necessary for investment in the more efficient technologies of the future.
>
> (Cato Institute 2007: online)

In this book we take capital accumulation and technology development very seriously. We accept that they have a role in the achievement of sustainable development in any credible conception – a role that is very largely defined and operationalised through what universities discover by research and disseminate by teaching. But we want to hang on to the 'sustainable' qualification on develop-

ment because it embodies, at the absolute minimum, the possibility of intelligent self-restraint. This, it seems, has no place at all in the 'solve the problems of development by more development' prescription set out by Professor Michaels.

Second, and oppositionally, there are those who ultimately want no truck at all with 'development' (at least as the term is usually understood) and advocate instead that humans should choose to live in steady-state communities of some sort. Such communities may well be described as 'sustainable' or as practising 'sustainability'. They are usually envisaged as being small scale. They are often modelled on some real or imagined historical example, perhaps with the addition of such modern conveniences as are thought excusable or indispensable. They are never animated by competition or market exchange, but always by collaboration for the common good and a state of harmony between society and nature. An interesting example is provided in Box 3.1. Readers may wish to know that Bedford is a town just north of London.

It may very well be argued that for Bedford to arrive at the circumstances described in Box 3.1 would constitute a form of development. Further, the example continues by suggesting, among other things, that a Brazilian firm is looking for opportunities to manufacture anti-cancer drugs in Britain. Surely this too would be development if it happened. But why would it? The problem is that both the provenance and the continuance – that is the development – of this 'sustainable community' depend on assumptions about social change which are as counter-historical as they are economically unsupportable, and which, more fundamentally, rest on a particular conception of what it means to be rational. In this book we are working with a conception of development that incorporates the view of Amartya Sen when he writes that: 'Exclusive pursuit of self-interest is not banished, in any way, from the domain of rationality, but neither is it mandatory. Its role in rationality is contingent on self-scrutiny' (Sen 2002: 47).

People may rationally choose to behave in ways that render a town like the one described in Box 3.1 wholly *unsustainable*. We would add that there is abundant historical evidence that they often do so, that there are clear economic and social reasons why they might, and that anything recognisable as a university might well facilitate them in doing so. For example, what if Tom wants to take out a high-interest loan to buy a villa in Spain for Bill, who very much dislikes looking after children in his old age but feels that he must do so because of community pressure? It is surely possible that the Credit Union (or some of its members) will see advantages in setting up a fully fledged bank to meet the demand for financial instruments of this kind, so diverting funds from lower-return uses and also creating a need for specialists in financial management. These specialists are recruited from the leading university in the field, which happens to be in Scotland. They demand a premium payment above the rates set by the Neighbourhood Council for the inconvenience of moving to Bedford, so enabling them to choose individual over collective service provision and injecting additional spending power into the local community. Meanwhile Tom, who has simply made a rational choice based on the balance of his preferences, needs extra paid work at the best rate he can get to cover the interest on his loan. As a result he doesn't have time to give Jake his breakfast any more. And so on.

Box 3.1 Envisaging a sustainable community (Bedford 2045)

It is a Wednesday in September 2045 and Jane Pearson wakes early. . . . The solar collector on the roof has warmed the water for Jane's shower and by the time she has dressed and gone downstairs, husband Tom is giving Jake his breakfast. . . . Jane, Jake and Tom tuck in to their breakfast of cereals and fresh fruit from the neighbourhood orchards. A lot of food is now grown around the town and Tom spends some of his time working at a local nursery where the glasshouses are heated with hot water from a small combined heat and power generating station which burns straw and willow. . . . Over breakfast Jane and Tom talk about their plans to add another room to their house before January when their second child will be born. Friends in the street will help them with some of the work once the prefabricated timber sections are delivered and they will engage a plumber and electrician through the town's local economic trading scheme (LETS) which now accounts for 30% of local business turnover. They will need to get a low interest loan from the Credit Union. . . . Most people now live near enough to walk or cycle to work, but there are electric bus services and some light rail links to surrounding towns which accommodate dual rail-road vehicles. . . . At the tram stop Tom meets his father Bill who is disabled and needs the tram to get him to the community centre where he helps look after young children like Jake. . . . It takes Tom another five minutes to reach the engineering factory where he works for 20 hours each week. The regional government now guarantees all adults between 18 and 55 this amount of work and with a national minimum wage, it is generally sufficient to meet their needs. They can do additional paid work but few do so. Most prefer to use non-work time for education, leisure and voluntary work and this means that there is less stress and fewer health problems.

[. . .]

The community cafe, like the community laundry, is a way of sharing domestic work and saving energy. Some people work in them for wages which are set by the Neighbourhood Council, but most people work in them to obtain services at a cheaper rate and meet their neighbours. All the talk over dinner this evening is about the community meeting.

[. . .]

(Huckle and Martin 2001: 249–53)

Our point here is not that people should hate looking after children or want villas, but that any useful conception of either sustainable development or higher education has to accommodate the possibility that they might.

Third, and rather differently, there is a view that 'sustainable development' is an inherently paradoxical conception, to be taken seriously not because of any substantive content that it has but because of what it reveals and/or conceals about the policy discourses within which it is employed. In short, sustainable development is *linguistically* interesting. This perspective turns out to be very revealing and we return to it later; but always with the proviso that our own ultimate focus is upon the social, economic and environmental realities that sustainable develop-

ment entails. Those interested in pursuing the linguistic approach are directed to the work of Andrew Stables in this area (Stables 2001a,b; Stables and Bishop 2001).

With these three outliers at least partly set aside, we now return to the question of sustaining development. This turns out to have different implications depending on the view taken of sustainable development (discussed in Chapter 2) and that taken of the purpose of universities (Chapter 1).

We have seen in Chapter 2 that a *technocratic* perspective on sustainable development is associated with 'getting the job done' by means of scientific and technological solutions. Quite clearly there are echoes of this in the arguments of Patrick J. Michaels, but there are also differences. It is possible both to be a technocrat *and* to advocate planned (as opposed to market-driven) interventions to alleviate environmental threats. It is also possible to link environmental and social sustainability from a technocratic perspective in such a way as to draw conclusions that favour economic restraint. Many of those advocating interventions that would – according to Michaels – 'fritter away billions in precious investment capital' are likely to be of a technocratic frame of mind.

An important issue here is whether technocratic solutions are seen as merely being necessary for sustainable development to happen, or whether they can be expected to be *sufficient*. A flavour of the sufficiency view is provided by the following extract from the output of the Human Genome Program:

> Goals of the new Genomes to Life program, funded at $19.5 million in FY 2002, are to identify and characterize the protein complexes that perform most of the cells work, the gene regulatory networks that control those processes, and the functional repertoire of natural microbial communities at the molecular level; and to develop computational capabilities for integrated and predictive understanding of biological systems. This new and comprehensive level of understanding will allow scientists to design ways in which the biological capabilities of various organisms can serve DOE [US Department of Energy] missions in energy security, environmental cleanup, and health protection. Specific payoffs include U.S. independence from foreign oil, enhanced protection against biothreat agents, stabilization of atmospheric carbon dioxide to counter global warming, and a savings of billions of dollars in toxic waste cleanup.
>
> (Human Genome Program 2002: online)

See also Gough (2004) for a critical review of thinking about this project.

'Scientists', however, do not always see themselves in quite the role set out for them here. For example, the ecologist C.S. Holling has written:

> Sustainable development is not an ecological problem, nor a social problem nor an economic problem. It is an integrated feature of all three. Effective investments in sustainable development simultaneously

> retain and encourage the adaptive capabilities of people, of business (enterprises), and of nature.
>
> (Holling 1995: 74)

Adaptiveness and simultaneity are crucial because, although science (even that enlisted in the service of US government 'missions') is very good at dealing with facts, in relation to sustainable development facts may often be incomplete or unavailable. They also, as we saw in Chapter 2, interact with values and contexts. This means that technocratic inputs to problem solving are necessary but not sufficient. They are necessary because problems of unsustainability cannot be solved simply by desisting from certain actions or 'going back' to any real or imagined past. Things change all the time, and the legacy of our past behaviour shapes the future. There are many problems (toxic cleanup, fisheries management, nuclear decommissioning, slum clearance/urban regeneration, the distribution of the benefits and costs of trade – to mention but five examples) to which solutions free of inputs of technical expertise seem unimaginable. But at the same time such inputs will not be sufficient by themselves to solve the problem of sustaining development. The problem cannot be solved in this way because there *is no such thing* as 'the problem'. There are lots of problems and they mean different things to different people. If we return to the terminology given in Chapter 1 of a real world view and an ivory tower view of the purposes of higher education, then the lessons of that chapter seem to be re-echoed here. The instrumentalist thinking that gives the real world view its clarity and focus is indispensable but insufficient because, paradoxically, it fails to engage fully with the uncertainties and multisubjectivities of the real 'real world'. On the other hand, the socially and environmentally detached self-improvement of an elite (however large it may be) cannot fully justify the ivory tower view, if only because the socio-economic arrangements that have made such a process possible for a brief historical period are (perhaps) set on a relentless course to self-destruction. And yet, at the same time, without the purely speculative opportunities to think, to explore problem definitions, and to engage with other perspectives that the ivory tower view holds dear, the adaptiveness required to complement the knowledge we do have seems unlikely to develop.

The second widespread view of sustainable development identified in Chapter 2 is the *paradigm shift* perspective. This takes a number of (broadly similar) forms in the literature but is represented here by one particular approach, chosen because its author, Sterling, has developed it over many years of careful study and research, and has linked his arguments to an understanding of the workings of higher education institutions in society. Sterling calls for a 'whole system shift' in relation to higher education. Box 3.2 makes clear what he means by this.

If the technocratic perspective had similarities with the pro-capital accumulation view of Patrick J. Michaels, then this paradigm shift approach appears on the face of it to have much in common with the sustainable community envisaged for Bedford by Huckle and Martin. We should note, however, that Sterling avoids telling us what people must like and think under the new paradigm, insisting

Box 3.2 A 'whole system shift' in higher education

Paradigm instead of higher education reflecting a paradigm founded on a mechanistic root metaphor and embracing reductionism, positivism, and objectivism, *it begins* to reflect a paradigm founded on a living systems or ecological metaphor and view of the world, embracing holism, systemisism and critical subjectivity. This gives rise to a change of ethos and *purpose* . . .

Purpose instead of higher education being mostly or only as preparation for economic life, *it becomes*: a broader education for a sustainable society/communities; sustainable economy; sustainable ecology. This expanded sense of purpose gives rise to a shift in *policy* . . .

Policy instead of higher education being viewed solely in terms of product (courses/materials/qualifications/educated people) *it becomes*: much more seen as a process of developing potential and capacity through life, at individual and community levels through continuous learning. This requires a change in methodology and *practice* . . .

Practice instead of higher education being largely confined to instruction and transmission, *it becomes*: much more a participative, dynamic, active learning process based more on generating knowledge and meaning in context, and on real-world/situated problem solving.

(Sterling 2004: 64)

only that the process will likely work in different ways and be underpinned by different understandings. There is a strong sense of open-endedness and continuing change. There is no explicit or implicit ruling out of conflict or competition. Further, Sterling goes on to consider the mechanism by which such far-reaching, systemic change might be initiated. He writes:

> The initial driving forces in this process may be less to do with education (that is, the effects of 'education for change'), than increasing awareness in society – and therefore, amongst some actors in education – of deep systemic crisis in the ecological suprasystem and in our relationship with it.
>
> (Sterling 2004: 67)

Sterling's prescription for higher education perhaps seems, on the face of it, to be closest to the ivory tower view of its purpose. The focus on 'preparation for economic life' and on 'product' is to be greatly reduced. Closer examination, however, reveals that the real world view is also likely to be indispensable. How will individual members of society correctly interpret the symptoms of ecological crisis without technical understanding, or without access to the advice of technical experts whom they can trust? Historical evidence (Diamond 2005) shows

conclusively that problems of a fundamentally environmental nature are often misidentified by those living through them. Failures of environmental services may well be perceived, rather, as resulting from inter-ethnic aggression, religious non-observance, class or clan conflict, dilution of tradition, and so on. The symptoms, quite simply, are mistaken for the causes. It may sometimes be the case that environmental problems *cannot* be identified at the time because scientific knowledge is crucially incomplete. But even when this is not the case very great difficulties may remain because of the general problem that, in the modern world, intelligent decision-making by citizens can require an unrealistic degree of technical knowledge. The philosopher Robert Nozick has put it like this:

> [It is] not just that interesting thoughts and results have occurred in the century that are inaccessible to large portions of even a well-educated population – that has been true since Newton. Rather, now these ideas concern topics we want and need to understand, topics we think everyone should understand. Yet without some technical familiarity these topics cannot be understood or intelligently discussed. The very terms of evaluation have become technical.
>
> (Nozick 1993: xv)

In short, participation, dynamism and knowledge generation at the general level may often be impossible without recourse to trusted experts. Higher education seems implicated in the production of both of these.

Consideration of both of these perspectives seems broadly to support the argument we first presented in Chapter 1, that neither the real world view nor the ivory tower view of higher education is the best one but, rather, that the dynamic tension between them constitutes the proper nature of a university. Sustainable development provides a context in which that tension is revealed with particular sharpness. This is, at least in part, because it creates a requirement for firm plans and urgent action that can, nevertheless, be calmly critiqued and – if necessary – swiftly and unsentimentally abandoned. The same point might be made from any of the other perspectives outlined in Chapter 2.

For example, from a *task-based* perspective Christie and Warburton write:

> Any reforms must be underpinned by better ideas about what should count as 'free trade', 'growth' and 'liberalization of markets' . . . . What we need are new criteria to specify what kinds of trade, growth and market liberalization – and on whose terms – are compatible with fairness for the developing world, environmental sustainability and social security.
>
> (Christie and Warburton 2001: 110)

This is an admirable project and Christie and Warburton are persuasive in their insistence on its urgency. At the same time its implications for the generation and dissemination of new knowledge are clearly immense – and while those processes

of enlightenment are in train, today's students and funders of research will need to be able to pursue their legitimate goals in the context of existing understandings of trade, growth and liberalisation. Universities might properly expect to support them, both in exploring the possible and in becoming fully equipped to engage with the actual: not one or the other.

This exact point may be rather well illustrated by reference to the *globalisation* perspective on sustainable development. Two of the most eminent figures in the debate on globalisation make opposing but interestingly parallel points about global power relations in a context of sustainability issues. Joseph Stiglitz writes:

> Trade liberalization is supposed to enhance a country's income by forcing resources to move from less productive uses to more productive uses . . . . But moving resources from low-productivity uses to *zero* productivity does not enrich a country, and this is what has happened all too often under IMF programs. It is easy to destroy jobs, and this is often the immediate impact of trade liberalization.
>
> (Stiglitz 2002: 59, original emphasis)

Here we have an instance, then, of globalising Western ideology destroying the potential for development in poor countries. However, a different kind of instance is recounted by Jagdish Bhagwati (2004) in relation to a 1998 World Trade Organization (WTO) decision in favour of the USA and against India and three other developing countries over trade in shrimp caught without the use of turtle-excluding devices.

> There is little doubt that the Appellate Body was influenced by the immense lobbying effort of the richly endowed environmental NGOs.
>
> Astonishingly, the Appellate Body relied (partially) . . . on the *preamble* to the Marrakesh Treaty establishing the WTO in 1994, where the phrase 'sustainable development' is used . . . . Even God does not know what *sustainable development* means. It has become the nonsensical, anything-you-want-it-to-mean term today that *socialism* was in the 1960s and 1970s.
>
> (Bhagwati 2004: 156, original emphasis)

Here we also have an instance of globalising Western ideology asserting itself to the detriment of the development of poor countries, but this time freer trade is not its instrument but its enemy. Its instrument is sustainable development. In the presence of such urgent issues can universities really confine themselves within the ivory tower? And in the presence of such complexity, can they legitimately preoccupy themselves with the facilitation of current policy goals?

Finally, both the *metaphorical* and the *pragmatic* perspectives on sustainable development leave us begging much the same questions. Difficulties of interpretation arise for the WTO shrimp decision, whether nature is seen as red in tooth and claw or as a self-sustaining web, and these pertain to a range of knowledge, from

the technical but well-established through to the philosophical and speculative. Nevertheless, a very large number of individuals will have been directly affected by the decision – and every other decision like it. It is an intrusion, welcome or not, of the idea of sustainable development into their lives. It makes their personal knowledge relevant even as it demonstrates its incompleteness.

Whatever sustaining development means, it is unthinkable that the work of universities does not or should not bear upon it. But that work cannot be simply described. A university embodies two elements that run counter to each other: the necessity that certain things are learned and the necessity of being free to question or even ignore those very same things.

With these considerations in hand, we now move, over Chapters 4 to 10, to a consideration of our seven international case studies.

Chapter 4

Case Study One – An international initiative in higher education management

University Leaders for a Sustainable Future (ULSF)

The Association of University Leaders for a Sustainable Future (ULSF) was founded in 1992 to promote sustainability in colleges and universities worldwide and serve as the secretariat for signatories of the Talloires Declaration (ULSF 1990). Its stated mission is to make sustainability a major focus of higher education teaching, research, operations and outreach. ULSF has sought to achieve this through advocacy, education, research, resource development, assessment, membership support and international partnerships. Originally based at Tufts University in Medford, Massachusetts, ULSF relocated to Washington DC in July 1997 to become the higher education programme of the Center for Respect of Life and Environment. This, in turn, is an affiliate of the Humane Society of the United States, which provides core funding. In response to recent pressure from the Humane Society, ULSF started an initiative in 2006 supporting humane sustainable food systems within the higher education sector. This involves developing educational materials that analyse the state of the global food system, critiquing the dominant practices of industrial agriculture, working with students, staff and faculty on a range of operational initiatives including organised support for healthier and more sustainable food within individual institutions, working within state higher education systems to change environmental and food procurement policies, and negotiating with international food contractors to change their food sources and options.

ULSF has based its work upon premises that appear to be foundationally environmental in nature. Its website (http://www.ulsf.org) provides an organisational rationale in terms of environmental impacts – which are seen as both historically unique and potentially devastating 'for both natural ecosystems and ourselves' – and in terms of a role for higher education in preparing future decision-makers

in both private and public sectors, and in helping to form society's values and expectations. However, the definition of 'sustainability' that is then brought to bear on higher education institutions (HEIs) is broadly consistent with the widely used three-sector model of sustainable development, because it demands, as a minimum, that activities be 'ecologically sound, socially just and economically viable'. ULSF staffing has been modest, including the nearly full-time work of the associate director and the part-time work of the director and the membership and communications coordinator, as well as the work of a consultant (paid on a per-project basis) and the unpaid collaboration of several ULSF senior fellows.

Since its formation ULSF has been associated with a number of important milestones for sustainability in higher education. It has been particularly influential in the establishment and maintenance of the Talloires Declaration, which was signed following a meeting organised by Tufts University in France in 1990 that involved 22 university presidents, vice-chancellors and rectors. This would appear to have been the first occasion on which senior university leaders publicly committed themselves and their institutions to sustainability (Wright 2004), and the total number of signatories has subsequently increased to over 320 in more than 40 countries. ULSF continues to provide online information and email support for signatories of the Declaration. Until 2006 ULSF also provided a range of services to members and others which included:

- ULSF's biannual report, entitled *The Declaration*, which featured in-depth articles on current sustainability initiatives at leading institutions (published from 1996 to 2005). The organisation has also supported and partnered with the *International Journal of Sustainability in Higher Education*. Published by Emerald (UK), this peer-reviewed journal is the major international outlet for scholarly research that focuses exclusively on sustainability in and through higher education. USLF staff have themselves published widely in the academic literature, and the organisation has provided e-bulletins, extensive online resources and other information services.
- Presentations and short seminars on a range of topics, including 'Higher education for sustainability: national trends, challenges, and factors for success'; 'Campus sustainability and the Talloires Declaration'; 'Assessing your campus commitment to sustainability'; 'The Decade of Education for Sustainable Development (2005–14)'; and 'Institutional mission, policy and planning for sustainability'. Some recent presentations were given at the Australian National University; UNESCO (Paris); the United Nations University (Tokyo); the US Department of Agriculture; Dalhousie University (Nova Scotia), the University of New Hampshire; and the University of Portland.
- Campus sustainability assessment and strategic planning consulting services. These took the form of one- to three-day campus site visits to meet with stakeholders; evaluate their institutional commitment to sustainability in mission and planning, curriculum, research, faculty/staff development,

physical operations, student life and community service/outreach; and contribute to strategies for the future.

These assessment interventions were often based on the Sustainability Assessment Questionnaire (SAQ) – a qualitative campus self-assessment tool designed by ULSF in 1998–99, which has now been used by over 1,200 individuals and institutions around the world. Since 2000, ULSF staff have worked with over 30 institutions (Wynn Calder, personal communication). The SAQ is a largely qualitative teaching tool. It can be downloaded from the ULSF website and, according to Shriberg (2004), its strength is that it offers institutions a manageable route into beginning to address the environmental, social and economic aspects of sustainability in their own particular contexts. ULSF is clear that the tool does not provide a means through which one institution may be compared with or against another. In 2006 and early 2007, ULSF co-hosted two meetings of representatives of nearly 20 USA-based disciplinary associations with a focus on integrating sustainability into the academic disciplines.

ULSF has served as the external evaluator for the system-wide South Carolina Sustainable Universities Initiative, which ran from 1999–2005 and involved the University of South Carolina, Clemson University and the Medical University of South Carolina (Calder and Clugston 2004). This evaluation drew on earlier work (Clugston and Calder 1999) to derive a set of seven criteria against which judgements about the degree of success of the initiative within the host institutions could be made and explained. These criteria are as follows:

1. How are the 'champions' of sustainability initiatives perceived by others in the institution? Do they have the credibility and the personality needed to promote the initiative or are they marginal institutional actors promoting their narrow self-interests?
2. Does the initiative have the endorsement of key administrative leaders at the institution? Is a commitment to sustainability supported by the president or chancellor and by other high-level and influential figures (e.g. senior managers)?
3. Who benefits from the initiative? Which departments and programmes will the faculty and administration perceive the initiative to be strengthening, and which will it threaten? If the initiative promises to empower and strengthen many programmes it will be supported.
4. Does the initiative fit with the institution's ethos, its saga and its organisational culture? Each college and university has a particular story that it tells about itself and a particular 'niche' that it fills in the ecology of higher education. How well does the initiative conform to this institutional identity?
5. Does the initiative elicit the engagement of the university or college community? Is there sufficient publicity (through public awareness events, press releases, articles, etc.) about new policies and initia-

tives? Is there regular disclosure of progress, successes and failures? Is the process for the critique of current sustainability programmes and for determining the next steps broadly participatory across the academic community?

6 Is the initiative academically legitimate? Is it perceived to be grounded in a recognised body of knowledge? Can it claim an academic rigour and validity? If it lacks this basic *sine qua non* of academic credibility it will be rejected.

7 How successful is the initiative in bringing in critical resources (e.g. grants and contracts, state funding, student demand, recognition and support from key stakeholders such as the media or trustees, and state, national and international leaders)? Does the initiative produce cost savings over time (e.g. energy conservation)?

(Abstracted from Calder and Clugston 2004: 256–9)

What is particularly interesting about these criteria is the sophisticated grasp they reveal of the institutional bedrock in which change towards sustainable development in higher education – whether in respect of campus estates management, research, or learning and teaching – is always embedded. Determining what sustainability requires in the abstract is one thing, and managing at the margin as actual initiatives progress (or do not) is quite another. It is not surprising that, using this methodology, the Sustainable Universities Initiative is found to have achieved only partial success, and indeed such success seems only encouraging once the complexities of the situation have been fully grasped. In the context of the present volume we should particularly note Calder and Clugston's conclusion (2004: 260) that the success that has been achieved has resulted largely from 'adapting to unanticipated opportunities'.

In 2000 ULSF co-founded the Global Higher Education for Sustainability Partnership (GHESP), which was formally launched as a type II partnership at the Johannesburg World Summit on Sustainable Development in 2002. The mission of this collaboration is to support higher education for sustainable development through cooperation and exchange of information and good practice between institutions around the world. Partners include ULSF, COPERNICUS-CAMPUS, the International Association of Universities, and UNESCO. A particularly significant activity for ULSF has been the coordination of the GHESP Resource Project, a contribution to the United Nations Decade of Education for Sustainable Development (2005–14). The purpose of this project is to advance sustainable development in higher education worldwide by building international and regional networks, conducting critical research and providing regionally relevant resources to scholars and change agents at universities. ULSF anticipates launching a Resource Project website in 2007 in collaboration with some additional partners, including the United Nations University Institute of Advanced Studies and the University of Lüneburg's Institute for Environmental and Sustainability Communication.

An example of the recent work of ULSF is the Halifax Consultation of October 2005. Held at Dalhousie University, Nova Scotia, Canada as a Research Development Initiative of the Social Science and Humanities Research Council of Canada, the consultation involved 35 experts on higher education and sustainability, and benefited from strong organisational and intellectual leadership from ULSF. At the heart of the consultation was a Delphi process involving three rounds of questionnaires, which, along with detailed discussion, sought to generate a comprehensive strategy for higher education for sustainability (HES) research. One output was the following list of research priorities for sustainable development in higher education, presented in descending order of importance as judged through this process and by these participants:

- impacts of teaching and learning methods;
- university and community linkages;
- mainstreaming sustainability;
- institutional culture and organisational/governance structures;
- evaluating educational approaches;
- case study analysis;
- legitimising HES research and practice;
- leadership and management;
- transformative learning;
- philosophy and epistemology in HES;
- disciplinarity, transdisciplinarity and interdisciplinarity;
- capacity building;
- individual and social change;
- campus sustainability assessment;
- inclusiveness and voice in sustainable development;
- university and politics;
- networking.

As the foregoing shows, a central aspect of ULSF's work has been the building of international consensus and its expression in the form of documentary institutional commitments. Wright (2004) traces the history of such sustainability declarations in higher education for sustainable development. She finds that the themes they embody have tended to remain constant since the early 1990s, but also identifies a tendency within the texts themselves to acknowledge, or claim, that each is building on its precursors. She also notes the following:

> Those involved in the sustainability in higher education movement may have been naïve in the beginning to assume that signing a declaration also meant that the institution would implement it. Universities have been accused of attempting to 'greenwash' their institutions . . . practitioners are realizing that monitoring implementation is essential to the success of a declaration.
>
> (Wright 2004: 17)

In conclusion we may say that ULSF offers an example of patient progress, often in difficult circumstances, by a not-for-profit organisation acting as a source of external advice and other inputs to the higher education sector. Its Associate Director, Calder, notes that it has often found membership hard to recruit, and that its survival therefore depends on the contribution of its parent organisations and on grants from private foundations. He continues as follows:

> We have seen considerable progress in HES over the last 10 years but it is mostly at the edges of the higher education endeavour, with a strong focus on 'greening' the physical plant, including energy and water conservation, and waste reduction and recycling. While sustainability themes are showing up more often in higher education curricula, it is mostly in environmental science and engineering, and mostly among a small, enthusiastic set of interdisciplinary academics/scholars who are not necessarily at the core of their institutions, or setting the tone for their disciplines.
>
> (Calder 2006, personal communication)

At the time of writing ULSF reports that it is shifting its orientation away from serving members and seeking to create a major programme focus on sustainable food systems for higher education. It has achieved much in difficult circumstances and would seem to be well placed, through the networks and skills-base it has established, to take advantage should those circumstances improve.

Chapter 5

Case Study Two – United Nations Environment Programme initiative

Mainstreaming Environment and Sustainability in African Universities (MESA)

This initiative began as a special contribution by the United Nations Environment Programme (UNEP) to the UN Decade of Education for Sustainable Development (2005–14) (UN-DESD). Its stated objectives are as follows:

- To enhance the quality and policy relevance of university education in Africa in the context of sustainable development and the achievement of the Millennium Development Goals.
- To increase knowledge of education for sustainable development (ESD) so that future business managers, scientists and political leaders of the continent will incorporate ESD principles in their decision-making.
- To raise awareness, spreading a new way of thinking about development and society beyond university boundaries, so reaching inside the many other social circles in which students and teachers live their lives.
- To offer new opportunities for collaborative projects between university management, teaching staff, students and representatives of the private sector and civil society.

(see http://hq.unep.org/Training/features/mesa.asp)

Writing in the journal *Research Africa* (p.20) in October 2006, Akpezi Ogbuigwe, UNEP's Head of Environmental Education and Training, summarised the challenge facing the project as follows:

> Can African universities play a role in fostering an increase in the quality of teaching and learning for sustainable development? How about the much-needed human and financial resources that African universities would need to allocate to propel the process? What is the purpose of education if it cannot produce answers to Africa's problems? These and many more are the questions African universities have to tackle and overcome.

The concerns that Professor Ogbuigwe expresses are, clearly, close to those of this book. 'What are universities for?', she asks, and 'What is their role and significance as producers and transmitters of knowledge, and institutions that must make decisions about resource use within parameters that may constrain or expand the resources available?'

One particularly striking aspect of this initiative is its ambitious pan-African reach and its inter- and intra-organisational scope. This is reflected in the partnerships that the project has formed and in the range of activities it has generated or supported.

Partnerships with organisations that themselves have cross-institutional reach include UNESCO; the Association of African Universities (AAU); the Nile Transboundary Environmental Project (NBI-NTEAP); the Southern African Development Community Regional Environment Programme (SADC-REEP); the Africa Integrated Environmental Assessment and Reporting Network (AFINET); the African Forum for Leadership and Development; the Global Higher Education for Sustainability Partnership (GHESP); and the New Partnership for Africa's Development (NEPAD). Partnerships have also been formed by MESA with a substantial number of individual universities. The activities that have resulted are illustrated in what follows under two broad – though, as we shall see, imperfect – headings. First, there are what might crudely, but not in the least pejoratively, be described as 'top-down' or 'centrally commissioned' activities. Second, there are 'bottom-up' activities, which arise from individuals and institutions responding on their own initiative to opportunities presented, or leveraged, by the programme.

Centrally, MESA activities were conceived under the following headings:

- Seminars for university leaders. The first of these took place in May 2006 and involved vice-chancellors, university associations, ministries of education and the African Association of Universities. The Global Virtual University (GVU), United Nations University (UNU) and UNESCO also participated. The seminar emphasised the critical issues associated with environment and sustainable development in an African context, and it introduced university leaders to the objectives of the UN-DESD and to the Africa Strategy for the UN-DESD and the MESA programme. ICT, networking and partnerships and quality education were discussed in depth.
- Education innovations workshops on various themes. The first two of these took place in May 2006 in Kenya. They were designed to enable university lecturers and professors to learn how to integrate sustainability issues into

their institutions and practice. A total of 85 university professors and lecturers from different academic fields from 29 African countries attended. By the end of the workshops, all participants developed an action plan for their own contexts.

- Development of innovative learning support materials on environment and sustainability themes in higher education. A particular example of this is the Education for Sustainable Development Innovations Course Toolkit (see http://www.unep.org/Training/mesa/toolkit.asp).
- As a follow-up to the workshops, UNESCO Dakar, in collaboration with UNEP, is implementing a project Mainstreaming Environmental Education in Sub-Saharan Africa in partnership with the AAU in 15 francophone countries. This will involve the translation of the toolkit.
- An awards programme, which aims to recognise ESD innovations at a university level. In particular, a rotating Chair of Education for Sustainable Development will be presented on an annual basis to an African university showing strong evidence of sustainability innovations in teaching, research and management. Funding for this is still being sought.
- A student awards programme for innovative student initiatives in universities.
- A MESA government/private sector/civil society forum.
- A biennial conference providing an opportunity for universities to report on ESD innovations associated with the triple mission of research, teaching and services, and to engage in South–South and North–South dialogue.
- Pilot programmes promoting action research linking universities, communities, business and industry in sustainable development partnerships.
- A 'MESA business campus'.
- The development of monitoring and evaluation processes.
- The first 'open MESA lecture', with Hans van Ginkel, Director of the UNU, as the guest speaker, took place in May 2006 at Kenyatta University, Nairobi. van Ginkel outlined UNU's strategy to strengthen ESD through the establishment of regional centres of excellence. More than 1,000 guests attended the lecture.

Although substantive initiatives in their own right, these central activities have also been designed both to take account of, and to further encourage, bottom-up action by individual higher education institutions. For example, the Education for Sustainable Development Innovations Course Toolkit draws upon a number of case studies. One of these relates to experience in the Nile River Basin. The approach taken overall is illustrated by the following extract from this case study:

> Lack of awareness and concern for environmental issues as well as the risks and uncertainty involved in sustainable development challenges need to be taken into account. For example, the large scale programme to establish wells in the Sahel during the 1960s and 1970s can be directly linked to growing herd numbers and land degradation within a

100 km radius of the wells. Conflicting interests are also an important underlying cause of unsustainable practices as is evident in the expansion of large-scale mechanised agricultural schemes in some Nile Basin countries and the subsequent concentration of migratory animals and nomadic populations.

Environmental education and ESD initiatives thus need to take into account not only information but also exploratory orientations. These need to involve different interest groups and equip people with the competencies to make decisions in situations of conflict and uncertainty. Universities are seen as key contributors to the development of the kinds of information, capacity for participation and innovative solutions that are needed in the Nile River Basin. A recent initiative is the formation of the Nile Basin Environmental Education Lecturers Network. This network seeks to enhance the capacity of universities in the countries along the Nile River to share information on environmental education courses and collaboratively to develop courses and learning support materials. This includes the collaborative and shared supervision of masters research initiatives in the region focusing on educational initiatives with an environment and sustainability focus.

(http://www.unep.org/Training/mesa/toolkit.asp)

A flavour of the bottom-up initiatives that have taken place may be obtained from the following examples. They are a selection taken from feedback reported to MESA in December 2006 and illustrate very clearly the enormous range of opportunities and challenges that are present:

- From Obafemi Awolowo University of Ile-Ife (OAU) in Nigeria, Professor Margaret Okorodudu-Fubar reported that the university was positioning itself as an active participant at national and regional levels in relation to ESD. There are plans to revise curricula offered at the university. The university has further built on the existing MESA partners' network and initiated a collaborative process with the Environic Foundation, Inc., USA towards such revision.
- From Egerton University in Kenya, Professor Gitile Naituli described how a core group had been formed to organise delivery of the Education for Sustainable Development Innovations Course to the Faculty of Agriculture and the Faculty of Environmental Science. It was also decided that a master's degree programme based on the materials obtained at the MESA Innovations Workshop be designed and presented to the university senate for approval.
- Also in Kenya, the following changes have occurred at Kenyatta University according to information provided by Ayub Macharia Ndaruga of the School of Environmental Studies and Human Sciences: implementation of an interdisciplinary course on ESD at both undergraduate and postgraduate level; a review of the curriculum of the Bachelor of Environmental Sciences to check on compatibility with the MESA programme; integration of MESA

ideals in the reviewed curriculum in the Department of Environmental Sciences; a vice-chancellor-driven 'beautification' programme to enhance overall aesthetics of the university in line with environmentally friendly practices; rulings that university examinations in the Environmental Studies Department, and all student projects and research, must now have an ESD component; and the planned launch of a book *Environment and Sustainable Development: A Guide for Tertiary Education* in Kenya in January 2007.

- Professor Samuel Ayonghe of the University of Buea in Cameroon described how the university has initiated the process of establishing a regional network for ESD training with universities in Chad, the Central African Republic, Gabon and the Republic of Congo. Also, university syllabi are being revised to include ESD as key objectives in all degree programmes.
- Even where circumstances are most unfavourable the project has prompted activity by individual academics. We quote here at length from feedback given by Professor Jonathan William of the University of Liberia School of Law:

  The participant has started implementing his action plan and reports that some progress has been made. The Louis Arthur Grimed School of Law does not offer a course in Environment Law. Upon his return from the MESA workshop in May 2006, the participant made an appointment with the Dean of the Teachers College and briefed her on the MESA movement. She agreed to provide all the required assistance. . . . The participant has been listed on the 'UNDP list of Liberian Professors with passion for the environment'. He also discussed the MESA programme with the Head of the Environmental Studies in the Science College at the University of Liberia (which offers a bachelors degree in Environmental Studies) and with the Directors of the Graduate Programme in Regional Planning (which offers a course on environment). The participants hope that UNEP can sponsor a MESA-workshop at the University of Liberia campus in the future. The participant states that Liberia is the least Developed Nation globally and has suffered 17 long years of war, which destroyed the little Liberia had built up. Access to the internet or land phone on campus is literally non existing. However, the love for knowledge and the hope to make planet Earth a safer place for our children drives him on. The participant indicates his gratitude that UNEP has offered him opportunity to increase his knowledge on Education for Sustainable Development and to introduce him to the MESA-network. The participant is confident that with the support of colleagues and friends, who care for the environment, and with some financial support, they will be able to successfully implement the action plan.

- Charles H. Makuwerere of the Department of Geography and Environmental Studies at Zimbabwe Open University gave an account of mixed experiences. The Chairperson of the Department of Geography and Environmental Studies

and the Dean of the Faculty of Science had been briefed. It was agreed that the Department of Geography should be the focal department for the implementation of ESD initiatives at the university. The first initiatives that the university felt could be easily implemented were those relating to the development of a university environmental policy, as well as those involved in the university becoming the main driver for the establishment of regional centres of expertise (RCE) in Zimbabwe. However, both time and money continue to provide significant constraints on progress.

- Finally in this sample we include the University of Western Cape in South Africa where, as Charmaine Klein, coordinator of the Environmental Education and Resources Unit and service manager, reported, a Chair for Sustainable Development has been established, despite only limited buy-in for sustainable development across the wider university. Currently, all initiatives linked to sustainable development rest with the Environmental Awareness, Training and Techniques coordinator and the Chair for Sustainable Development. She also noted that funding for the MESA initiative remains a problem and overall has grave doubts about its potential for success.

This is a relatively new and very ambitious project, conceived on a vast scale and across huge geographical and cultural distances. The potential is great, the obstacles and potential pitfalls legion, and the commitment of some individuals humbling.

Chapter 6

Case Study Three – A UNESCO initiative

Re-orienting teacher education to address sustainability

The provenance of this initiative can be traced to the 1992 United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro. This produced the 'work plan' known as Agenda 21, which has 40 chapters. Chapter 36 of this document specifically concerns 'promoting education, public awareness and training'. This is extremely broad in scope and identifies three 'programme areas' for learning, in addition to the prerequisite necessity to achieve universal participation in education (education for all). The three areas are:

1 re-orienting education to sustainable development;
2 increasing public awareness;
3 promoting training.

Subsequently, UNESCO identified teacher education as crucial to educational re-orientation (programme area one), arguing that it ought to be seen as the 'priority of priorities', both in the sense that teacher education is an important investment in capacity-building and because bypassing teacher-education institutions is seen as both unethical and a wasted opportunity. The capacity-building argument relies, in part at least, on the multiplier effect, whereby one teacher over a working lifetime may well come across (and hence influence) thousands of students. Such education is also, of course, an important area in which higher education institutions (HEIs) provide training, and so is relevant to programme area three as well.

In 1998 the United Nations Commission on Sustainable Development (CSD) called for UNESCO to develop guidelines for re-orienting teacher training to address sustainability. In response to this, UNESCO collaborated with York University, Toronto, in 1999 to establish a UNITWIN/UNESCO Chair on Re-orienting Teacher Education to Address Sustainability. The post was accepted by Charles Hopkins, a most experienced environmental educator and schools system admin-

istrator, and the project secretariat was established under the supervision of Dr Rosalyn McKeown of the University of Tennessee.

The Chair established an international network of 30 teacher-education institutions across 28 countries. This network met in Canada (2000), South Africa (2002), Sweden (2004) and Finland (2006). The Chair's approach to the international network has been one of facilitating engagement between teacher-education institutions around the world, then archiving and managing the outcomes in such a way as to promote further national-scale innovation and the growth of the network. As a result the network has grown over time, and regional networks have been established in Canada, Eastern Europe, the Caribbean and Southern Africa, with others planned at the time of writing. Together, these regional networks have engaged more than 70 institutions of teacher education.

In 2005, a report *Guidelines and Recommendations for Re-orienting Teacher Education to Address Sustainability* (UNESCO 2005), prepared by the UNITWIN/UNESCO Chair and the international network, was published by UNESCO as a resource for the United Nations Decade of Education for Sustainable Development (2005–14) (UN-DESD). These guidelines and recommendations (hereafter the *Guidelines*) should not be seen as the last word, however, as the continuing work of the network will involve their use and revision.

It is important to note that the work of the international network has been conducted under institutional circumstances that have sometimes been less than favourable. First, the impetus of UNCED was not maintained everywhere after 1992, and the Earth Summit Plus Five review of progress held in 1997 was thought by many to be disappointing (Rao 2000). This matters because UNESCO is very dependent on the willingness of other organisations, particularly at the national level, to support it. Second, UNESCO's influence is a function of its relationship with the UN as a whole and has, in consequence, sometimes been marginal. For example, Field (2000: 251) described it as 'a rather discredited body with a vague remit and a large and diffuse membership'. In this context it is important to note Hopkins' and McKeown's conviction [personal communication with the authors (2007)] that association with UNESCO was crucial to the working of the international network and to the success of its work on re-orienting teacher education. Third, although UNESCO's focus on ideas such as 'global citizenship' and the 'Earth Charter' may have considerable appeal among environmentalists and educationalists, it has often struggled to divert the attention of decision-makers and budget-holders from other goals that might be, to some degree at least, incompatible with them, for example 'economic growth' or 'national development'. Further, the network did most of its work at a time when the significance of sustainable development was not as widely understood as it is now. For all these reasons it is a notable achievement of the UNITWIN/UNESCO Chair to have established and expanded the international network, to have published the *Guidelines* and – along the way – to have successfully both used and disseminated influential independent initiatives such as the UNESCO Teaching and Learning for a Sustainable Future multimedia teacher-education programme (http://www.unesco.org/education/

tlsf/) and the Education for Sustainable Development (ESD) Innovations Course Toolkit (http://www.esdtoolkit.org).

There is emphasis in the *Guidelines* both on the transfer of skills and expertise from more-developed to less-developed nations and on the infusion into developed-country thinking of insights from the developing world. For example, in the appendix (which is based on text drawn from the ESD Toolkit), the academic departments of Western universities are clearly implicated when we read that:

> Sustainable development encompasses environment, economics, and society. Therefore, people need basic knowledge from the natural sciences, social sciences, and humanities to understand the principles of sustainable development, how they can be implemented, the values involved, and ramifications of their implementation. Knowledge based on traditional disciplines supports ESD.
>
> (UNESCO 2005: 72)

At the same time the *Guidelines* detail exemplary interventions by network members in developing countries, which include, *inter alia*:

- work with trainee English teachers in Jamaica on the parameters of social violence and the possible role of education for sustainable development in preventing it;
- A masters-level initiative by the Department of Women's Studies at the University of the Punjab focused on the significance of the empowerment of women in sustainable development;
- the introduction of a compulsory education for sustainable development component into masters-level environmental education and geography education programmes at the University of Zambia.

Such examples are not confined to consideration of the higher education curriculum. They also extend to the management of estates, as in the case of an initiative at the National Taiwan Normal University to establish a 'sustainable campus'. This involved rainwater harvesting; black water treatment and recycling; biodiversity enhancement through a constructed wetland environment and rooftop garden; the introduction of energy-saving technologies; and, a campus environmental education and interpretation system.

Core recommendations (UNESCO 2005: 9) are made in relation to:

1 ministerial and national involvement;
2 community and regional/provincial involvement;
3 change *within* institutions of higher education;
3A change *across* institutions of higher education;
3B change within faculties of education;
3C change related to engaging pre-service and in-service teachers;
3D individual faculty members.

As this quoted extract from the ESD Toolkit shows (UNESCO 2005), the authors endorse a 'strengths model' in which 'every discipline and every teacher can contribute to sustainability education':

> begin by ensuring that educators and administrators understand the concept of sustainability and are familiar with its principles. Once they understand the concept of sustainability, educators from each discipline can examine the curriculum and school activities for existing contributions to ESD. Next, educators can identify potential areas of the existing curriculum in which to insert examples that illustrate sustainability or additional knowledge, issues, perspective, skills, or values related to sustainability. After identifying existing and potential contributions, leaders can create awareness among the educational community of these contributions to the larger ESD picture. Then, these contributions can be woven together to create ESD programs that are taught overtly to pupils and students.
>
> (UNESCO 2005: 70)

Teacher education is here conceived both as part of education for sustainable development and as serving it. Such education, we are told, must be locally and culturally relevant. It cannot, we must therefore assume, be centrally prescribed in fine detail. However, it is proposed that it be introduced by teachers trained in the use of the strengths model, which, as we see above, respects existing disciplines but alters the detail of what is taught within them to have a particular focus. For example:

- mathematics helps students understand extremely small numbers (e.g. parts per hundred, thousand or million), which allows them to interpret pollution data;
- language arts, especially media literacy, creates knowledgeable consumers who can analyse the messages of corporate advertisers and see beyond 'greenwash';
- history teaches the concept of global change while helping students to recognise that change has occurred for centuries;
- reading develops the ability to distinguish between fact and opinion and helps students become critical readers of political campaign literature;
- social studies helps students to understand ethnocentrism, racism and gender inequity as well as to recognise how these are expressed in the surrounding community and nations worldwide.

(UNESCO 2005: 70)

The point here is that the degree of detail at which local and cultural appropriateness emerges must be finer than this and determined locally.

However, it is not supposed in the *Guidelines* that existing, discrete disciplines

are sufficient by themselves. Rather, a challenge that emerges at this point, of particular significance for HEIs, is of drawing together methodological and pedagogical techniques from across existing disciplines. Sustainable development is conceived as an essentially cross-disciplinary project. Clearly this has implications that go beyond how schools work, or even how teachers are trained, and touches upon the organisation of higher education itself.

In the *Guidelines* the education for sustainable development curriculum that teachers should be trained to deliver is envisaged under five headings: knowledge; issues; skills; perspectives; and values. As we have noted, the relevant 'knowledge' is to be drawn from across traditional disciplines. The 'issues' are broadly those identified by the Rio Earth Summit and Agenda 21, and so we see a tension between the desire to empower learners and the desire to instruct them, as it seems only reasonable to assume that some critically minded learners are likely to take exception to the analyses offered therein. 'Skills' are those that give 'people practical skills that will enable them to continue learning after they leave school, to have a sustainable livelihood, and to live sustainable lives.' (UNESCO 2005: 72). This is a definition that challenges some traditional success criteria not only for teaching in schools but also for teaching in universities. The proposed 'perspectives' are global and historical in nature, whereas 'values' are essentially those of pluralism, tolerance, empathy, equity and environmental stewardship.

Finally, the *Guidelines* make a number of recommendations directed specifically at HEIs, based in part on the experiences of network members of enablers and barriers to change. These are summarised below.

First, the following changes are proposed across HEIs:

- the restructuring of reward systems to encourage research, teaching and administration that advances education for sustainable development;
- the adoption of sustainable management practices, including those relating to issues of social equity and environmental stewardship;
- the embedding of sustainable development in senior administrative practices so that institutions are resistant to a loss of impetus towards sustainable development caused by the frequent turnover of senior staff;
- the promotion of interdisciplinary work that supports sustainability;
- the engagement of student organisations in sustainability issues and management.

Second, the report proposes action by faculties of education to:

- raise the awareness of faculty leaders both of the importance of sustainable development and of the role of teacher education within it;
- provide appropriate training for faculty members;
- establish inclusive internal democratic processes that support the reorientation of (teacher) education to address sustainability;
- protect sustainability initiatives against changes in regulation, faculty composition or funding;

- reward contributions towards sustainability;
- raise the awareness of teaching faculty.

This is an initiative which argues that it is bringing about significant change through the use of a particular institutional mechanism, the UN. It has produced not only a set of guidelines and recommendations but also generated a set of nested networks. It sees cause for cautious optimism:

> Members of the international network repeatedly mentioned the urgency to act and the need for profound change. While many spoke of the enormity of the task at hand, all who participated were able to make significant and positive inroads. Interested individuals operating within their own spheres of control (e.g., weaving sustainability themes into their own classroom curricula) made great headway re-orienting their programs. Also, many institutions were able to develop new courses at both the undergraduate and graduate levels. Problems arose, however, when the Network members advocated for change beyond the sphere of direct control. ESD within teacher-education institutions is currently endorsed by early-adopters. However, it will take concerted effort and resources to establish ESD in curricula, programs, practices, and policies across teacher-education institutions.
>
> (UNESCO 2005: 5).

Finally, one of the significant positive features has been the way that it has tried to work with university administrators as well as academics as a tangible way of addressing the change process/hurdle.

Chapter 7

Case Study Four – Sustainable development and higher education management

The work of the Higher Education Funding Council for England

This chapter describes a programme of work undertaken in the English higher education sector by the Higher Education Funding Council for England (HEFCE).

HEFCE was established in 1992 under the terms of the Further and Higher Education Act 1992 as a non-departmental public body operating within a policy and funding context set by the government but with statutory responsibilities free from direct political control. The Council's main function is to administer grants provided by the Secretary of State for Education to fund education, research and associated activities at 130 universities and other higher education institutions in England. In sum, the Council:

- distributes money to universities and colleges for higher education teaching, research and related activities;
- funds programmes to support the development of higher education;
- monitors the financial health of universities and colleges;
- ensures the quality of teaching is assessed;
- provides guidance on good practice.

In doing this it has identified four core strategic aims: (i) enhancing excellence in learning and teaching; (ii) widening participation and fair access; (iii) enhancing excellence in research; (iv) enhancing the contribution of higher education to the economy and society. Underpinning these are the two cross-cutting supporting aims of 'sustaining a high quality higher education sector' and 'enabling excellence'.

The Council uses formulae to determine how money is allocated between institutions. These take account of certain factors for each institution, including the number and type of students, the subjects taught and the amount and quality of research undertaken. Funding is provided in the form of a 'block grant',

which institutions are free to spend according to their own priorities within broad guidelines. It is not expected that institutions will model their internal allocations on the HEFCE funding method. The constraints that this main funding method imposes on universities are generally in terms of the delivery of overall teaching and research activity. Whenever possible the Council seeks to reduce the number of separate funding streams (and any associated separate monitoring) by incorporating them within the main formulaic allocations.

The relationship between government, HEFCE and each individual university is therefore characterised by what might be termed 'cooperative tension'. Each has its own areas of responsibility and competence. Each must work within the context set by the others. So, for example, government is anxious that universities should produce appropriately skilled graduates, universities are anxious to defend academic freedom, and HEFCE must promote excellence, both when the actions indicated by these separate priorities coincide and when they do not.

Sustainable development has provided (and continues to provide) a context in which this cooperative tension has played itself out in particular, varied and very interesting ways.

In January 2005, following the government's Sustainable Development Action Plan for Education and Skills (DfES 2005), which had asked HEFCE to develop a sustainable development strategy for itself and for the way it interacts with the higher education sector, the Council published *Sustainable Development in Higher Education: Consultation on a Support Strategy and Action Plan* (HEFCE 2005a), inviting written responses from the sector and holding four consultation seminars. The initial impetus, therefore, came from government, although we should also note that by this time many universities (but certainly not all) were already engaged in sustainability initiatives in relation to teaching, research and/or estates. However, these initiatives were patchy, based on a range of conceptions of sustainable development and coordinated to greater or lesser degrees. On the whole they had been most successful in respect of the management of the university environment and least successful in relation to curriculum innovation (Johnston and Buckland 2002; Reid *et al*. 2002; Scott and Gough 2003, 2004; Haigh 2005). Two overarching initiatives had sought to coordinate progress towards sustainable development in a number of universities. The 1997–1999 HE21 project took a directive approach to curriculum change, presenting universities with documents specifying 'what sustainability learning is required by different professions' (Ali Khan 2002: 15). Little actual curriculum change seems to have come of this. Subsequently, the 2000–2003 Higher Education Partnerships for Sustainability (HEPS) project worked with 18 universities on both estates management and curriculum aspects of sustainable development and, in particular, producing a curriculum development toolkit that offered institutions a route to the production of their own context-specific course content and pedagogy.

In its January 2005 consultation HEFCE noted:

> This is a consultation on our vision for, and plans to support, higher education's contribution to sustainable development. We want to make

> sustainable development a central part of our strategy for the future development of the higher education sector. Our vision is that, within the next 10 years, the higher education sector in England will be recognised as a major contributor to society's efforts to achieve sustainability – through the skills and knowledge that its graduates learn and put into practice, and through its own strategies and operations. The support strategy sets out our vision for higher education's contribution to sustainable development and, in broad terms, our approach to pursuing this vision. The action plan sets out a series of practical actions we propose to take within parameters set by the strategy.
>
> (HEFCE 2005a)

The action plan set out a support role for HEFCE in four key areas:

- engaging with stakeholders to bring about policy synergies on sustainable development;
- building the capacity of people to manage sustainable development;
- sharing good practice, or supporting the development of good practice where none exists;
- rewarding more sustainable behaviour.

The Council said that implementation of the proposed action plan was intended to support the sector in a way that encouraged it to:

- embed the principles of sustainable development in its values, strategies, operations and organisational learning;
- develop curricula, pedagogy and extracurricular activities that enable students to develop the values, skills and knowledge to contribute to sustainable development;
- strengthen links to businesses, the community, civil society, government and others in pursuit of sustainable development;
- build the new skills, knowledge and tools needed for sustainable development through research;
- continuously improve its own impact on the environment, society and the economy.

In July 2005, following the consultation feedback (HEFCE 2005b), the Council published *Sustainable Development in Higher Education* (HEFCE 2005c), which set out the Council's revised approach to promoting the sustainable development agenda, taking account of *Securing the Future*, the government's strategy for sustainable development (UK Government 2005).

Sustainable Development in Higher Education retained the support roles and the stress on making sustainable development a central part of its strategy for the future development of the higher education sector, but the Council noted:

> While we continue to believe in the value of developing tools to report organisations' progress on sustainable development, we are not seeking to introduce sector-wide reporting nor to penalise negative performance. In the short-term we will commission a strategic review of activity relating to sustainable development in the sector to demonstrate sector performance to stakeholders.
>
> (HEFCE 2005c)

In 2006 the Department for Education and Skills updated its Sustainable Development Action Plan in response to *Securing the Future*. In this the only action that related to HEFCE was encouragement of non-departmental public bodies to produce their own action plans during 2006. This the Council did, setting out the actions it would undertake in 2006/07 (HEFCE 2006a). HEFCE has also made sustainable development a key theme of its strategic plan for 2006–11 (HEFCE 2006b). This includes a key performance target that 'by 2008, HEFCE will develop a baseline assessment of how the HE sector contributes to the sustainable development of society, and to demonstrate progress in this area by 2011'. In pursuance of this it has (2006) commissioned a 'light-touch' strategic review of activity, which aims to:

- establish a baseline of sustainable development in the sector, against which we can measure progress and publicise what the sector is already doing;
- learn from institutions' experience about the conditions for embedding sustainable development, including barriers and drivers;
- identify key issues that present opportunities and challenges for the sector and investigate possible policy responses;
- evaluate its approach and refine priorities;
- raise the profile of sustainable development in the sector.

This was a two-stage process: (i) a scoping study (2006) informed (ii) a subsequent research programme (2006/07) whose outcomes were to meet the aims of the strategic review and gather information that would contribute to understanding a number of broad questions:

- To what extent do the strategic plans and other corporate documents and policies of HEFCE-funded higher education institutions and bodies that fund higher education demonstrate a commitment to sustainable development?
- What are the successful processes used to embed sustainable development within an institution?
- How can the experiences of higher education initiatives (HEIs), both positive and negative, of embedding sustainable development be used to effectively encourage others to do likewise?
- What are the needs or demands of user groups, in particular students, employers and professions, in relation to the sustainable development agenda?
- How can we usefully generate and manage a debate around some of the key

sustainable development issues that present opportunities and challenges for the sector?
- How can we encourage development of the curriculum in sustainable development?
- What can we learn from the experiences of other sectors and countries?
- What can we learn from the interface between various elements of this strategic review?

This review is under way as we write and is due to report in late 2007.

Three further aspects of the institutional context in which this report will be produced should be mentioned at this point. First, and in parallel with the foregoing activity, HEFCE funding has enabled the establishment of two sustainability-related Centres for Excellence in Teaching and Learning (CETLs). These are the Centre for Excellence in Teaching and Learning for Education for Sustainable Development (ESD) at the University of Plymouth, which aims to transform the university from an institution characterised by significant areas of excellence in ESD into an institution modelling university-wide excellence able to make a major contribution to ESD regionally, nationally and internationally; and the Centre for Sustainable Communities Achieved through Integrated Professional Education (C-SCAIPE) at Kingston University, which aims to produce graduates with a holistic understanding of sustainable communities. Second, in 2005 the Higher Education Academy (HEA), which is owned by the HEIs themselves, commissioned a report (Dawe *et al.* 2005) entitled *Sustainable Development in Higher Education: Current Practice and Future Developments*. These two events are linked because the HEA supports and promotes networking among the HEFCE-funded CETLs, including those with a focus on sustainability. Third, HEFCE is (and cannot help but be) influenced by a wide range of stakeholders who bring different perspectives and interests to the issues. Consultants, for example, may have project management, estates management, learning and teaching, or research as their primary focus and/or area of expertise. In relation to sustainable development they may take a dominant focus on social, or environmental, or economic aspects. They may see the challenge as being predominantly about improving the education of learners, or predominantly about 'changing behaviours' to achieve predetermined, non-negotiable environmental or social ends. They may see sustainable development itself as an end state to be targeted or as an adaptive process to be encouraged or as something in between. In any case they will certainly have institutional goals and priorities of their own.

These points are well illustrated by the reactions to the original HEFCE circular, *Sustainable Development in Higher Education: Consultation on a Support Strategy and Action Plan*. The HEA welcomed it. However, the response from individual universities was subdivided in two senses: there were responses that opposed the development and those that welcomed it; and in the latter there were responses that felt that the Council had not gone far enough in its aims. To what extent these responses were those of involved academics (as opposed to just their senior managements) is an open question, however. In all, there were 133 re-

sponses, 96 of which were formal comments from institutions. HEFCE (2005b) notes that:

- 27 per cent wholly supported the strategy and thought that the action plan would deliver the vision;
- 52 per cent supported our action plan and thought that it would be successful, but with caveats – sometimes about the vision or specific actions, or about a barrier that must be overcome;
- a further 5 per cent were unsure whether the action plan would deliver the vision;
- 5 per cent thought that it would not work;
- 5 per cent said that they did not think we should have written this strategy and thought that HEIs were more than capable of taking on the promotion of sustainable development themselves without our intervention; within this 5 per cent some respondents indicated that they might react more positively to HEFCE adopting a supporting role rather than being prescriptive in our expectations of HEIs.

This was a vice-chancellor writing in a personal capacity at the start of the consultation:

> It is not the job of universities to promote a particular political orthodoxy; it is their role to educate students to examine critically policies, ideas, concepts and systems, then to make up their own minds. The Funding Council should support that objective, including, from time to time, telling the government that the university curriculum is none of its business.
>
> (Knight 2005)

This critical sentiment was clearly endorsed in the consultation, for example 'Decisions as to the content of an institution's curriculum is for the institution itself and should be made in the light of its own philosophy and aims' (University 1) and 'as a matter of fundamental principle, HEFCE should have no role in determining directly or indirectly . . . curricula of courses' (University 2).

Although HEFCE noted that in response to its suggestion that promoting sustainable development through the curriculum was a legitimate role for higher education '48 per cent of respondents broadly supported this, with 13 per cent of the total viewing it as a priority', a majority (27 per cent of all respondents) felt that HEFCE should not be the authority to introduce or enforce this.

As HEFCE noted above, there were some very supportive comments about the overall proposals, for example 'We feel that the action plan is a good start, but feel that the Funding Council could be more ambitious' (University 3) and 'If achieved, the action plan and support strategy are clearly linked. There are many sensible and encouraging comments included in both; however, there are major barriers to overcome' (University 4).

This is a critical view from a research-intensive university:

> The University . . . is committed to the implementation of sustainability in a wide range of operational areas (e.g., estates services, energy supply, purchasing and waste management), and to support research and teaching that seeks to address environmental issues, as part of the University's wider academic portfolio. But the University is not persuaded that the concept of sustainability espoused in the strategy should form a central principle of institutional management. According to a definition suggested by the HEFCE, strategic management is concerned with formulation of a number of long-term, high-level principles outlining the long-term direction of an institution and the sort of characteristics it should have. This is possible only if a plurality of principles is considered, driven by the advancement institution's founding vision. A strategy with the overarching aim of 'embedding the principles of sustainable development in [its] values, strategies and organisational learning', with little regard to the institution's own objectives, is likely to subvert this balanced approach. . . . the fact that the proposals regarding the development of curricula and pedagogy could be put forward with apparently little awareness of how they offend basic principles of academic freedom and institutional legal autonomy is deeply troubling. Not only would the development of 'values, skills and knowledge' be inappropriate and contrived for many academic disciplines, but it is arguable that, in purely intellectual terms, the concept of sustainability is still essentially contestable. Perhaps the most fitting role for universities is to provide space for debate about the concept of sustainability, rather than to implement a strategy and action plan which seem to presume that many of the basic issues surrounding the concept are settled.
>
> (University 5)

Note here the focus on institutional autonomy, strategic institutional management, academic freedom and sustainable development's contested nature, and, in particular, the last sentence, which echoes, in more measured terms, the points made by the university vice-chancellor quoted earlier. This is a near-classic expression of the argument that freedom of thought and action are required if society's interests (now and in the future) are to be realised.

Universities were quite likely to support the aim (e.g. increase universities engagement with sustainable development issues) whilst commenting critically on the proposed strategy, particularly if it were seen as overly interventionist:

> As an institution, we support the concept of sustainability and, indeed, are parties to the Talloires Agreement . . . [but] we believe that it is for each institution to develop its own view as to how it will meet [the sustainability] agenda and the speed with which it moves.
>
> (University 1)

The following quoted response is from a university that, although deprecating the approach taken by the Council, also criticises it for a narrow vision of sustainable development:

> The scope is too narrow, and the top-down approach inappropriate for a funding council. It is hard to see how what is proposed will contribute to minimising the accountability burden. Whilst we welcome initiatives from the [government] to support Universities in progressing sustainable development education and behaviours, we are disappointed by the apparent narrowness of the understanding of sustainability evinced by these initiatives; nor are we able to support [the funding council's] proposals. The funding council takes . . . an approach to sustainable development that focuses on the environmental issues and pays scant attention to the ethical, social and moral dimensions of sustainability. Perhaps this is not surprising given the composition of the external advisory group. It is our belief that sustainability has to be approached through preparing our graduates as global citizens which also requires leading by example.
>
> (University 6)

For this university there is too much focus on the environment at the expense of other perspectives, for example social justice. Note this university's commitment to 'preparing [its] graduates as global citizens' and to 'leading by example'. The university goes on to note: '[sustainable development] is an integral part of our learning and teaching strategy, and it intersects with our strategy for internationalization and human resource strategy, the latter primarily through the work of our . . . steering group.'

To attempt to summarise the issues at stake in this case study is daunting to say the least, but it does seem clear that the level of complexity is such that any progress according to any criteria will require a degree of clear-headedness about two absolutely fundamental questions: 'What is a university for?' and 'What is education for?'

Chapter 8

Case Study Five – Russian interpretation of sustainability and its reflection in higher education

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Introduction

The concept of sustainable development, advanced at the end of the 1980s by the World (Brundtland) Commission on Environment and Development, was enthusiastically received by the world community despite its declarative character. The lack of alternatives to sustainable development put forward is highly indicative of its informal reception in the world as a universal mobilising approach to the resolution of one of the most acute social conflicts of modern time.

The universality of the concept of sustainable development, its high social status, and attendant functions as a world community integrator, coupled with the impressive dynamism of the concept itself, explain the enduring interest in it as an object of close study.

Russian science has always been virtually independent and self-sufficient. Most noteworthy theoretical concepts developed by foreign scientists received a patently severe, often prejudiced, reception but meticulous consideration in Russia. It would have been challenging even for the harshest critic to accuse Russian domestic science of echoing foreign science.

The Western concept of sustainable development, which immediately earned an interested and deferential attitude in Russia, was an exception to this, and sustainable development became one of the most discussed subjects at the intersection of sociology, political science, ecology, geography and contiguous disciplines. This enables us to address the phenomenon of sustainable development

and take a closer look at the possibilities of its implementation in higher education in Russia.

The concept of sustainable development in the historical setting

The problems of sustainable development have been a focal point in world ecology and related spheres for 15–20 years. Is this because of the objectively high status of the problem or merely an unprecedented large-scale manipulation of social consciousness? Both, of course, are possible. It is perfectly clear, however, that the problems of sustainable development are directly linked with whether or not there is a future for humankind, a question that cannot be answered unequivocally (Kasimov *et al.* 2004), which probably explains the sudden shift of a rather abstract scientific idea from the academy to factual politics.

The idea of sustainable development in its present-day sense was first defined in the Brundtland Commission's report *Our Common Future* (WCED 1987). In this, the idea is treated rather simply and definitely: it is such a development that meets the needs of the present, but would not jeopardise the power of generations to come to meet their own needs. The *needs* of people for natural resources and ecological benefits, and the *limitations* of environmental possibilities or capabilities to meet people's present and future needs, are named as the main functional notions of this concept. The basic idea of the concept was defined quite specifically: the consumption of natural resources is not to exceed the natural limitations imposed by environmental parameters, and several approaches embodying present-day practices and new ideas of environmental policy were proposed to implement this global imperative.

The Brundtland report, however, failed to elaborate the axiological aspects of the concept, to show the inevitable and necessary regional differentiation of sustainable development, and to point to implementation instruments. That these and some other questions more closely concern the problems of programme implementation rather than any specific feature of sustainable development was confirmed by further studies.

The Brundtland Commission report, written to determine the reaction of the world community to the growing threat of a global ecological disaster, was highly appreciated by both specialists and the public of almost all countries. Although we fully approve of it there is an essential singularity in the report, as its authors assert that development is compatible with the conservation of vital environmental qualities to the satisfaction of both rich and poor countries. The interpretation of the notion of *development* in this context and its relationship to the notion of *growth* (population growth, production growth, consumption growth, etc.) is lacking in the document. It is probably exactly for this reason that the idea of sustainable development was found 'convenient' in the different countries of the world, and that the resolutions adopted at the 1992 Conference on Environment and Development in Rio de Janeiro were based on this report.

An extension of the concept of sustainable development was proposed at the

Rio Conference. This Rio-92 Declaration offers the ideology of a global programme for diminishing the risk of unacceptable environmental and other effects at the cost of the systemic ecologisation of all sections of public production and social being. This subsequently served as a starting point for numerous other interpretations of sustainable development formulated, by now, in most countries of the world by governmental agencies and public organisations, as well as by individual scientists.

Thus, the concept of sustainable development, according to the logic of its architects, offers the ideology of a balance between the interests of generations within an environmental paradigm demanding the just distribution of limited natural resources. In this interpretation, however, we can see a number of ideas consonant to the concept that was previously voiced in various countries, including Russia.

It is known that the Brundtland Commission does not mention the theoretical background and scientific prerequisites of the concept of sustainable development. Considering the objectives of the authors, this omission in the report should not be regarded as a flaw. The question of the concept's originality and development, however, arouses academic interest. Closer attention should therefore be paid to the theoretical work of *national* research schools, which focused on the environmental interpretation of development. From this viewpoint, the concept of rational nature management is of particular interest for Russia.

The Russian concept of rational nature management

The concept of rational nature management was formulated by the remarkable Soviet scientist David Armand who was a physical geographer, landscape specialist and conservationist. In 1964, Mysl' published his book rather meaningfully entitled *Nam I Vnukam* (*For Us and Our Grandchildren*; Armand 1964), which was repeatedly published for many years. This monograph was destined to become the same for the Soviet reader as *Before Nature Dies* (Dorst 1970) or *Silent Spring* (Carson 1962) were for Western readers.

Armand was the first person in Russian science literature to detail a scientific approach to the utilisation of natural resources as a priority and as one of the eternal values of the human race. Appreciating the book, the author's contemporary, geographer Yuri Efremov, wrote:

> Even long before the resolute turning of attention to upholding the merits of nature, the first edition of the book gave a powerful stimulus to the formation of public opinion, and got the need for responsible and constructive care for nature across to hundreds of readers.
>
> (Efremov 1977)

The book was actually a manifesto of rational nature management offered as an alternative to the squandering and negligence of natural resources practised at the time.

Curiously enough, Armand's book contains neither the concept of rational nature management nor even the term 'rational nature management'. The author uses the notion 'appropriate nature management'. It is more significant, however, that conceptually Armand's publication is very close to the Brundtland report. We should note that the title of the book, *To Us and Our Grandchildren*, performs the function of the basic argument to be formulated and maintained. It is actually an aphoristic anticipation of the concept of sustainable development.

The above similarity is neither accidental nor coincidental, as can be seen from the last paragraph of the book: 'The moral duty of each generation is to leave their natural resources for the next generation in a better state and greater amount than it received from previous one' (Armand 1964: 181). The idea of a just distribution of natural resources to posterity is a dominant theme, which is also found within the Brundtland report. In its section on the conservation and consolidation of resources we find that environmental conservation should be regarded as our moral duty to other people and generations to come (WCED 1987: 62). It should be remembered that Armand's book was published 23 years before the Brundtland report appeared.

This listing of analogies and logical parallels in both works could be continued but we shall mention just one more example. Throughout his book Armand demonstrates the need for, and effectiveness of, conservation expenditure. Furthermore, he asserts that:

> during the transition to appropriate nature management expenditure on the propagation of certain resources will inevitably increase . . . nature is sick with many diseases and enfeebled through our own fault. Nature is not insured, its treatment is never free and always costs dearly, but we cannot do without it.
>
> (Armand 1964: 180)

Even now this thought is topical and it was a key part of the Brundtland report.

Armand persistently and firmly refuted speculative attempts to dodge this issue:

> We must blankly discard the theory that at present, during the tense period of building communism, we can 'borrow' from nature, our children will be better off, and they can then return the debt to nature . . . . Such a theory is neither wise nor bold.
>
> (Armand 1964: 180–1)

Now, during another tense period of our history, the truth and topicality of the above assertion are particularly acute for Russia. It was Armand who first so clearly defined and justified the basic idea of a conservation charge in the new concept of rational nature management. This idea is implemented now in the present-day

conservation legislation of Russia as one of the basic principles of environmental conservation (Article 3, Federal Law on Environmental Conservation).

While working on his book Armand freely used the then relatively new term 'nature management', introduced to daily academic usage by Yuri Kurazhskovsky at the end of the 1950s. Kurazhskovsky looked upon nature management as a sphere of production and as a science, whose role, in his opinion:

> is to lay down the general principles of engaging in all kinds of activities concerning direct environmental management and its resources and the effects that can affect it. The long-run objective is to provide a uniform approach to the universal basis of labour.
>
> (Kurazhskovsky 1969: 6)

This thought, so unusual for the time, is also central to the ideology of sustainable development in the interpretation of the Brundtland Commission.

Apart from Armand, an important role in the formation of the rational nature management concept was played by the prominent geographer and writer Yuri Efremov who is justly ranked among the chief architects of Russia's first comprehensive environmental law: On Nature Conservation in the RSFSR (1960). This law incorporates certain tenets of the then-forming concept of rational nature management, for example the unity of nature protection and exploitation, the responsibility of the state and civil society for environmental conservation, the need for the conservation of wilderness, and several others that are close in spirit to the concept of sustainable development. Although Efremov was a physical geographer he surpassed many others in appreciating the economic constituent of rational nature management and consistently maintained the need to observe the environmental and economic unity of conservation.

The well-known Soviet economic geographer Vsevolod Anuchin offered an extensive philosophical and theoretical rationale of the concept of rational nature management. He combined a sense of civil responsibility with scientific arguments to show that society was part of the environment and not the other way around. He showed that radical improvement of the whole spectrum of human interactions with the environment was possible exclusively through a transition to a fundamentally new technology that would enable society to blend in with 'the closing circle' (Commoner 1971) of natural processes on the planet. Such assertions make up the basis of the concept of sustainable development.

The concept of rational nature management was at first distinctly anthropocentric and utilitarian in its character. The concept was even sometimes presented as the most efficient means of environmental exploitation for productive purposes. It is also to Anuchin's credit that such a narrow-minded and dead-end approach was rejected. In his academic monograph *The Fundamentals of Nature Management*, the author says: 'Rational environment management, reproduction and conservation included, implies a qualitative and quantitative inventory of the environment and natural resources with due regard for their public and not productive use' (Anuchin 1978: 219). As a consequence of Anuchin's efforts the ideas of

environmental socialisation formed deep roots in the Russian concept of rational nature management, becoming consonant with the Western concept of sustainable development. It is remarkable that Anuchin treated rational nature management as a basic scientific direction, which was to foreshadow the social development of Soviet society. One reading of the Rio-92 Declaration suggests that the concept of sustainable development is likewise to become the basis of progress for all countries and nations.

Geography and adjacent disciplines in the development of the rational nature management concept

The ideology of rational nature management rather quickly permeated the sphere of governance. Beginning in the 1970s, its characteristic terminology and basic ideas were used extensively in the command papers of the country's government agencies. In particular, the 1972 and 1978 decisions of the CPSU (Communist Party of the Soviet Union) Central Committee and USSR Council of Ministers on conservation and rational use of natural resources are indicative of this, as they played an important role in the formation of the national environmental policy. Major clauses of this concept were included in the country's 1978 and 1993 Constitutions (as duties of the state and its citizens to protect nature and its riches). This use of the term 'nature management' in the country's fundamental law was unique, as it had been only introduced for the purpose of scientific analysis, and the high social demand for the ideology of rational nature management boosted its development in the 1970s and following years.

Geography as a science was at the forefront of this field. Its major accomplishments in the 1970s include the works of A. A. Mints on economic appraisal of natural resources, Yu. G. Saushkin's substantiation of the country's environmental and economic zoning and the series of theoretical studies by I. V. Komar, G. A. Privalovskaya and T. G. Runova on the analysis of spatial environmental regularities, as well as I. P. Gerasimov and V. S. Preobrazhensky's concept of constructive geography, K. N. D'yakonov and A. Yu. Reteum's concept of a geotechnical system, and the concept of a cultural landscape and landscaping (Yu. G. Saushkin, V. A. Nikolaev, Yu. A. Vedenin *et al.*). This period was marked by the creation of new directions in studies on the interaction between man and nature, such as medical geography, human ecology, space geography, landscape ecology, urban ecology, recreational nature conservation, territorial environmental design, social ecology, and others. In 1987 the Department of Rational Nature Management was set up in the Faculty of Geography of Moscow State University. This was a natural sequel of introducing the concept into university education.

The concept of rational nature management was originally treated in geography as the ideology of a major interdisciplinary field of theory and practice in which the contributions of both economics and biology were highly appreciated. The publication of an article by the patriarch of Soviet economics, academician S. G. Strumilin, entitled 'The price of "free goods" of nature' (Strumilin 1967) was a major event in the formation of the economic aspect of the concept. The

author convincingly showed the irrationality of the established order of management, under which the environmental input was ignored when pricing products. Strumilin thus backed up Armand's previously voiced idea about charging for environmental exploitation.

Economists quickly adopted the ideology of rational nature management and from the 1970s they have extensively used its terms and notions, making original and often invaluable contributions to it. For instance, in 1973, proceeding from in-depth analytical studies, academician N. P. Fedorenko and his colleagues from the Central Institute for Economics and Mathematics, USSR Academy of Science, described the development of nature management as a new and fast-growing sphere of material production (Fedorenko 1973). Later the following main subsystems were singled out within it: utilisation of natural resources (nature management in the narrow sense), environmental protection and environmental safety.

The works of Siberian economist P. G. Oldak are of great significance for the economic aspect of the concept of rational nature management. This notion is shown in his works as an important direction for governmental economic policy and he fully shares Armand's idea about a just appropriating of natural riches among generations as a basic concept in the ideology of development. In the conclusion of his best-known book (Oldak 1979) he asserts that the call 'To Us, and to our Grandchildren, and to Great-grandsons' is an increasing demand in the development of public production. As in Armand's book we find the anticipation of a number of ideas about sustainable development.

The economists who formed the economic basis of the concept of rational nature management also include academician T. S. Khachaturov, the founder of the first department of environmental economy at the Faculty of Economics of the Moscow State University, K. G. Gofman, Russia's best-known specialist in the field of economic appraisal of natural resources, and M. Ya. Lemeshev, theoretician and expert in economic environmental management.

The biological aspects of the concept of rational nature management are usually associated with the activities of scientists, and in particular with theoreticians and practitioners of environmental policy and nature sanctuary affairs. Prominent amongst these are the Russian Academy of Sciences (RAS) corresponding members N. N. Vorontsov, N. F. Reimers, academician V. E. Sokolov (Soviet representative on the Brundtland Commission), F. R. Shtil'mark and RAS corresponding member A. V. Yablokov. The environmental reservation of territories and water areas (in common international terminology) are justly regarded as one of the major components both in the concept of rational nature management and in the Western concept of sustainable development.

The main basic principles of rational nature management

We could give further details of the formation of the concept of rational nature management, but the preceding paragraphs show its ideological and textual closeness, which developed into the teaching and practice of environmental management in the 1960s to 1970s, to the Western concept of sustainable development. It

is exactly for this reason that the ideology of sustainable development is not alien to the Russian traditions of nature management and national mentality. The concept of rational nature management was not an absolute innovation in its day; it reflected the succession of the classical ideas of environmental socialisation found in the scientific heritage, ranging from M. V. Lomonosov to V. I. Vernadsky.

The concept of rational nature management includes the following main clauses:

- anthropocentrism in choosing strategies for the interaction of society and the environment;
- just distribution of natural riches between generations;
- equal access to natural resources and just redistribution of proceeds from environmental management among all society members;
- limited consumption of renewable natural resources to prevent their depletion;
- restricted consumption of non-renewable natural resources with regard to the interests of generations to come;
- comprehensive and efficient utilisation of natural resources, minimising the production of waste and biowaste;
- observance of threshold values of adverse anthropogenic effects on the environment and the preservation of the environment's assimilation potential;
- minimisation of environmental risks due to anthropogenic effects;
- recovery of human-induced environmental damage;
- optimisation of the spatial organisation of nature management, reserving the most valuable natural territories;
- chargeable nature management;
- government and public support for sustainable production and sustainable household culture.

Conclusion

It should be emphasised, in conclusion, that the concept of sustainable development, first presented by the Brundtland Commission in 1987 and recognised by the world community, is the Western analogue of the earlier Russian concept of rational nature management, formulated in Soviet science at the beginning of the 1960s. In its turn, the concept of rational nature management was an essential result of progress in a number of directions/areas of Russian science.

The Russian concept of rational nature management found itself most influential in the practice of government administration in the Soviet and post-Soviet periods. Its individual clauses were incorporated into the last two constitutions, and their laws and bylaws. Russia now has experience of its implementation in the economy, and it is significant that the concept absorbed the theoretically digested historical experience of interaction between society and its habitat and was therefore intelligible and popular with broad sections of the population.

In such a situation, any ideology focused on the concept of rational nature management in meaning and content is certain in Russia to receive support from the government and society. It is for this reason that the concept of sustainable development was so positively received in the country. It is perceived as a theoretical concept and a basis of state administration, embodied in legislative instruments of nationwide significance.

This broad support for the concept of sustainable development failed, however, to ensure sustainable development in Russia. This paradox arises from attempts to design a mechanism for sustainable development using the obsolete methods that are traditional in this country and which were tested during the implementation of the concept of rational nature management.

By virtue of its still considerable natural and ecological potential, Russia now commands prerequisites for onward advances in accordance with the imperatives of the concept of sustainable development. We must, however, ensure the appropriateness of the mechanisms of implementation for sustainable development in the new historical conditions, including the adaptation of those traditional instruments of governance that have proved themselves equal to the task. Education and enlightenment are to play an important role in securing the stability of society, responding to the challenges of the present day by organically combining the latest attainments of fundamental science with the creatively interpretable experience of the past.

Chapter 9

Case Study Six – Sustainability in management education

An initiative in sustainable procurement training

This chapter describes a programme of training and research in the field of sustainable procurement. Sustainable procurement is the pursuit of sustainable development objectives through the purchasing decisions that organisations make. It is a relatively new concept but one that is often found attractive by both sustainable development champions and governments, because it has demonstrable potential to make a difference in concrete ways. The present example, which refers to the UK National Health Service (NHS), illustrates this very well. The NHS employs more than 1.3 million people and spends roughly £19 billion per annum exclusive of pay. The scope of this purchasing is very wide, embracing everything from surgical gloves to whole hospitals and including, *inter alia*, fuel, vehicles, pharmaceuticals, garments, food, energy, cleaning fluids and technical equipment. These products are obtained through contractual arrangements with organisations ranging from major multinational corporations to small-to-medium enterprises (SMEs) and social enterprises. For even the largest of these the winning of NHS contracts is likely to be a significant business objective, and this, in turn, is likely to result in a willingness to comply with NHS specifications – creating an opportunity for secondary impacts on corporate policies.

In this case study we encounter higher education in a formative and developmental context. The learning and teaching innovations described were instigated, studied and refined in response to a challenge: how to find innovative ways to inculcate skills that had acquired new significance following changes in a particular task environment. Relevant aspects of this environmental change included changes in central and local policy priorities, new regimes of regulation and evaluation, and wider shifts such as the globalisation of trade and the development of EU-wide frameworks of practice. We might expect researchers to provide cutting-edge training of this kind. We might also expect the experience of doing so ultimately to contribute to the future development of more conventional

courses for graduates and undergraduates. As we shall see, this has, in fact, been the case.

In 2004 the NHS Purchasing and Supply Agency (PASA) (http://www.pasa.doh.gov.uk/) funded a training and research collaboration with the Centre for Research in Strategic Purchasing and Supply (CRiSPS) (http://www.bath.ac.uk/crisps/) and the Centre for Research in Education and the Environment (CREE) (http://www.bath.ac.uk/cree/), both at the University of Bath in the south of England. The role of PASA within the NHS is to act as a centre of expertise, knowledge and excellence in purchasing and supply matters, and to provide expertise and advice to the NHS in England. It is an integral part of the UK government's Department of Health, advising on policy and the strategic direction of procurement across the NHS. It also contracts on a national basis for products and services that are strategically critical to the NHS and intervenes in cases in which aggregated purchasing power will yield greater economic savings than those achieved by contracting on a local or regional basis. The agency works with around 400 local NHS trusts and health authorities and manages 3,000 national purchasing contracts.

At the heart of this collaboration was an acceptance from the outset by all those closely involved with the commissioning and design of the project that, in practice, successful sustainable procurement depends on individual buyers making good decisions in unique and unfolding circumstances, and that a 'good' decision in this context could only be one that *both* appeared, on the basis of available evidence, to be the most sustainable option *and* met accepted standards of good procurement practice.

This dual condition is important. To put it starkly, there never was and never could be any possibility (or, we would argue, merit) of seeking to persuade, over the course of a few weeks, a cohort of experienced practitioners working within established, complex institutional contexts to abandon entirely the burden of their accumulated experience and developed priorities for the sake of a policy slogan – sustainable development – with which they and those with whom they worked were, on the whole, only slightly acquainted. If procurement professionals were going to embrace *sustainable* procurement they would need to be persuaded that it was, at least to a significant degree, synonymous with *good* procurement. We should add that this particular context was helpful to that aspiration in one particular respect – that there are clear links to be made between sustainability and health, and that health is unambiguously the ultimate corporate objective of the NHS.

This presented challenges, particularly since benefits were being sought both in terms of training and research. The first important decision was not how to design the project but how to structure the project design team. The structure finally adopted is illustrated in Figure 9.1.

In the project core team a sustainability and procurement specialist and PASA's Head of Sustainable Development Policy were joined by one of the present authors as a sustainability and learning specialist. This had the effect of making the resources and research expertise of both CRiSPS and CREE available at all times, and embedding the project within the institutional priorities of PASA. A

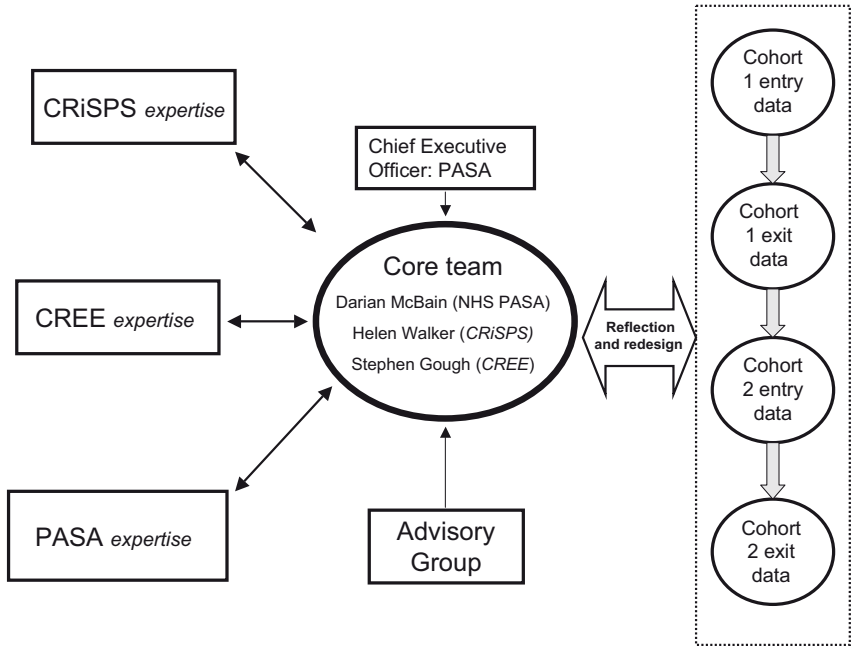


Figure 9.1 Sustainable procurement project design structure.

small advisory group was established, which included, in particular, very senior representatives of the two lead government agencies (at that time) on sustainable procurement policy – the Department for Environment, Food and Rural Affairs (DEFRA) and the Office of Government Commerce (OGC). In this way the project was placed firmly within the context of contemporary policy development, ensuring that it was subsequently perceived by both participants and wider stakeholders as being of high status and direct relevance to actual and expected regulatory requirements. The advisory group provided feedback on initial design ideas and regular direct inputs throughout. It was also, therefore, able to carry forward insights from the project into the developing policy context, most particularly during the establishment by the UK government in May 2005 of a Sustainable Procurement Task Force (http://www.sustainable-development.gov.uk/government/task-forces/procurement/index.htm) charged with drawing up an action plan to bring about a step change in sustainable public procurement to enable the UK to be among the leaders of this in the EU by 2009. Finally, a process of reflection and redesign based on both incidental inputs and systematic data collection from participating managers was integral to the project design.

Formally, the aim of the programme was for learners to identify key aspects of sustainable procurement. Learners would, they were informed on enrolment, identify key indicators for best practice in sustainable procurement and obtain an understanding of how it might be achieved.

The formal objectives were:

- to ensure that all buyers participating acquired a common basic understanding of sustainable development by attending an opening workshop;
- to achieve action learning through group projects involving teams of buyers from NHS PASA and the wider NHS, over the course of an eight-week period;
- to use 'virtual teams', e-learning, online tutorials and videoconferencing to develop key ideas and support the projects;
- to present the group findings at a closing presentation day attended by project sponsors and senior NHS and other public sector staff.

After this presentation day the core team considered the best methodology for passing on the learning that had occurred to other buyers throughout the NHS. It was anticipated that, by the end of the programme, a model of learning for increasing the capacity of buyers to integrate sustainable procurement into practice would be developed. Subsequently, the implications of the model, and its potential usefulness in other programmes, would be assessed.

As already noted the project had both training and research objectives. The research element could be subdivided into two distinct though clearly related areas:

- the operationalisation of sustainable procurement;
- learning and sustainable procurement.

Figure 9.2 shows the team's response to these issues in the design of the project as it involved each cohort.

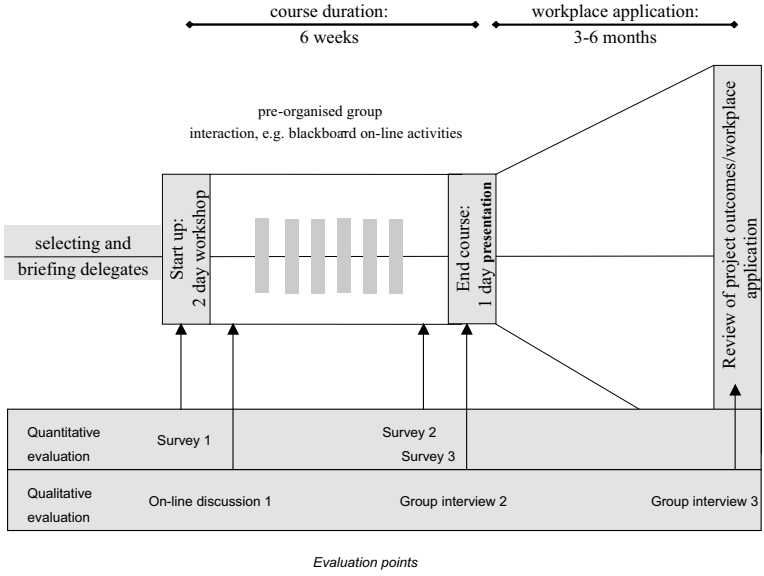


Figure 9.2 Project design (one cohort).

At the heart of the project were two courses, run between January and June 2005. Participants (or 'delegates') were recruited by PASA from within the NHS and organised into cohorts on the basis of geographical distribution. Although a number were volunteers, all were clear that participation was seen as part of their mainstream professional duties by their superiors. Cohort one was drawn from the west of the country and cohort two from the east. There was a one-month period between the courses to allow for some evaluation and necessary adjustments to the design.

Each course began with a two-day face-to-face meeting during which participants completed a range of structured activities relating to current regulatory requirements and existing ideas about professional best procurement practice and sustainable development. This also entailed working with others within a variety of group structures and some basic training in the use of 'Blackboard', a virtual learning environment (VLE). All sessions took place at the University of Bath, participants were accommodated in the same hotel and the evening was occupied with dinner and a guest speaker.

Central to this phase of the project was the distribution of participants into permanent 'aspect groups', each of which focused in its work on one of the following sub-areas of sustainable procurement:

- sustainable supply chain management;
- SMEs, local sourcing and social enterprise;
- sustainable innovation development;
- sustainable food sourcing.

Allocation to these groups was *not* on the basis of previous experience in these areas. Indeed, although all participants were familiar with the extensive body of established theoretical and practical knowledge relating to procurement *in general*, such knowledge was clearly lacking in relation to sustainable procurement and these particular aspects of it. Its development was precisely the task that the project had set itself. In particular, therefore, each aspect group was required to make short presentations on the outcomes of its deliberations to the other participants at an early stage, so establishing shared group responsibility and making explicit the absence of readily available answers. Figure 9.3 shows an example of one day's activities in the form of the 'teaching plan' used by the core team.

In the second phase of the course, participants returned to their jobs but remained in contact with other participants, most particularly the members of their aspect group, through the VLE housed at the University of Bath. Each week for six weeks they collaborated on prespecified, structured tasks to produce outputs that developed understanding of their particular aspect of sustainable procurement. In doing this they used restricted-access electronic discussion space and were supported by a wide range of online resources and electronic access to the core team. At the midpoint of this phase each aspect group was also given the opportunity to report progress, ask questions and raise challenges during a 30-minute videoconference with the Chief Executive of PASA.

When	What	Resources	Who	Structure	Time
08:45 to 09:00	**Coffee**				
09:00 to 10:30	Presentation on OGC/ DEFRA joint note + Q&A + explain group task	Data projector	DM/SG	Plenary	30
	Work in aspect groups: what are the ENABLERS and BARRIERS to progress in the aspect? Does the joint note help or hinder?	Joint note Key Points and reference copy; Flip charts from previous day; OHT/ pens	DM/SG/ HW	Aspect Groups	60
10:30 to 10:45	**Coffee**				
10:45 to 12:30	4 x 10-minute (+ 5-minute Q&A) presentations by aspect groups	OHP	DM/SG/ HW	Plenary	60
	Response to presentations from course team + discussion		DM/SG/ HW	Plenary	15
	Description of the virtual sessions, especially V1. Q&A	Data projector	SG/HW	Plenary	30
12:30 to 13:15	**Lunch**				
13:15 to 15:00	Introduction to case study exercise	Data projector	SG/DM	Plenary (seated in aspect groups)	5
	Work on case study task in aspect groups	Case study sheets	All	Aspect Groups	45
	Facilitated discussion		All	Plenary	20
	Blackboard session 2 Begin V1	Online access		Lab	30
15:00 to 15:15	**Coffee**				
15:15 to 16:00	Emerging issues; Evaluation; Final clarifications; Invitations to presentation day		HW All	Plenary	45
CLOSE at 16:00					

Figure 9.3 Sample schedule: day two.

Finally, participants reassembled at Bath for the third phase of the course. Each aspect group gave a formal presentation relating to the opportunities and obstacles confronting sustainable procurement in relation to its particular aspect. The invited audience included representatives of:

- hospitals and health-care trusts, often including their own senior line management;
- DEFRA;
- OGC;
- the National Audit Office;
- PASA;
- a range of non-governmental organisations (NGOs);
- the UK Sustainable Development Commission;
- academic research groups;
- local government bodies.

These presentations, and the discussions that followed, were intended to achieve a better understanding between the originators of policy and the practitioners who implement it.

Throughout this process observational data were collected, supplemented by three points of formal quantitative evaluation and three points at which group interviews were conducted to elicit information about participants' developing understandings of sustainable procurement and their experiences of the various educational technologies employed during the course. The final round of group interviews took place three months after the final presentations, to ascertain how sustainable procurement was being implemented in the workplace. All group interviews were conducted using a semi-structured interview protocol. Interviewers were recruited from outside the core team but within CRiSPS, and briefed to ensure consistency of techniques. Interviews were recorded and transcripts were coded using iterative thematic analysis. The group interviews showed that following the course participants reported a more complex, broader view of sustainable procurement, extending beyond original notions of environmental purchasing. Findings from cohort one group interviews were used in a redesign of the activities for cohort two.

Perhaps most significantly from a research point of view, all online discussions between participants were archived within Blackboard. A preliminary analysis of this substantial data set was reported to the International Purchasing and Supply Education and Research Association at its 2006 conference in San Diego. The project has also been reported by invitation to the Prime Minister's Development Unit at the UK Treasury and the Treasury of the Australian State of Victoria.

A very small minority of the delegates found parts of the course difficult, this applying mostly to the online activities. However, the group interviews revealed widespread enjoyment of the experience. The invited visitors to the presentation days also filled out a feedback form, and all agreed that the course is important for the advancement of sustainable procurement and that it should be more widely

adopted in the public sector. They felt that they and the participants had learnt a lot.

The participants reported different learning experiences of the course, suggesting that no one style of learning can suit all equally well. Some felt that the course was designed for the more mature learner in their day job, others felt that the design would better suit full-time students.

As regards the make-up of aspect groups, one appeared to have benefited from a participant who consistently questioned the structure of the course, another from an enthusiast who consistently encouraged the group to complete its tasks. Aspect groups generally seemed to benefit from the emergence of a leader, and it may be possible in future to try and select participants who may emerge as leaders when deciding on group membership, although online group dynamics are likely to make this unpredictable. Most felt that the group mix was important and that all members contributed to activities.

Some reported feeling uncertain of what was expected of them. In some ways this was intentional, as the core team did not want to give the impression that there were right or wrong answers. Some groups wanted more structure and a structured approach to time management such as blocking out time in diaries for weekly online activities. Others relished being creative in their interpretation of activities. Focus groups all stressed the importance of face-to-face meetings. Each raised geographical issues and felt that aspect groups whose members were geographically closer to each other had enjoyed an advantage in being able to meet more easily. All emphasised the importance of communication and the need for alternative ways of communicating beyond the Blackboard virtual environment, such as email and phone contact. This suggests that using VLEs such as Blackboard may only work well if supplemented by face-to-face meetings.

However, any summary account tends to mask some of the practical identification with live professional issues that often characterised the work. The following example may help to convey some of this.

At the time of joining the second cohort, one participant had recently issued a specification for the supply of a particular surgical device to hospitals in a major UK city. In the light of conversations at the first face-to-face meeting he decided to contact his office and issue a supplementary request to potential suppliers that they provide information on the environmental and social sustainability of the materials from which their products were manufactured. This was carried out in quite a simple way, by means of the questions set out in Box 9.1.

Most suppliers responded promptly but were unable to provide full information. Often they simply did not know and/or did not possess the requisite documents. Worse than this, when information was provided it proved very hard to interpret from a sustainability perspective. For example, one difficulty was ranking the incineration characteristics of plastics of different compositions. The group was therefore able, at the presentation day, to raise and discuss with senior policy-makers a set of conclusions that were contrary to their preconceptions. The technicalities of incorporating sustainability considerations into a tender, they argued, were not as great as expected. Nor was the attitude of suppliers necessarily

Box 9.1 Questions for potential suppliers about environmental and social sustainability

Environmental considerations – packaging and product

You should supply as much information as possible concerning the packaging materials to be used in the supply of your proposed product:

1 Brief description on packaging
2 Breakdown of packaging materials, i.e. 40%/56 g cardboard, 10% PVC
3 Statement on biodegradable characteristics PVC – *degradable 20 years, can be recycled or treated*
4 Statement on sourcing policy (child labour?/sustainable resources?)

Product information

1 Statement on sourcing policy (ethical?/sustainable resources?)
2 Statement on biodegradable characteristics of various product information

General issues

Any company statements, initiatives or other relevant information associated with the implementation of sustainable development initiatives may also be supplied.

negative. On the contrary, in this case many had expressed an eagerness to comply along with interest in what, to them, might have appeared as an opportunity to add extra value for a major potential customer. However, it proved impossible to evaluate or rank responses because they were of a technical nature and also involved potential trade-offs between social and environmental sustainability priorities. Therefore, standard and transparent criteria would be required, and these could only originate centrally.

In concluding this case study we should note that although this programme was in many ways unusual it has been extremely well-received by key stakeholders at the policy level, with PASA subsequently being identified on a number of occasions at an official level as the leader in sustainable procurement training. Insights from the work have been accommodated into mainstream supply management education at the University of Bath and reported to interested gatherings of educators, practitioners and policy-makers in the USA and Australia as well as in UK. At the same time, however, it continues to be the case that the project's insistence on open-endedness and adaptiveness by learners continues to be rather at odds with an established culture of snappy descriptions and bullet-point summaries. Further, a model in which policy-makers set a course of action and practitioners follow it seems far from adequate. Rather, it seems likely that whatever course is set will require constant maintenance and adjustment, as practitioner knowledge develops and is fed back. We might also add that mechanisms to enable such feedback seem themselves to be crucial.

Chapter 10

Case Study Seven – Sustainability in engineering education

The Royal Academy of Engineering Visiting Professors Scheme

The UK Royal Academy of Engineering ('the Academy') initiated its Visiting Professorships in Principles of Engineering Design Scheme in 1989. The purpose was to develop working relationships between universities and engineers in outside organisations, thus enabling the identification of challenging and real problems on which students could develop their design skills by interaction with experienced practitioners. The scheme was underpinned by a belief that, to be successful, engineering education needs to be embedded from the very beginning in the realities of engineering practice. It has been highly successful.

The Academy is also committed to a long-term programme to promote sustainable development through engineering. Therefore a similar scheme, with a focus on real case studies illustrating the engineering approach to particular sustainability issues, was seen by the Academy as a natural further development. Specifically, it was intended that this would enhance both the understanding and the practice of teaching related to sustainable development through the creation of quality teaching material (and approaches) by leading industrial practitioners working in unison with experienced teachers in higher education.

The resulting Scheme for Visiting Professorships in Engineering Design for Sustainable Development was launched in 1998 with the following objectives:

- to generate a knowledge base of case studies of decisions on a diverse range of developments with an engineering dimension, and definable links with sustainable development indicators;
- to analyse each case study to identify elements of good practice (whether achieved or not) that are appropriate to the circumstances of the case;
- to distill a set of general principles of good practice from the experience encapsulated in the case studies;
- to disseminate the case study material to the university system;

- to assist with the incorporation of the general principles into the engineering curriculum.

These objectives were to be fulfilled by:

- securing the appointments of visiting professors of engineering with experience of how decisions are made;
- making such appointments at the rate of five per year over the three-year period from 1998 to 2001;
- selecting the broad themes covered by appointments to achieve a balanced distribution across all fields of engineering;
- facilitating communication between, and coordination of, the work of the visiting professors during their tenure;
- reviewing the operation of the scheme, making any necessary adjustments to the arrangements put in place from year to year;
- engaging other bodies (e.g. the UK's four higher education funding councils) in enabling universities to adapt the curriculum to take advantage of the inputs from the scheme;
- seeking opportunities to publicise the scheme;
- establishing and maintaining liaisons with academies and organisations in other countries with similar interests.

Appointed visiting professors were expected to commit around 40 days per year to the development of teaching materials and approaches based on case studies that simultaneously enhance both the understanding and the teaching of sustainable development. In the five academic years from 1998 to 2004 a total of 26 universities were sponsored to carry out this work, and the scheme continues. Visiting professor appointments are made in universities whose bids are judged successful by a panel of Academy fellows. These bids are invited from selected universities and are expected to respond to a strongly interdisciplinary list of themes (e.g. built environment, materials and manufacturing, etc.), which the Academy identifies in advance.

In taking this work forward the Academy seems comfortable with the fact that there is no universally held understanding of what sustainable development means. Academy documents refer to the Brundtland definition – 'development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs' – as the basis for one working conception of the term. But other conceptions are also recognised, such as sustainable development as the coming together of ecocentric, technocentric and sociocentric concerns, and sustainable development as the maintenance of 'five capitals' – that is, human capital, environmental capital, social capital, financial capital and manufactured capital (RAEng 2005). The Academy also suggests that, as a concept, sustainable development is in some respects similar to 'justice', that is, it is intellectually rich, practically suggestive, ethically indispensable and definitionally elusive.

Given all this, the Academy accepts that the assessment of sustainability in engineering terms is sure to remain a matter of ongoing debate. However, it has taken the practical step, pending the outcome of that debate, of focusing its efforts within a framework derived from the UK government's sustainable development strategy, and, in particular, on four sustainable development objectives:

- social progress that recognises the needs of everyone;
- the effective protection of the environment;
- the prudent use of natural resources;
- the maintenance of high and stable levels of economic growth and employment.

It is made clear both that specialist engineering knowledge is implicated in all four objectives *and* that thinking about sustainability cannot be an activity reserved for specialists. On the one hand, design and lifelong operation of processes and products from a sustainability point of view require the development of the mental skills needed to construct an optimum balance between complex and competing requirements transcending the traditional disciplinary boundaries. On the other hand, stakeholder pressures and, in some cases, legislation will in future require engineers to provide a robust rationale in support of the sustainability of their proposed solutions.

Hence, the Academy has concluded that all engineers should possess an awareness of core sustainability issues. It also emphasises the wealth creation opportunities associated with technological solutions to sustainability questions. This is consistent with the UK government view, already noted, that sustainable development is not incompatible with continuing economic growth.

In 2005 the Academy produced a report (RAEng 2005) *Engineering for Sustainable Development: Guiding Principles*, which gives details of work within the scheme and provides a framework linking general principles to practical examples. These examples take the form of seven selected case studies reported by and, for the most part, developed by visiting professors within the scheme. They are available as teaching resources for engineering students and lecturers and include:

- The Jubilee River flood alleviation scheme on the River Thames in the UK, which represents a new way of constructing flood relief channels. This scheme provides flood defences for the heavily populated areas of Maidenhead, Windsor and Eton, avoiding traditional concrete construction techniques and instead mimicking the characteristics of a natural river, including islands, reed beds and shallow margins. It resulted from a collaboration between civil engineers and planners, landscape architects and ecologists, in consultation with local residents, to both provide functional flood protection and replace habitat lost during previous phases of development. Even though successful the case illustrates very well that sustainability-driven innovation is rarely free from elements of risk and surprise. In this case these took the form of

unexpected erosion of the new watercourse, giving rise to a need for further engineering adjustments.

- A project led by the Academy's visiting professor at Glasgow University to embed the concept of sustainable development in the running of the university and in the curriculum. A small group of staff prepared and presented a sustainable development strategy to senior managers, which linked to the university's business plan. They have sought to enhance sustainability-related work across departments and engage students in sustainable development in unusual ways, such as carbon offsetting through tree planting and a fair trade fortnight. They have also sought to influence the curriculum across the institution through staff workshops, course analysis, identifying the sustainability-related needs of academic staff, the promotion of collaborations with other engineering departments and the introduction of a sustainable development lecture for all first-year civil engineering students. Engineering students work with a sustainability assessment framework to explore the implications of design decisions in relation to, for example, contaminated land remediation, biodiversity and cultural heritage.
- A case study looking at the balancing of positive and negative impacts from catalytic converters. These devices have unquestionably played a significant role in preventing pollution from car exhausts with all its attendant social, environmental and economic costs. For example, although traffic in the UK has increased by a multiple of 15 since 1950, emissions of harmful exhaust gases have fallen. Against this, however, the platinum, palladium and rhodium required for catalytic converters are found only in very low concentrations in countries around the world. The environmental impact of mining is therefore very great. This gives rise to a number of questions relating to: the potential for the voluntary limitation of road traffic; the accounting of health costs and benefits in non-health projects; the funding of research and development in non-fossil fuel motive systems; the potential for recycling to substitute for long-term non-sustainable mining of rare metals; the short to medium term sustainability implications for developing countries of reduced income from such mining; and the possibility of developing alternative technologies to the catalytic converter.

All of these case studies illustrate very well the cross-disciplinary reach of the Academy's scheme. However, this is not the end of the matter because a further attempt is made to identify lessons from the cases and to distil these into a working document. This is done in five stages. First, 12 'guiding principles of engineering for sustainable development' that should be a part of the higher education of all engineers are identified. In summary, these principles are:

1. look beyond your own locality and the immediate future;
2. innovate and be creative;
3. seek a balanced solution;
4. seek engagement from all stakeholders;

5 make sure you know the needs and wants;
6 plan and manage effectively;
7 give sustainability the benefit of the doubt;
8 if polluters must pollute . . . then they must pay as well;
9 adopt a holistic, 'cradle-to-grave' approach;
10 do things right, having decided on the right thing to do;
11 beware cost reductions that masquerade as value engineering;
12 practise what you preach.

(RAEng 2005: 25)

Each of these principles is explained in some detail before moving to the second stage, which is the linkage, through a grid, of the 12 principles to the seven case studies. This means that the reader can see at a glance how any particular principle relates to any particular case. So, for example, cross-referencing principle 10 to the case study of the Jubilee River leads to the following text:

> Much was done well, but there have been structural failures of a weir and some banks. This illustrates that it is very important to get the engineering right alongside the environmental and amenity enhancement. The containment cell for material from contaminated land was created successfully and incorporated into the landscaping of the project.
>
> (RAEng 2005: 36)

The third stage is the cross-referencing of the case studies to the different engineering disciplines (civil, chemical, electrical, mechanical and aeronautical). All but one case is shown to involve multiple disciplines. At the fourth stage a process for the application of the principles is put in place, involving the following steps:

- framing the requirements;
- project definition – scoping the decision;
- planning and detailed design;
- implementation, delivery and operations;
- end of useable life.

The fifth and last stage provides a further grid through which the importance of each principle at each stage is indicated through a starring system – five stars indicates that the principle is vital at that particular stage.

The focus on case studies within the scheme has paid dividends in ensuring that the real and relevant experience of each visiting professor is fully exploited, thus providing a credible basis for development in the particular department. The visiting professor is fully conversant with the case study, is aware of what can and cannot be said from a confidentiality perspective, can adapt the material for short or long teaching periods and to fit in with other lecturing material, and can field detailed questions. It is therefore unsurprising that case studies tend not to travel easily, either between universities or from visiting professor to lecturer within a department.

The challenge of prising open space in increasingly overcrowded undergraduate engineering curricula in order to address sustainable development issues usually necessitated pragmatic tactical approaches to adjust the material and approach to make use of the opportunities available. Such approaches are highly contextual, which adds another layer of difficulty to the movement of case studies from one university to another.

A number of important points emerge from this brief summary of the Royal Academy of Engineering Visiting Professorships in Engineering Design for Sustainable Development Scheme. It is an example of a top-down initiative through which a body that exists to provide professional leadership is doing exactly that in an innovative manner, and an example of an initiative that has the potential to impact directly on the higher education curriculum, across institutions – provided that it can consolidate its reach beyond the core group working on developments. It is certainly one that has been careful to engage with the requirements of sustainable development *pedagogy* as well as content.

Another particular strength is that the scheme presents sustainable development issues in ways that are likely to be acceptable and familiar to a constituency of engineers that has its own norms, standards and regulations. To the undergraduate who has enrolled on an engineering degree, who knows nothing about sustainable development and who simply *wants to be an engineer*, the content and pedagogy generated through the scheme are likely to have credibility, relevance and, above all, warrant. The message is this: sustainable engineering is *good* engineering. No person or organisation *outside* the engineering profession could possibly, we suggest, achieve this in the same way.

Yet at the same time as it establishes itself at the core of the discipline of engineering, the scheme reaches out to a very wide range of potential collaborators from other disciplines and professions. And consistent with this, the developers of the scheme have shown remarkable receptiveness to ideas about sustainable development originating in other disciplines – perhaps most particularly that sustainable development is likely to be most effectively pursued by those willing to entertain a substantial measure of doubt about what it is and what it might become.

Chapter 11

The case studies
Clarity and confusion

We hope that it is clear by now that the series of perspectives on higher education and sustainable development that we first identified in Chapter 2 are alternatives only to the extent that particular individuals, at particular times and places, are likely to adopt one rather than another. In fact, each of these perspectives reveals some things even as it obscures others. A way of thinking about this, which we have presented in greater detail elsewhere (Gough and Scott 2006), is to think of 'higher education and sustainable development' as an irregular-shaped object that has been placed at the centre of a large, dark space. To describe this object in detail is possible in principle. It does have finite, measurable features, and these are related to each other in ways that could be described according to rules – if only the rules were fully known. However, they are not fully known and, to pursue the metaphor, the only equipment we have available to begin our observations is a pencil-beam torch. Shining the torch onto the object from any one vantage point reveals only small amounts of information, which, nevertheless, are valid. By standing at a series of different points we may begin to build a picture of sorts, probably experiencing a process of error and correction as we do.

All such perspectives will be useful. Some may well appear to contradict others until further information becomes available to resolve such difficulties. For this reason it will be important to be cautious in synthesising the available evidence and to avoid leaping to general conclusions too quickly.

Yet actual debate about higher education and sustainable development often amounts to little more than an attempt to assert the claims of one perspective over another. This amounts to beginning an enquiry not with data collection but with systematic data exclusion.

Table 11.1, therefore, may be said to illustrate not only the conceptual richness of our topic but also the potential for confusion that is intrinsic to it. This is in spite of – or perhaps because of – the fact, acknowledged earlier, that any conceptual scheme such as this, which describes a complex set of inter-related phenomena, is bound to be subject to a degree of overlap and incompleteness.

Two examples will illustrate this point. First, if we look at the NHS PASA example (discussed in detail in Chapter 9) we find that the different perspectives

Table 11.1 Perspectives on sustainable development and the seven case studies

	ULSF	*MESA*	*Unesco*
Technocratic perspectives	Halifax Consultation involved 35 experts on higher education and sustainability	Asks: 'What is the purpose of education if it cannot produce answers to Africa's problems?'	'People need basic knowledge from the natural sciences, social sciences, and humanities'
Paradigm shift perspectives	Helping to re-form society's values and expectations	'Initiatives . . . to involve different interest groups and equip people with the competencies to make decisions in situations of conflict and uncertainty.'	Proposes restructuring of reward systems
Task-based perspectives	Influential in the establishment and maintenance of the Talloires Declaration: Sustainability Assessment Questionnaire	Aims to increase knowledge of ESD, so that future business managers, scientists and political leaders of the continent will incorporate ESD principles in their decision-making	Published *Guidelines and Recommendations for Re-orienting Teacher Education to Address Sustainability*
Globalisation perspectives	Co-founded the Global Higher Education for Sustainability Partnership (GHESP)	A special Pan-African contribution by UNEP to UN-DESD (2005–14)	Involved 30 teacher-education institutions across 28 countries
Metaphorical perspectives	Demands, as a minimum, that activities be 'ecologically sound, socially just and economically viable'	'Beautification' project at Kenyatta University	Focuses on ideas such as 'global citizenship' and the 'Earth Charter'
Pragmatic perspectives	Support for healthier and sustainable food within institutions, negotiating with international food contractors to change their food sources	Seminars for university leaders	Employs a 'strengths model'

CETL, Centre for Excellence in Teaching and Learning; ESD, education for sustainable development; HEFCE, Higher Education Funding Council for England; MESA, Mainstreaming Environment and Sustainability in African Universities; NHS, National Health Service; RAEng, Royal Academy of

HEFCE	*Russia*	*NHS*	*RAEng*
Aims for impact: 'through the skills and knowledge that . . . graduates learn'	Focus is on 'nature management'	Particular emphasis on whole-life costing techniques	Emphasises the wealth creation opportunities associated with technological solutions to sustainability questions
Kingston CETL aims to produce graduates with a holistic understanding of sustainable communities	Requires 'just distribution of natural riches between generations'	Emphasises the potential of social enterprise	The message is: sustainable engineering is *good* engineering
Consultations on, and development of, an action plan and support strategy for the higher education sector	Sustainable development seen as a 'universal mobilizing approach to the resolution of one of the most acute social conflicts of modern time'	Provided training for specialist purchasing managers	Focused on training for engineers
Plymouth CETL aims for international influence in ESD	Takes a specifically Russian perspective	£19 billion per annum spent internationally is significant	International case studies of engineering practice
One university demands focus on 'graduates as global citizens'	Focuses on anthropocentrism in choosing strategies for the interaction of society and the environment	Focuses on overall contribution of purchasing to healthy living, not just cost minimisation	Recognises sustainable development as the coming together of ecocentric, technocentric and sociocentric concerns
Aims to strengthen links to businesses, the community, civil society, government and others	Sustainable development seen as 'intelligible and popular with broad sections of the population'	NHS employs more than 1.3 million people	Case studies focused on real engineering problems in real social and environmental contexts

Engineering; ULSF, University Leaders for a Sustainable Future; UN-DESD, United Nations Decade of Education for Sustainable Development; UNEP, United Nations Environment Programme.

engage a wide variety of concepts and are likely to lead to a range of distinct activities involving, in many cases, quite different people. A serious approach from the *technocratic* perspective is likely to conclude that the technique of 'whole-life costing' is crucially important to sustainable procurement. This approach is simple enough to describe. It involves calculating and comparing the costs and benefits of particular spending choices over the entire life of the asset(s) involved, including factors relating both to the production of inputs and the disposal of end-of-life remains. However, this is difficult to do if either one is reluctant to accept assumptions that have the effect of excluding other perspectives – such assumptions might concern, for example, the future structure of individual preferences, the continuance or otherwise of political and economic trends, and the point at which the influence of a purchasing decision on other variables becomes so small or remote as to be judged insignificant – or complicated additional calculations are required to be performed by very large numbers of operatives (in this case procurement managers or purchasing officers) who make a great many such decisions as part of their normal work and who are likely to lack the skill, the time and (quite possibly) the incentive that would be needed.

What participation by universities is indicated from the technocratic perspective in these circumstances? Probably the answer will involve the recruitment of expert, university-based researchers to refine the whole-life costing technique as it relates to sustainable procurement in the health sector and, quite probably, the development of some sort of 'toolkit' or web-based resource to make it, once refined, accessible to operatives. In the best cases such operatives will be consulted along the way. In the worst they will simply be assumed to be waiting eagerly for whatever is produced. On the whole the resource is likely to be of at least some use to someone. It may, indeed, prove to be very useful. However, it is highly unlikely to yield a comprehensive or transferable template for relating sustainable development and health sector procurement to university research, and is quite certain to obscure or assume away important uncertainties that *simply must* be set aside if any work of this kind *at all* is to proceed.

Advocates of a *paradigm shift* perspective will seek to facilitate a move to social and economic processes that tend to enhance healthy living and illness prevention rather than the development of increasingly high-technology remedies to (what may often be seen as) socially triggered ailments. Their view of the health-care sector will therefore be quite different from that of the technocrats, and so will their view of higher education because, for them, the focus must be on educating the whole person rather than teaching compartmentalised disciplinary knowledge. The results in terms of sustainable procurement (assuming that there is sufficient funding and institutional support to produce a result) will probably include the creation of participatory forums for practitioners and other stakeholders. One possible further outcome is then increased prioritisation of forms of purchasing that tend to support social enterprise, so enhancing local economies and supporting an alternative to mainstream business practice. Here, too, it is perfectly possible that useful results will occur and that universities will be involved, perhaps quite extensively, in facilitating them. If so, they will be a realisation of the potential of holistic thinking and practice, probably at the cost of marginalising

to some extent the benefits – which are at least equally manifest – of reductionist, discipline-focused thinking and practice.

By any definition, sustainable health sector procurement is likely to include both environmental and social dimensions. It will be carried out by health sector procurement managers. A *task-based* perspective is likely to focus on training such managers and may well seek to write specific environmental and/or social preferences (in terms, for example, of increased purchasing of organic and/or local produce) into its desired outcomes. Because the sector commands large overall budgets it is unlikely that invitations to tender for the provision of such training will go unanswered. As sustainable procurement is a recently developed concept, and as there is no universal standard of what it means or includes, organisations that offer management training are likely to adapt their existing products in preparing tenders rather than beginning from fundamental questions. It is very likely that university departments or centres will be among those tendering, that non-university tenderers will seek to form links with university departments, and that the content of whatever training is provided will eventually, by one means or another, begin to be represented within established higher education curricula.

What one makes of UK health sector sustainable procurement from a *globalisation* perspective depends, inevitably, on the view taken of globalisation. Within universities this is partly (but not fully) predictable on a department-by-department basis, with management specialists likely to be more sympathetic and, for example, education for sustainable development specialists less so. If globalisation is seen as a bad thing then there is an incentive, for example, to maximise local sourcing and products derived from small-scale, environment-friendly technologies. If it is seen as a good thing then the large sums of money involved may be regarded as providing useful opportunities to help poor country suppliers to develop themselves sustainably. In practice both positions are complicated by the existence of EU procurement regulations that often serve to make both these approaches problematical. The implications for research and teaching in universities are, once more, quite different from those of the other perspectives.

In a rather similar way, *metaphorical* perspectives may lead to radically different conclusions. If it is explicitly or tacitly assumed that human societies are sustained by a complex interdependent web of nature, or that they should be modelled on such webs, then purchasing on the massive scale practised by the UK health sector first and foremost represents a very substantial and absolutely crucial series of engagements with other elements in the web. It is about maintaining social and environmental fabric. If, on the other hand, human societies represent a triumph in the struggle for survival over perverse environmental and human natures, then money is well spent only if it secures the maximum return on each pound spent. It is, of course, the former metaphor that tends to dominate across the discourses of sustainable development. However, it appears to have very much less wide acceptance among institutional finance officers, both in the health sector and in higher education. We should also note a fairly widespread tendency for individuals to flip from one metaphor to the other, or to seek to accommodate both at once. UK government thinking on sustainable procurement at the time of writing – with its simultaneous focuses on, *inter alia*, quality of life, social justice, inclusion,

communities, best value and efficiency – illustrates this rather well. Very much at the heart of these issues is our understanding of what markets are, what they do and what they do not do. A fuller discussion of this role of markets will be found in Chapters 12–14.

Finally, procurement practices affect every single person employed by the UK health service and every single patient treated by it. Many of them will never have heard of sustainable development or will feel that they do not know what it is or that they know what it is but are sceptical of it nonetheless. Some will have been educated in higher education institutions and some will not. Either way, from a *pragmatic* perspective they will increasingly need to come to terms with sustainable procurement as it affects their own lives, and these effects, in turn, will depend very much on the responses of universities through their research and teaching.

A second example of the conceptual richness of our topic – and its potential to create confusion – may be seen by simply comparing the top two rows of Table 11.1. The initiatives presented are all excellent and yet tensions (not, let it be noted, contradictions) exist in every case:

- What is the place of 'experts' in helping people 'form values'? (ULSF)
- If the purpose of education is to produce 'answers' to 'problems', then why is it also about equipping people to cope with 'conflict and uncertainty'? (MESA)
- What is the relationship between knowledge and motivation? (UNESCO)
- If it takes graduates to have a 'holistic understanding of sustainable communities', can non-graduates live in them on equal terms? (HEFCE)
- Can 'nature management' really be scientific if it depends on a particular conception of justice? (Russia)
- Doesn't the RAEng formulation lead us straight back to the proposition that *good* engineering is *profitable* engineering?

If this were all then the matter would be complex enough. However, as Table 11.2 illustrates, there is the further difficulty of tensions that arise between competing views of higher education and its purposes.

In every case the basic issue is the same. How does one pursue purposeful action in higher education in relation to sustainable development while leaving enough room for 'accidents to happen'? (Hayek 1960: 29; see Chapter 1).

Across all of these issues one basic and persistent difficulty is the lack of clarity and consistency about the meaning of key terms and the relationships between them. It is not just that, as we saw in Chapter 2, definitions of sustainable development have proliferated. Underlying this proliferation are a range of particular confusions and controversies about:

1 the meaning of the word 'environment';
2 the relationship between the environment and 'Nature';
3 the relationships between environment, society and economy;

Table 11.2 Views of higher education and the seven case studies

	Real world view	*Ivory tower view*
ULSF	Places significant emphasis on universities' policy, management and curriculum as systematic means to enhance sustainable development	Respects universities' individual cultures. Absolutely requires 'academic legitimacy' of courses. Attributes some successes to 'adapting to unanticipated opportunities'
MESA	Sees universities as a means to the end of enhancing development in Africa through curriculum, research and institutional management	Supplements top-down leadership with support of bottom-up, context- and institution-specific initiatives
Unesco	Takes an instrumental view of teaching and teacher education in relation to internationally endorsed conceptions of sustainable development and education for sustainable development	Encourages and values context and institution-specific initiatives
HEFCE	Seeks to implement government sustainable development policy across the higher education sector in England	Keen to respect universities' autonomy and academic freedom
Russia	Sees university research and teaching as the foundation of scientific nature management	Sees the articulation of nature management processes as the prerogative of universities
NHS	Concerned to transmit knowledge within a specific organisational and policy context	Concerned to assemble, re-order and re-interpret existing, often widely diffused, knowledge and to create new knowledge
RAEng	Focuses on real cases to train real engineers	Encourages innovation and exploration beyond the boundaries of existing conceptions of sustainable development in engineering

HEFCE, Higher Education Funding Council for England; MESA, Mainstreaming Environment and Sustainability in African Universities; NHS, National Health Service; RAEng, Royal Academy of Engineering; ULSF, University Leaders for a Sustainable Future.

4 the nature and significance of teaching and learning;
5 the relationship between teaching and research;
6 the actual and potential role of management.

The rest of this book explores all six points in detail, with reference both to the existing literature and to the case studies already described. However, it may help at this stage to outline the sequence of the argument in more detail.

The word 'environment' means different things to different people. It sometimes means different things to the same people at different times and places. It may therefore often be a source of misunderstanding, even when those involved

are well-informed and in good faith. One particular difficulty concerns the relationship of the environment to 'Nature', which affects practical outcomes at two different levels. First, the phenomena that constitute the natural world (such as matter, energy, gravity and so on) also constitute and reconstitute the environment that humans inhabit, according to laws that lie entirely beyond any human influence. They also, not insignificantly, constitute individual human beings themselves. Second, however, the terms 'environment' and 'Nature' are combined in particular ways by different individuals and communities to generate a cornucopia of meanings. These meanings powerfully affect what people are likely to do in any given circumstance. They may be economic, moral, political, territorial, historical or spiritual, and may provide individuals with a sense of belonging to a larger group or a sense of personal distinctness from such groups. They may find expression through literature, art, institutions, sport, ritual or warfare. Taken together, the relationship between environment and Nature, and the impacts that this relationship has on humans, comprise a very substantial component of what universities teach and research. These matters are explored in detail in Chapter 12.

To focus on the relationship between environment and society, and between these two and economy, extends the foregoing into important additional areas. Quite clearly, societies create their environments (a refugee camp is one extreme example). Equally clearly, environments create societies (it is surely more than mere coincidence that the Inuit are found only at high latitudes). Out of this shared understandings ('social constructions') arise, about, for example, what is entailed by forced migration or hunting, what it means to be a refugee or a hunter, what behaviours, choices and priorities each implies or excludes, and how each should be valued. Economic implications are inescapable. Chapters 13 and 14 argue that sustainable development requires a better understanding of these processes at all levels and begin to suggest that universities have a key role in determining whether such understandings arise or not.

Chapters 15 and 16 consider learning at individual and collective levels, respectively, and argue that educational processes can be better understood in terms of a number of analytical categories that seek to capture the learner's personal and social contexts. Chapter 17 examines the significance of linkages between learning and research, and proposes a possible system of classification of learning interventions in relation to sustainable development.

Chapter 18 sets out a number of management issues relating to sustainable development and higher education, and considers, in particular, the example of the UK's 2006 Leitch Review. Chapter 19 considers the significance of uncertainty in management and Chapter 20 focuses on universities as open systems requiring management across the organisational boundary.

Finally, in Chapter 21 we summarise the argument and return to our core question: 'What is a university for?'

Chapter 12

The environment in sustainable development and higher education

The notion that human beings live within some kind of environmental limits is fundamental to most conceptions of sustainable development. Indeed, the existence of such limits seems self-evident to many people. Like many apparently self-evident conclusions, this repays closer examination.

Economics and the natural sciences tend to operate within quite different conceptions of the relationship between humans and the natural environment. The history of this divergence between intellectual traditions has been traced by Norgaard (1984, 1994), who notes that the classical economic models of Malthus and Ricardo, for which resource scarcity and its consequences are crucial, were successfully adapted by natural scientists such as Darwin and Wallace but ultimately abandoned by economists. The results of this parting of the ways were subsequently particularly well-illustrated by the differing responses to the publication of *The Limits to Growth* (Meadows *et al*. 1972). On the whole, natural scientists found this work convincing or, at least, methodologically well-founded. Among economists, however, only Daly (1973) was fully accepting of it (Norgaard 1984).

At the heart of the issue lie different evaluations of the potential for human-made assets to substitute for naturally occurring ones, that is, in economic language, for human-made capital to substitute for natural capital. So it is, for example, that we find the economist and environmentalist Paul Ekins and his colleagues arguing for a 'strong sustainability' view in which the need to identify and protect 'critical natural capital' is accorded a high priority. Such assets are 'critical' because they are 'responsible for important environmental functions and . . . cannot be substituted in the provision of these functions by manufactured capital' (Ekins *et al*. 2003: 159).

To understand this formulation better it may be helpful to consider the two positions that define the limits of possible debate. At one extreme, one might believe that, in principle, *all* natural assets can be substituted by manufactured

ones. If this were so then, for example, it would not matter if the atmosphere of the Earth became too polluted to breath if, instead, a breathable atmosphere could be maintained within specially constructed domes; it would not matter if the proportion of greenhouse gases in the atmosphere became too high for average global temperatures conducive to human life to be maintained if, in compensation, giant mirrors could be launched into space to reflect sunlight; and it would not matter if fundamental genetic material were damaged or lost if it could be repaired, recreated or improved through laboratory processes.

At the other extreme, to believe that *no* natural material could or should be substituted would, for example, rule out the building of wooden huts and the making of spears or canoes. The attempt to observe such a prohibition would not only be fundamentally against the nature of human beings but would also, for most of us, be fatal. Nevertheless, there are those who argue – with due appeal to empirical evidence as well as philosophical and spiritual argument – for the more limited position that the natural world has rights and human beings have obligations to it (see, most particularly, Devall and Sessions 1985).

Two separate questions (at least) arise from this: 'Should we, as a species, *want* to remake the world in our own image?' and 'Are there any ultimate limits on our ability to do so?' Answering the first of these is clearly beyond the scope of this book and, equally clearly, very much a proper concern of a university, whether in a real world view (which might ask, for example, what the costs and benefits are) or an ivory tower view (which might ask almost anything).

The second question reveals an interesting paradox that goes to the heart of much confusion. Ultimately, by virtue of the laws of thermodynamics, resources *are* limited and so is our capacity to reconstruct ourselves and our planet. However, from our own particular human perspective, and over what really are very long periods of time in human terms, negative entropy change is perfectly possible providing appropriate and appropriately focused inputs of energy are available. Norgaard writes:

> The oxygen we breathe, the plant and animal life we eat, and the hydrocarbons we tap to fuel our industry all arise from biological processes. Even the ordering of minerals has improved for man over eons by various physical processes stemming from solar energy and the gradual cooling of the earth. From a perspective limited to man and the earth, the evolution of life has been a negentropic process.
>
> (Norgaard 1984: 531–2)

This creates substantial potential to substitute what we make for what we find, and explains why dire warnings of impending resource exhaustion have often proved misplaced. However, Norgaard continues with a warning:

> This seemingly optimistic view, however, must be tempered . . . though no available data are adequate, many scientists are persuaded that man is currently exploiting the accumulated low entropy of his environment,

> through both extraction and pollution, to the detriment of future generations . . . most of the technologies we associate with development may simply allow us to use low-entropy stocks faster.
>
> (Norgaard 1984: 531–2)

One way of thinking about environmental sustainability, therefore, is that it requires the maintenance of society's productive base, or wealth, over time in such a way that natural assets that are used up are replaced by other, and at least equivalent, assets of other kinds (Dasgupta 2001). It is the extent of our ability to do this that defines the 'environmental limits' within which we live and, therefore, these are not immutable.

As the foregoing begins to suggest, if possible conceptions of 'our environment' are bounded, at one intellectual frontier, by the unchanging laws of physics, they also abut against another frontier, at which they begin to merge, without any very definite demarcation point, into our conceptions of 'society'. This is because when we talk about 'saving the environment' (which, incidentally, is also what we really mean when we talk about 'saving the planet') what we really mean is that we want to conserve certain aspects of particular environments that have meaning or value for us. There is, quite simply, absolutely nothing that human beings can possibly do that will result in the Earth having *no environment*. We are not even in a position to end 'life on Earth' unless, in addition to killing everything, we also manage somehow to remove all of the water. Nature has plenty of time to start again after a failed experiment. But this just isn't what we mean. We mean that there are things about *this* environment that we value, or attach particular meanings to. It is these values and meanings that we wish to express and preserve through our attempts at environmental conservation. They originate not in non-human Nature itself but in society.

The following example may help to clarify this point, drawing on detailed research conducted in Bangladesh (Raihana and Iftikhar Hossain 2004). Although a poor country, Bangladesh possesses abundant water resources. However, the population density is extremely high and clean drinking water is scarce because of contamination of surface sources. Over the last 30 years there has been massive investment in the construction of tube wells in response to this problem. These employ simple and appropriate technology to draw groundwater to the surface on demand.

Unfortunately, it has subsequently emerged that groundwater in Bangladesh is contaminated with arsenic. This contamination is entirely natural in origin and results in chronic arsenicosis, leading to an accumulation of visible and non-visible symptoms, damage to vital organs and, ultimately, death. There is no treatment. In a rich country, use of such water would be immediately discontinued and alternatives found. Bangladesh is not a rich country and all alternatives are problematic in practice. It is estimated that nearly 90 million people are affected.

Considering this problem from a safe theoretical distance we might begin by noting that this is a failed attempt to replace one form of natural capital (abundant surface water) with a different form of natural capital (shallow groundwater de-

posits), which becomes natural capital – that is, becomes a resource – *only* when it is enhanced by human-made capital (in the form of operational tube wells). This failure has arisen partly because Nature has turned out not to have properties that we are inclined to associate with it. Naturally occurring water free of human contamination has turned out not to be 'wholesome', or 'pristine' (although in a literal meaning of the word, 'pristine' is *exactly* what this water is), but rather to be highly toxic to humans. It has also arisen from the transitory and partial nature of our understandings of our environment. An entirely non-sentient, motiveless water deposit has undergone, over a few years, a journey from having virtually no significance in human reckonings of 'the environment' to having a very strong positive significance, and then an even stronger negative significance. Further, these understandings have played themselves out within a wider context of shared values, narratives and histories. So, for example, the danger might have been spotted by more careful preliminary testing, but to insist on such a precautionary regime across the board would make development in general much slower and more expensive, and stretch aid budgets further than they are stretched already. The problem might be less severe now (although periodic flooding would still cause difficulties) if human activity and population had not grown so quickly in the past as to lead to surface water contamination. But they did. We – and 90 million poor Bangladeshis – start from where we are now, and not from somewhere more theoretically convenient. Finally, solving the problem as it now confronts us through more development, capital accumulation and technological innovation seems, from the perspective of a chronically poisoned population, a hopelessly long-term and uncertain prospect, and one which is rather likely to worsen environmental degradation before improving it.

What we see here is Nature entwined with human meanings and relative values to produce something that people call an 'environmental problem'. The complexity of this entwining is illustrated by Raihana and Iftikhar Hossain as follows:

> It is important to understand that every stakeholder in this arsenic menace has a vested interest. The media wants to overemphasize the catastrophe to increase their circulation. The government wants to understate the situation because it does not want to create panic. In addition, it has other priority areas like poverty, illiteracy, law and order situation etc. UNICEF, World Bank and British Geological Survey have been taken to court so they are moving forward cautiously. Other aids that come for ensuring safe water have many strings attached. NGOs promote only those technologies that the donors are interested to fund. Donors on the other hand, either want to promote a technology that has been developed in some other country and might not be too appropriate for Bangladesh or promote a product of a certain company. The private sector wants to make money out of this situation. . . . Researchers are only interested in extracting data for their work. Caught in the middle are the poor victims who are getting closer to death with every day that is passing.
>
> (Raihana and Iftikhar Hossain 2004: 112)

In summary, we can say that 'the environment' turns out to be a rather elusive term that describes, for humans, a space in which artefacts of Nature interact with artefacts of societies to produce sets of meanings which are often contested and invariably subject to change. It provides rich exploratory territory for universities, both in a real world view and an ivory tower view. There are always things that we need to know to solve particular problems, and there are always important questions to pose about the origins of those needs, the warrant for knowledge, the criteria for the evaluation of solutions and the definition of problems. In short, there are opportunities to learn, and these opportunities are more extensive and – in some places at least – better resourced than ever before. In large part it is this that leads Diamond (2005) to conclude his analysis of environmental catastrophes on an optimistic note, even though contemporary environmental threats are often unprecedented in their global scale. We can learn; and universities, through research and teaching, must be at the heart of that learning.

In the light of all this, what can we say about existing practice in higher education in relation to sustainable development and the environment?

First of all we should note that universities do have environments themselves, and they form a part of the wider environment of the societies that they serve. They therefore have an effect through the way that they manage their own affairs and estates. Indeed, this may well be the area in which they find it easiest to take corporate action. We have already seen, for example, that the Association of University Leaders for a Sustainable Future (case study one; Chapter 4) reports universities' own environmental management as being the area in which it has been possible to facilitate the greatest amount of progress. This is not necessarily cause for cynicism or dismay. If institutions are placing an emphasis on reducing energy and water use, minimising their waste and carbon footprints, and recycling, then the fact that they may be doing so primarily in response to financial incentives is no bad thing in itself. That market forces *can* work to enhance environmental sustainability is only to be regretted if one is more opposed to markets than in favour of resource conservation. Where there is a need for sustainability action beyond the promptings of markets (as very often there is), it may be – and indeed often is – still useful to ask why market conditions fail to address that need within existing technologies. The answers may well suggest opportunities for both research and teaching, and these, in turn and over time, might bear on wider social preferences, subsequent market prices and the appearance of new openings for financial and environmental synergy.

A further point to note is that a focus on environmental management of estates does not necessarily imply that a university has a purely *technocratic* perspective on sustainable development. In case study two (Chapter 5), for example, we saw how Kenyatta University had instituted an aesthetically driven programme of campus development and 'beautification' informed, perhaps, by a more *metaphoric* conception of the issues. And from case study seven (Chapter 10) there seem to be clear *pragmatic* difficulties in influencing the professional behaviour of engineering students towards sustainable development in an institutional context of wasteful environmental management. The possible results of this are perhaps

best illustrated by the example given from Glasgow University, of a project linked to the university's business plan. Finally, we should note here the significance of case study six (Chapter 9) on sustainable procurement training. Although the work reported was conducted by a university, it focused not on higher education but on the health sector. Nevertheless, universities do purchase very substantial amounts of a very wide range of products in the course of their day-to-day operations. More sustainable environmental procurement may well offer immediate cost savings for individual institutions. Applied across the sector as a whole it may also lead to changes in supplier behaviour and so to consequent environmental benefits. In short, we might see sustainable procurement as a lever for change in an environmentally *task-based* approach.

This said, although university estates management is not nothing in sustainability terms, it cannot be the main issue. In moving to consider teaching and research in their relation to the environment we might note the following general points:

- Universities are concerned with the entire range of possible understandings of what 'the environment' essentially is.
- Cross-disciplinary working may be indicated by environmental issues, but to say that such working is *necessary* does very little to make it more *likely*.
- Environmental knowledge that seems true, useful and generalisable to rich-country academics may be much more questionable in the developing world.
- The institutional context within which universities operate is important in determining their attitudes to environmental knowledge, both for teaching and research.
- Policy-makers often have an unrealistic and naïve view of the relationship linking policy decision-making to research, teaching, learning and environmental change. So too (sometimes at least) do academics.
- Research can be as readily characterised by the assumptions that it makes about the environment as by the discoveries that it makes.

The following examples illustrate these points. Case study five (Chapter 8) is perhaps the one that shows the most consistent conceptualisation of the environment at the greatest scale of higher education provision, and this, perhaps paradoxically, is because it is the one with the clearest and most consistent underpinning by a very particular set of values. These values relate to the geographical and cultural integrity of Russia, the possibility and desirability of planning based on the rational application of discoverable and generalisable principles, and, perhaps most significantly, an underlying conception of justice as intergenerational, anthropocentric and egalitarian in nature. These common understandings result in a very clear basis for exploring the environment in many of its possible dimensions, through both work within single disciplines and cross-disciplinary collaboration, and through both teaching and research. So, for example, we read how the concept of nature management was developed synergistically in Russia in geography,

economics, philosophy, ecology and the natural sciences. However, in spite of its rigour and insightfulness, and as our contributing authors Nikolai Kasimov and Yuri Masurov themselves note, this work did not, in fact, bring about sustainable development. Scientific understanding of nature is one thing. Managing the environment, with its array of competing and always-changing meanings, is, as we have already suggested, quite another.

This last point is echoed under very different circumstances by case study two (Chapter 5). In the face of Africa's enormous environmental and cultural variety, the MESA project seeks to promote collaborations that will develop universities across the continent as a force for sustainable development. Yet, as in the cases of both nature management in Russia and arsenicosis in Bangladesh, this work takes place in a context in which a great many different interests and agendas are engaged in activities that exploit the environment in one way or another. One particularly significant issue arising from this concerns perceptions of the role of education itself. The following observation by Da Silva, based on a study in Tanzania, illustrates the issue well: 'Education is alternately criticised and praised, first as the culprit responsible for the irreversible acculturation process that has been forced on Africa, and next as the panacea for ameliorating underdevelopment' (Da Silva 1996: 122).

There was a time when rich-country universities were concerned, through their discovery and dissemination of knowledge, with 'civilising' Africa – in large part by enabling its environment to be controlled and put to use. Now the concern of Western academics is more likely to be with atoning for that error through the promotion of development according to one conception or another. As Said (1985) has pointed out, both these accounts relegate developing-country history to the status of a subtext within rich-country history. The challenge for the MESA project, and for other sustainable development and higher education initiatives in developing countries, is to obtain and retain the status associated with the notion of a university, take advantage of useful rich-country knowledge as far as is possible and appropriate, but remain respectful of, and responsive to, locally significant environmental meaning. In this light the report of Professor William of the University of Liberia, with its appeal to 'the love for knowledge and the hope to make Planet Earth a safer place for our children' in the face of local difficulties of a scale unimaginable by most academic outsiders, seems, perhaps, more like a beacon of hope – and not at all like a reason to abandon it. There may be technocratic opportunities for African academics to identify and exploit. At the same time there may also be scope for new task definitions, paradigmatic assumptions and metaphors to emerge, which may cause the pragmatic requirements of individuals in the continent's many and varied countries to take shapes as yet unknown.

Finally in this section we should note that our case studies also provide examples of sophisticated but differing responses to issues of disciplinary specialisation and cross-disciplinary working, as these bear upon the human inter-relationship with Nature through the environment. Disciplines are useful. It is, in fact, very difficult to address any complex problem without dividing it up into manage-

able component parts. Even thoughtful advocates of 'holistic' thinking realise this and argue not for the abandonment of analytical thinking but rather for it to be remembered at all times that the really major insights are likely to arise from putting the pieces back together again (see, for example, Sterling 1993). However, bringing together the insights of different disciplines is particularly problematic and typically *does not* in any way equate to assembling the pieces of a jigsaw. This is because different disciplines work with different simplifying assumptions, which may lead to different and equally valuable insights even as they appear to contradict each other. These assumptions are likely to become second nature to the specialist steeped in one particular disciplinary approach, so quite possibly making the sharing of insights with other specialists problematical. Case study three (Chapter 6) recounts the UNESCO approach to this issue in relation to teacher education through a 'strengths model', which begins from a clear articulation of sustainable development and identifies how different disciplines can contribute to it. By contrast, in case study seven (Chapter 10) the Royal Academy of Engineering visiting professors scheme seeks to build a better understanding of the meaning of sustainable development through insights emerging from its own case studies. We would argue that, given the complexity of the environmental context of sustainable development, approaches of both kinds are likely to be found helpful in the formation and re-formation over time of higher education's responses to it.

However, perhaps the central point to take forward into the rest of this discussion is that, although environmental limits do exists, and although human societies are constrained by nature, it is in practice – and perhaps particularly in relation to sustainable development – impossible to separate our environmental thinking from our social and economic understandings.

Chapter 13

Society in sustainable development and higher education

In the previous chapter we noted the indistinct nature of the boundary between the natural environment and society. We should also now formally note a further point that was, in fact, implicit in that discussion: the boundaries of the *economic* with both the environmental and the social are similarly indistinct. Economic behaviour comprises particular types of social interactions, which, at least in any post-hunter-gatherer society, *must* involve or depend upon either new transformations of the environment or the maintenance of established forms of transformation (see Brody 2002 for a discussion of the issues). The familiar division of sustainable development into environmental, social and economic elements followed in this book is a convenient one precisely because it *is* so familiar. We find it reflected in the design of our institutions (for example, most governments have separate ministries dealing with environmental, social and economic matters), in the delineation of fields of academic study (e.g. sociology, economics, ecology, biology) and, perhaps most fundamentally, in the language we use to talk and think about our lives. This compartmentalisation serves the useful function of making a massively complex set of issues more manageable, but it is still a habit of mind rather than an inalienable property of the underlying realities. Further, it systematically pre-empts the use of alternative sets of analytical categories that might just possibly be useful in thinking about sustainable development – one not entirely flippant suggestion might be as follows:

- things we really know;
- things some people think they know;
- things we can learn;
- things we cannot know, at least for the foreseeable future.

However, we employ the environment/society/economy framework here because we want to use the language that is considered normal in the discussion of

sustainable development in such a way as to engage with the concerns of ministries, disciplinary specialists and others. Nevertheless, we hold that framework lightly. Anyone still inclined to the view that the firm separation of economic, social and environmental factors is intrinsic, at the minimum, to modern, highly developed societies might consider the following description of twenty-first-century Montana in the north-western United States:

> Today, the Bitterroot Valley looks lush, belying its original natural vegetation of just sagebrush. Ravalli County in which the valley is located is so beautiful and attracts so many immigrants . . . that it is one of our nation's fastest growing counties, yet 70% of its own high school graduates leave the valley, and most of those leave Montana. . . . Some of the people recently establishing homes in the valley are extremely wealthy . . . but Ravalli County is nevertheless one of the poorest counties in the state of Montana, which in turn is nearly the poorest state in the U.S.
>
> [. . .]
>
> Environmental disadvantages . . . limit Montana's suitability for growing crops and raising livestock. They are: Montana's relatively low rainfall, resulting in low rates of plant growth; its high latitude and high altitude, both resulting in a short growing season and limiting crops to one a year rather than the two a year possible in areas with a longer summer; and its distance from markets in the more densely populated areas of the U.S. . . . Montana's history consists of attempts to answer the fundamental question of how to make a living in this beautiful but agriculturally non-competitive land.
>
> (Diamond 2005: 30, 33)

With these preliminary observations in hand we focus now on society, and on how social factors bear upon issues of sustainable development and higher education. In doing so it is useful to make an initial distinction between, on the one hand, society as the *object* of sustainable development and, on the other, society as its *agent*. The first of these orientations has already been illustrated by our earlier discussion of the envisioning of Bedford in the year 2045 by Huckle and Martin (2001). In that work a picture was drawn of what, in the view of the authors, a sustainable society should be like. This is not the same thing as stating what society needs, in the non-sustainable present, to do. For example, Jucker (2002: 318–41) sets out '28 practical strategies to foster EfS' (education for sustainability), including 'Invest in people not technology', 'Redefine notions of excellence', 'Expose the eco-illiterate lecturers and courses', 'Get your institution a policy' and 'Make EfS a core of all teaching'. Of course many authors, those cited here among them, do have a clear view about both the goal of sustainable development and the actions its achievement might require. Some, indeed, use the term 'sustainable development' to refer to present processes, and 'sustainability' to refer to their desired end state. However, the alternative usage of 'society as object' and 'society as agent' seems more appropriate for the present discussion

for two reasons. First, it makes clear a useful distinction between: (i) sustainability innovations undertaken as part of the wider and quite unremarkable process through which universities respond to changes in social conditions; and (ii) such innovations undertaken in a deliberate attempt to initiate or drive particular social changes. So, for example, it is one thing to improve energy management in line with current best practice, or to modernise an engineering curriculum to accommodate the developing requirements of professional bodies; either of these might occur as a part of a society-wide shift in the direction of sustainable development. It is quite another thing to insist that sceptical or uninterested academics across the board revise their professional practice in line with a particular set of sustainability principles, so treating their objections or lack of interest as obstacles to be overcome, and sustainable development (in some particular conception) as an adequate grounds for compulsion.

Second, universities would seem to have an important role in the critical examination of the proposed causal links between particular sets of actions and their expected outcomes. For instance, it might be asked whether Jucker's proposed actions would be likely to lead to Huckle and Martin's desired outcome, and whether both actions and outcome are, in fact, consistent with underlying goals claimed for them, such as the enhancement of environmental conservation or social justice (there is, in fact, cause for doubt about both, as we shall see). This leads to a further interesting paradox. Even if a whole society was to be somehow united in the pursuit of sustainable development, it would *still* be essential for universities to maintain a critical distance from that mission – in the interests, ultimately, of its being achieved.

It is quite clear that the distinction between 'being part of a changing society' and 'initiating particular social change' is seen as important by some universities. For example, in case study four (Chapter 7) we saw the hostility engendered in some institutions by the January 2005 Higher Education Funding Council for England (HEFCE) circular, *Sustainable Development in Higher Education: Consultation on a Support Strategy and Action Plan*, and the insistence on the importance of academic freedom and political independence that this document provoked in some quarters. Yet other universities were sympathetic to the circular or criticised it for not going far enough.

At the heart of the issue lie the following questions:

- Is sustainable development (to some significant extent and in some conception) a legitimate social goal?
- If so, in what ways is it legitimate and/or useful for universities to promote that goal?

The appearance in the debate at this point of concepts such as 'freedom', 'rationality' (which we raised in our earlier discussion of Huckle and Martin 2001) and 'justice' (a central concern of both Huckle and Martin, and Jucker, and a key issue for many of those involved in our case studies) is simply evidence of the

profound and enduring issues that underlie the topical and exclusively modern interaction between society, sustainable development and higher education.

Freedom, in Isaiah Berlin's famous conceptualisation, can be thought of in two ways, which, although on the face of it are only slightly divergent, have tended to play out very differently when operationalised in practice. Negative freedom is present when one is not prevented by others from choosing as one wishes. Positive freedom requires that one is one's own master. The lever that has frequently prised these two conceptions far apart is the notion that those who have the negative freedom to choose may make choices that are wrong, bad or self-damaging, and that this may happen, for example, because they are being systematically deluded in some way, or because they lack the rational understandings necessary to make those sound choices that will lead towards a rational ordering of society and all its relationships. In any case, the argument goes, they are not masters of themselves. Positive freedom therefore requires and justifies the removal of whatever obstacles are judged to be distorting their choices. Once these have been removed, people will be able to choose both freely and well. And, of course, it will be clear when this situation has come about because the choices that people make will be the ones that are predicted at the outset by the advocates (in any given case) of positive liberty. Berlin puts it like this:

> One belief, more than any other, is responsible for the slaughter of individuals on the altars of the great historical ideas – justice or progress or the happiness of future generations, or the sacred mission or emancipation of a nation or race or class, or even liberty itself, which demands the sacrifice of individuals for the freedom of society. This is the belief that somewhere, in the past or in the future, in divine revelation or in the mind of an individual thinker, in the pronouncements of history or science, or in the simple heart of an uncorrupted good man, there is a final solution.
>
> (Berlin 2002: 212)

If only to avoid being thought unduly provocative we should note that the use of the particular expression 'final solution' endows these words with a portentousness that was, no doubt, fully appropriate at the time that they were first spoken (in 1958), but which does not deserve to be attributed to any programme of sustainable development of which we are aware. Nevertheless, whenever we find a strong a priori conception of what a sustainable society would necessarily be like (society as object), coupled with a determination to use social processes as a lever to bring that conception about (society as agent), we may well conclude that advocates of positive freedom of the kind described above are at work, given only that one further test is met. This is that, in the proposed sustainable society, all oppositional thoughts and actions (such as, in the case of Bedford 2045, harbouring preferences for top-down leadership, meritocratic inequality, institutionalised private property ownership or competitive allocations of rewards) have *simply vanished* – not been outlawed or suppressed, but just evaporated, as individu-

als have (supposedly) discovered that what they *really want* to choose is exactly what, according to the advocates of sustainable development in the conception in question, they *ought* to choose.

It is, of course, perfectly possible to wish for society – and specific elements within it such as universities – to take steps to encourage sustainable development without also buying in to this kind of positive-liberty prognosis. But then one must be reconciled either to the possibility of failure (people reject what you have in mind) on the one hand or of success through compulsion (regulations are introduced which constrain people's choices) on the other. We might also note, in passing, that one might bypass the issue in this precise form by centring one's conception of sustainable development in the economic realm – so that change results primarily from individual responses to market signals – or (perhaps) in the environment itself, which has its own way of influencing outcomes through pestilence and plenty. Nevertheless, when some university vice-chancellors in case study four (Chapter 7) asserted a prior allegiance to academic freedom over sustainable development, the kind of freedom they clearly had in mind was that of themselves and their staff to choose what and how to teach, rather than having it set down for them by somebody else – even if, in so choosing, they were subsequently found to be responding not to a rationally conceived need on the part of society to achieve sustainable development but rather to the fickle whims of imperfect markets, the institutional ambitions of historically situated organisations, or something else. If we take Berlin's warning about positive liberty seriously, those vice-chancellors had good reason to be suspicious:

> In due course, the thinkers who bent their energies to the solution of the problem on these lines came to be faced with the question of how in practice men were to be made rational in this way. Clearly they must be educated.
>
> (Berlin 2002: 195)

Can sustainable development be served by negative liberty? In the first place we should remind ourselves that, although our focus here is on the social dimension, we have already seen that social behaviours cannot be severed from the environment in which they occur. In Chapter 12 we described that environment as 'elusive', 'contested' and 'invariably subject to change'. We might conclude that the attempt by advocates of positive liberty to achieve total separation between people's 'true' selves and their 'poor ignorant, desire-ridden, passionate, empirical selves' (Berlin 2002: 194) is not merely doomed to failure but is, in any case, misguided. Sustainable development, it would seem, lies beyond the limits of *fully* rational comprehension or, to put it another way, may well turn out to be *inherently* characterised by rational inconsistencies. As another major philosopher of liberty has put it:

> The antirationalistic position here taken must not be confounded with irrationalism or any appeal to mysticism. What is advocated here is not

> an abdication of reason but a rational examination of the field where reason is appropriately put in control.
>
> (Hayek 1960: 69)

Though very different in many ways, both Hayek and Berlin saw clearly that all of the problems of the world were not, and never could be, amenable to solution *solely* through the application of some (any) rational scheme.

Case study five (Chapter 8), with its detailed exploration of the concept of rational nature management in Russia, is particularly interesting in the light of the foregoing. We learn of the impressive, sometimes almost heroic, achievements of Russian academics in exploring (within their own terminologies) the concept of sustainable development through research in geography, economics, biology and the natural sciences. Their integrated intellectual scheme succeeds more completely than many more recent attempts in integrating a requirement for the efficient, time-sensitive management of all those aspects of nature that we have elsewhere in this book referred to as 'natural capital' – including renewables, non-renewables and sinks – with a principle of justice rooted in equality. However sceptical one may be of the integrity of post-war Soviet political processes, there is no reason to doubt the intellectual integrity of those who undertook this work. Yet historical experience leads Professors Kasimov and Mazurov to place their hopes for the future in 'combining the latest attainments of fundamental science with the creatively interpretable experience of the past.' Here we have, perhaps, a culturally rather different account of the failure of a particular real world view, 'get on with the job' approach – Kasimov and Mazurov refer to the 'obsolete methods that are traditional for this country' – to recognise that 'creative interpretation' of the 'experience of the past' happens in society whether people are taught or not. Meanings, understandings and values are created in this way, and compete with each other. Those that succeed are imitated and become, perhaps, embodied in institutions, so acquiring a durability that may cause them to persist for some time in the face of new and less suitable circumstances. Sooner or later, however, those that fail are abandoned. Imitation of successful social innovations, of course, is a process of central importance in Hayek's conception of (negative) freedom, but one does not have to go the whole way with Hayek to argue, as we do here, that notions of sustainable development as (in Berlin's terminology) a 'final solution' are based on ill-conceived notions of what society *is*. Meanings, understandings and values change. Sustainable development is centrally about managing and facilitating, rather than prescribing, the process of creative reinterpretation described by Kasimov and Mazurov. And it is about avoiding, as Berlin puts it, 'the vivisection of actual human societies into some fixed pattern dictated by our fallible understanding of a largely imaginary past or a wholly imaginary future' (Berlin 2002: 216).

In this, universities have a key role, and one which is absolutely proper to them *as universities*, because it combines their status as participating elements of society with their role as guardians of (negative) academic freedom. The distinction between society as object and society as agent effectively collapses at this point,

because agency *becomes* the object. We have, rather, a version of what Foster (2001) has called 'education *as* sustainability'.

However, a cautionary note about negative freedom, and its place in sustainable development and higher education, is in order. In case study two (Chapter 5) we saw how universities across Africa were attempting, each in its own way, to build appropriate forms of sustainable development. We described, for example, the Education for Sustainable Development Innovations Course Toolkit and its use of a particular case study of the Nile River Basin, which revealed the tensions between development pressures and the conservation of traditional lifestyles. We hope we have said enough already to make clear our view that all development is not sustainable. At the same time it should also be clear that all conservation is not necessarily desirable. Berlin himself makes the point that, in some conceptions, negative freedom might be said to be achieved simply by renouncing the object of desire. If I no longer want what I am barred from having, then I am free. It is certainly true that some traditional communities have wished only that the globalising world would leave them alone to pursue their own lives in their own traditional ways. Freedom requires that they be able to make such a choice, but also that it is theirs, and no one else's, to make. In the Nile River Basin example the emphasis on 'capacity for participation and innovative solutions' seems to respond very well, in principle at least, to this point.

We have outlined in this chapter the basis of our view that there is a rational need to recognise the limitations of rationality for social planning, and that doing so is important from the points of view of sustainable development, higher education and society as a whole. We have also previously noted our preference for the account of rationality offered by Sen (2002), which excludes neither self-interested nor altruistic behaviour, but requires rather that individuals subject their preferences, of all kinds, to reasoned and continuing examination, so developing and incrementally realising a progressive conception of who they would prefer to be. A particular attraction of this account is that it does not stand in opposition only to the kinds of positive-freedom approach that locate responsibility for the (sustainable) development of both the individual and society in the hands of a knowing elite. It is equally incompatible with 'final solution' theories of the type that propose free markets and deregulation as the solution to everything (and so, perhaps, helps us see where we might wish to part intellectual company with Hayek). Sen himself writes: 'The search for a single all-purpose remedy (such as 'open the markets' or 'get the prices right') has had much hold on professional thinking in the past. . . . Instead, an integrated and multifaceted approach is needed' (Sen 1999: 126).

At the same time Sen's position is clearly one that places the highest value on rationality and so, we hope quite clearly, avoids any possibility that the arguments advanced here might be seen as being in some sense 'relativistic' or ultimately anti-scientific.

Most importantly, however, it is this broad conception of rationality that enables us to consider our topic with the apparently conflicting claims of the real world and ivory tower views of the nature of a university, and the multiple perspectives,

held in equal esteem, for now at least, that exist on what it might mean to sustain development. Of course, over time, individuals who attend or work in universities, and the societies to which they belong, will develop their preferences. Sustainable development itself represents a refinement of past preferences, one important aspect of which is the more determined and critical inclusion of conceptions of justice in accounts of the environment/society/economy relationship. The logic of our argument is that, even as we seek to understand and advance sustainability, we must recognise that the values embodied in our present conceptions of it are quite certain not to endure in their present form. For this reason we give the last words of this chapter to Isaiah Berlin:

> It may be that the ideal of freedom to choose ends without claiming eternal validity for them, and the pluralism of values connected with this, is only the late fruit of our declining capitalist civilization: an ideal which remote ages and primitive societies have not recognized, and one which posterity will regard with curiosity, even sympathy, but little comprehension. This may be so: but no sceptical conclusions seem to me to follow. Principles are not less sacred because their duration cannot be guaranteed.
>
> (Berlin 2002: 217)

Chapter 14

Economy in sustainable development and higher education

A good deal has been said already about the role of the economy in sustainable development as it relates to higher education. This has been inevitable given the unbreakable linkages between the environment, societies and their economies. In particular, we have seen that economists have tended to frame debate about environmental sustainability in terms of the replacement over time of natural with human-made capital. In Chapter 1 we introduced the idea of investment as a metaphor for higher education, and in Chapter 12 we briefly discussed the notion of natural capital. Now we explore some of the implications and opportunities offered by these ways of thinking.

It is commonplace to describe higher education as a form of 'investment'. To do so suggests that it is similar to more tangible capital assets, such as machinery, for example. First, it requires the commitment of financial and/or other resources in the present. As a result, other alternatives presently available will be forgone, that is, there will be an opportunity cost. Second, an asset or assets are acquired through higher education that are expected to generate a flow of returns over a number of future time periods. Third, those expected future returns justify the cost in the present.

It is also quite usual to think about nature and society in this way. We do this when we invoke the terms 'natural capital' or 'social capital', and, in fact, when we talk about 'sustainable development' – as the implication of such development can only be that acceptable, sustainable, future returns are securely expected at some acceptable present cost. Of course, there remains scope for extensive disagreement around such questions as 'What is acceptable now or in the future?', 'Acceptable to whom?', 'How far into the future?' and so on. But the point should be clear that given human time preference – that is, that all other things being equal we would rather have a thing sooner rather than later – there is an underlying issue about how we presently value future possibilities, which is important in our consideration of higher education, sustainable development and the two taken together.

Natural capital is a complex concept, but it lends itself to simplification for the purposes of policy formulation. For example, it has not been uncommon in recent years to hear keynote speakers at environmental conferences of one sort or another describing sustainable development as a state in which the human species would 'live off the interest' of natural capital. Natural capital has been defined as follows:

> Natural capital refers to the various ways that the environment powers production – and indeed supports most aspects of human existence. Natural capital provides a major extension of the concept 'land', one of the classical factors of production in economic theory. It has both non-renewable and renewable dimensions, the latter including its generation of eco-system services and other life-supporting functions.
>
> (Ekins *et al.* 2003: 160)

According to Åkerman (2005), the concept of natural capital was first introduced by David Pearce (1988) as a response to the then recently developed notion of sustainable development. Three particular aspects of the extensive body of subsequent work on this concept seem particularly significant for the present argument. They are:

1. The importance for scientific rigorousness of maintaining methodological caution in the face of irreducibly incomplete knowledge. Things are so complicated that tried and trusted techniques sometimes don't work or, worse, lead us astray.
2. The certainty (it is more than mere possibility) that learning will occur as the developing relationship between society and its environment unfolds. Our actions trigger changes in the world around us. As we adapt to them (smoothly or otherwise) we trigger further changes.
3. That although ecosystem functions are often relatively obvious, and to this extent likely to be valued by humans, the same cannot be said of the underlying environmental functions that sustain ecosystems themselves. Therefore, valuation and choice may be impeded not only by incomplete information but also by the lack of any coherent intellectual framework for transforming such information as is available into rankable preferences (Ekins 2003). For example, we place a high absolute value on access to an adequate supply of clean water but are likely to be at best confused about the relationship between our own actions and the medium- to long-term maintenance of aquifers.

We might further illustrate these points by reference to the issues surrounding the spread of genetically modified (GM) crops. The following conflicting possibilities arise in deciding whether to invest (perhaps through university research or teaching) in the conservation and protection of non-GM crops, that is, in a form of natural capital:

- the development of GM crops might turn out to have benefits in excess of anything we imagine at present and the costs might be minimal;
- the costs *might* be catastrophically large and the benefits minimal;
- what will actually emerge is a messy mixture of costs and benefits distributed unevenly across society and over time.

The chances of a successful, detailed prediction are close to zero for two reasons. First, our scientific knowledge is incomplete. The 'best available science' at any moment in time may very well turn out subsequently to be quite wrong (this does not, of course, make it bad science). Second, and related, the value attached to particular outcomes depends on who is doing the valuing and on the values that they themselves have. So, over time, we may learn new factual information and we may learn to have different preferences from those that we have now (we have already seen that this is, in fact, required in the conception of rational behaviour advanced by Amartya Sen). Although there is insufficient space to discuss it here, the history of the management of Kenyan elephant stocks provides an excellent example of this (Leakey 2001).

The expected returns from investment in natural capital turn out to be hard to pin down.

Valuing investment

We began by noting that thinking of higher education as a form of investment means finding elements of similarity between it and other kinds of capital assets. It is helpful to insist on the essentially metaphorical nature of this approach, because if universities, or nature, were simply machines for generating future returns through the sale of outputs within well-understood business parameters, then *valuing* them in the present would be easy. The process for doing so is well-established, sophisticated and rigorous, and might be described in very simple terms as follows. Future year-by-year returns of the machine would be estimated and then discounted to a net present value (NPV) using a rate of discount that takes account of human time preference, the alternatives available in the present, the degree of risk and uncertainty involved and other factors if necessary. If it were further the case that investment in higher education or some form of natural capital was the sole prerogative of a single individual or group, then a decision could be made by comparing this NPV with the initial outlay required. If the value of discounted future returns exceeded the initial outlay then the investment would go ahead.

However, valuable though it certainly is, this technique may not be adequate by itself for complex business decision-making. Mun (2002: 10) writes: 'Some of the answers generated through the use of the traditional discounted cash flow model are flawed because the model assumes a static, one-time decision-making process.'

Moore (2001: 191, original emphasis) makes the same point rather differently:

> The cash flow series forecast used in the familiar NPV model contains forecasts *conditioned* on accepting the proposal now (at time t=0) and seeing it through as planned. In essence, for a risky project you spend a given amount now (initial outlay) in exchange for a series of (probability) distributions of cash flows. The means of these distributions, i.e. the expected cash flows, are discounted to the present to obtain the NPV. This works fine for projects that present one decision-point, or more precisely, one condition. . . . But conditions may change for many capital investments, and you as a decision-maker may be able to switch to a new probability distribution given certain conditions. In such a case, use of NPV analysis as it is often presented may lead to the wrong decision.

More recently, Hertzler has made this point specifically in relation to the environment:

> The real option value of damage to the environment can be many times higher than the net present value and several times higher than the expected damage itself. In a world of uncertainty, real option values should replace net present values in all benefit–cost analyses.
>
> (Hertzler 2006: 37)

We are therefore entitled to ask if the NPV approach is adequate (at least by itself) for thinking about something as complex and multifaceted as either higher education or natural capital. The above authors suggest that, under the particular circumstances of complexity they describe, there is also a place for 'real options' analysis. Mun, in particular, identifies an impressive list of corporate investors (HP; General Motors; Boeing; AT&T) who have used this technique. It is extremely complex in application, but the point here is to ask whether it provides any metaphorical purchase in thinking about higher education and sustainable development as forms of investment.

A real option is a feature of a capital asset that provides an opportunity to make a choice about how the asset is to be used in the future. This concept is an extension of thinking from financial markets to physical assets (Amram and Kulatilaka 1999). The basic forms of real options can be seen in:

- capital equipment that can function for the same purposes in different ways or which can be turned without significant adaptation to different future purposes, as required;
- technological R&D platforms that can support various different possible future applications;
- stock that can be liquidated, or its value otherwise realised, under different sets of future circumstances.

The common element is that in all such cases valuing the asset depends on

seeing it as rational to accept – indeed, to welcome – uncertainty about the future, rather than trying (as on the standard discounted cash flow model) to diminish it as far as possible. This means that there is additional value in an investment if it creates future potential opportunities which cannot be fully evaluated in the present. Mun puts it like this:

> The real options approach takes into consideration the strategic managerial options certain projects create under uncertainty and management. . . . The real options approach incorporates a learning model such that management makes better and more informed strategic decisions when some levels of uncertainty are resolved through the passage of time.
>
> (Mun 2002: 10)

We saw earlier that higher education produces quite different future returns from the perspectives of different groups, and that these groups may 'invest' in it in quite different ways. This does not mean that NPV analysis is useless, but it does complicate matters because there are, in fact, a number of different NPVs to be derived from different expected future returns. Further, these future returns are in some ways connected, and this compounds the uncertainty that surrounds them. So, for example, it is possible to imagine a situation in which the development of a new information technology leads to a widespread expectation that there will be a future shortage of individuals with a particular skill. Governments may support university education and research related to that skill for reasons of national competitiveness, individual students may eagerly enrol because they anticipate high demand in the labour market, businesses may complain that they already cannot recruit staff to help them cope with planning for the mass introduction of the technology, and universities may close marginal departments to free up space and resources for the expected influx of enthusiastic students. Subsequently it may (or may not) happen that all of this rational forethought creates market oversupply, and that the technology fails at the trial stage, or turns out to have been overhyped, or surpassed by an alternative, or to be much more expensive than previously expected. Other opportunities, previously unimagined, may come along and the marginal departments may close just as their expertise becomes the focus of international retrofashion. In a system guided by real options thinking all those involved would be willing to incur some extra costs in the present in order to maintain options. So, for example, a university might:

- retain staff with broader rather than exclusively narrow skills to maintain curriculum *switching* options;
- develop space in generically useful ways to accommodate curriculum *switching*;
- *delay* capital development projects, accepting that the potential extra cost of subsequent rapid development is balanced by the value of an *abandonment* option if things do not work out as expected;

- retain sufficient expertise in marginal areas to provide an *expansion* option at a later date;
- initially pursue parallel strategic plans to create an option to *choose*.

All of the above have corporate parallels (Mun 2002). Governments and businesses might take a similar perspective on their own best sets of choices when faced with these same uncertainties. The situation facing students, however, is rather special and is considered below.

To illustrate real options in relation to natural capital we can return to our example of GM food. Here, society might consider undertaking exploration of the possibilities while deliberately maintaining an option to revert entirely to non-GM or to organic production on a much-enhanced scale. This option would cost something to create and maintain, and that cost would be analogous to the purchase price of a financial option. The option in question might be seen in two ways: as an *expansion option* on non-GM/organic production or as an *abandonment option* on GM production. If we take the first of these perspectives by way of illustration, we can say that the value of our expansion option on non-GM/organic production will be higher the longer the time period under consideration before a decision about such a production is required and the greater the uncertainty.

If the value of non-GM and/or organic crops does not increase over time then the loss incurred by society will be the full cost of setting up and maintaining the option. This, at least, we might expect to be calculable. Whether or not an option value can ultimately be calculated to compare with this cost, we should note that the real options approach responds positively in its valuations to high uncertainty and long time periods. In this at least it offers a qualitative 'sobriety test', and an invitation to rational reflection on our preferences. This is extremely important given the tendency of NPV approaches, which increase the rate of discount in the face of uncertainty and time lags, to produce minimal evaluations of environmental assets. Finally, if the value of non-GM crops does increase this might happen because either GM proves to be damaging or because non-GM turns out to offer opportunities of which we are presently unaware. In either case the value of the option may then have exceeded its cost.

We have seen that a real options approach embodies a learning orientation to the future and creates an enhanced and rather different perspective on its valuation. What that perspective might mean, in outline, has been explored from the perspective of both higher education and an important aspect of sustainable development, natural capital.

However, what is crucially important about universities is that they provide an essential part of the learning which takes place in society as human/environment inter-relationships develop and events unfold. This returns us finally to the situation confronting the individual student.

We have followed Sen (2002) in arguing that the pursuit of self-interest is not necessarily rational or irrational, and that we might look for evidence of rational behaviour in the continuous development of a person's preferences in the light of increasing knowledge and experience. A rational education would be one that,

starting from wherever the learner was, maximised increases in their capacity – in all its dimensions – to do this.

Such an education might still be described as an investment but it should be quite clear that an NPV approach to curriculum design is by itself inadequate to the task of valuing it. The future returns cannot be fully specified and present value is, in any case, only cautiously privileged. The addition of real options thinking to our investment metaphor, however, enables us to cope much more readily with the requirements of students who are learning their way into a presently indeterminate future.

And there is more to it than that, because sustainable development requires the same learning orientation. We might therefore conclude that higher education as sustainable investment would, starting from the existing capabilities and contexts of learners, seek to:

- increase their capability to access options;
- increase their skills in exploiting options they can access;
- increase their skills in valuing, revaluing and ranking their preferences.

In fact our case studies provide a number of rich examples of this.

The activities of case study six (Chapter 9) were in fact designed with some of these considerations in mind. Participating purchasing managers were introduced directly to the idea of real options during the course of the training they received, although it should be said that engaging with the concept directly at a theoretical level was not a requirement. However, coming to grips, in practical terms, with the actual complexities that real options theory attempts to describe was an inescapable fact of professional life for most participants. Health sector purchasing is extensive and varied. The sums of money involved are so large that very small percentage variations are significant. The implications of making one decision over another are labyrinthine, likely to result in a range of trade-offs and prone to yield quite differently valued outcomes depending on whether one is thinking about: (i) the next 12 months or the next 5, 10 or 50 years; and (ii) a community, a town, a county, a country, Europe or the world.

If one were, for example, considering the commissioning of a single new hospital, then the uncertainties are such that the options which *might* be worth retaining in the present, at some cost, include:

- the potential for expansion of functionally specific buildings into designated car parking space; this option acquires value if car use declines and public transport use increases;
- contract flexibility in the supply of, for example, garments, food, cleaning services and vehicles;
- flexibility of energy sources for heating and lighting;
- flexibility in terms of admissions and outpatient/community-based treatments;
- flexibility, for a range of products, in choosing how far to combine with other

health sector purchasers to obtain economies of scale, or how far to purchase as an individual institution to encourage competition among suppliers, small business, social enterprise and the local economy.

Decision-making in this area involves a great deal of uncertainty. Further, much of what is known is widely diffused among different practitioners, managers and academics. Decisions can only be well made in good faith and with a willingness to reconsider in the light of new information. This might seem far removed from mainstream ideas of rational economic choice; but it should also surely be clear that to suppose that such choices can be resolved without reference to economic considerations – on purely medical, social or moral grounds, say – is absurd.

In case study seven (Chapter 10) we saw the engineering uncertainties around, for example, the use of catalytic converters. These reduce pollution but have environmental implications through their significance for the mining industry. The nature of optimum solutions therefore depends on a whole range of unknowns or part-unknowns relating to future transport arrangements; the accounting of health impacts and the time spans and geographical range over which such impacts are considered significant; the outcomes of future research; developments in recycling; and so on. It is at least worth considering, in relation to present decision-making, whether retained flexibility in relation to these matters has a value.

Finally, we should note that, although some of the preceding discussion has been unavoidably technical, and although it is hoped that technical discussion may inform future action, it is also perfectly possible for action that is locally initiated on wholly non-technical grounds to subsequently withstand technical scrutiny. For example, in the UNESCO teacher-education initiative described in case study three (Chapter 6) we saw how the Department of Women's Studies at the University of the Punjab had focused on sustainable development through the empowerment of women. For a society it is hard to imagine anything more option-enhancing than that.

Chapter 15

Individual learning in higher education

In Chapters 12–14 we have considered our topic from the perspective of the different elements of sustainable development. We now adopt a different, complementary viewpoint, that of the theory and practice of learning in higher education.

As Cullingford and Crowther (2005) have noted, concern with how students learn in higher education has tended to focus on a particular intellectual tradition associated with the work of David Kolb (1984). Kolb's well-known concept of experiential learning describes a cyclical pattern in which experience leads to reflection and thence to conceptualisation and action. This action then results in further experience. Each successful transition from one stage to the next involves a particular 'learning style', and these are termed, in sequence, 'diverging', 'assimilating', 'converging' and 'accommodating'.

Significantly for our present discussion, this process has also been reconceptualised as a spiral (rather than a circle) in which each successive 'twist' begins at a higher level of knowledge and understanding than the previous one. Writers concerned to promote environmental education and education for sustainable development have for many years found this a useful theoretical device. It has informed the design of learning experiences capable of leading students into higher levels of understanding through engagement with a linked series of problems or obstacles (Robottom 1987; Greenall Gough and Robottom 1993; Stapp and Wals 1993). In particular, it is of value to anyone who takes a *paradigm shift* perspective on sustainable development, because it offers the possibility that learners can start from a relatively small and personally relevant issue and then progresses, through a series of self-motivated stages, to a perception of the unsustainable whole and the possibilities for change.

Approaches to teaching of this sort are pedagogically demanding. Students need to be provided with time to reflect on or discuss the learning that they have experienced. Lecturers need to be comfortable with at least a degree of initial uncertainty about what the eventual outcomes will be. The result, however, may be that students begin to construct knowledge for themselves – that is, achieve 'deep learning' – rather than be content with mere 'surface learning' that results from the absorption of what has been taught.

However, as Cullingford and Crowther point out, there is a tendency for 'learning style' to become equated with 'learning quality' in a way that is a variance with the original conception (and, to a degree, the original terminology). They write:

> The original conception was focused more on style than on outcome; the serial learner could be meticulous and exact, just as the holistic one could be vague and superficial. The more common terms, deep and surface learning, are bound to be associated with the obvious distinctions of successful concentration and the lack of it, that lecturers experience every day. The notion of learning style, therefore, is hard to invoke as neutral and descriptive.
>
> (Cullingford and Crowther 2005: 33)

Whether neutrality matters in this context is a question we can ask at two levels. First, there is the issue of whether we want student success to be associated with deep learning in relation to sustainable development. This cuts both ways because we would be forced to equate failure both with deep learning that did not include sustainable development and with surface learning specifically about sustainable development. Second, there remains the possibility that student deep learning in relation to sustainable development actually takes forms other than those we have anticipated. This is likely to be a particular problem for those paradigm shifters who have delineated the new paradigm in great detail. Ironically, it also raises the question of how far they themselves are willing to countenance new (deep) learning that might change their own views.

At a general level, we may say that the tradition associated with Kolb's work tends to lead to a conception of learning styles as being consequent on appropriate pedagogic design by teaching staff, and voluntary engagement and motivation on the part of learners. This is not the only possibility, however, as Cullingford and Crowther note:

> In research on learning styles of pupils in schools . . . another tradition prevails. This is the more ancient notion of learning styles as manifestations of different approaches and abilities in terms of subjects . . . and the possibility of matching subject matter to the particular bent of individual pupils.
>
> (Cullingford and Crowther 2005: 33–4)

This second tradition is associated with the work of Hudson (1968) on 'frames of mind' and, more recently, of Gardner (1993) on 'multiple intelligences'. A list of possible learning styles in this conceptualisation might include: visual–spatial; bodily–kinesthetic; musical; interpersonal; intrapersonal; linguistic; and logical–mathematical. These derive, quite clearly, from psychological dispositions of the learner rather than characteristics of the learning process itself. We should note, however, that there exists a vast literature on the theory and practice of learning styles within which it is possible to find other taxonomies that seem to combine

characteristics of both approaches. For example, D'Andrea (1999: 54) suggests that 'as a learner, a student might be independent, collaborative, dependent, avoidant, competitive or participative.'

It should be clear from the foregoing brief discussion that a major consideration for any attempt to pursue sustainable development through the higher education curriculum is that the individual student participates, inevitably, within a shifting, context-influenced framework of personal dispositions and expectations. Many (if perhaps not quite all) aspects of this framework are captured by the concept of 'positionality', which Wellens *et al*. (2006), writing in the context of higher education for social transformation, define as follows: 'This is the notion that where an individual is located in the social structure as a whole and which institutions he/she is in affect how she/he understands the world'.

Given that the focus of the paper by Wellens *et al*. (2006) is on social transformation through geography teaching, it is unsurprising to find that it overlaps with a number of areas of sustainable development. Indeed, the authors specifically refer to the need for higher education to challenge students' preconceived ideas in relation to economic, social, environmental and political issues. Such initiatives would involve both an awareness of the learner's starting point and the capability to design situationally appropriate educational processes. It would also, it seems, involve a willingness to learn on the part of university teachers:

> If we want to establish a method of social transformation through critical reflective practice, we need to introduce a process of self-questioning that challenges our positionality as defined by our own value-system and lays it open to the critique of all those who may be concerned.
>
> (Wellens *et al*. 2006: 122)

All of this raises the question of how one might arrive, as a teacher in higher education with a concern for sustainable development, at a representation of particular students' positionality, or at least a working approximation of it. One possible tool for doing this is shown in Figure 15.1 (Gough and Scott 2001; Scott and Gough 2003).

Examples of an 'organisational institution' include universities and, within them, faculties and departments. However, the term also extends to institutions to which students and academics may belong that influence their thought and actions more widely. These include the family, religious groups, clubs and societies and, in the case of academic staff, trades unions, disciplinary associations and the like.

A 'cultural institution' is an established way of thinking or organising that has become integral to who people think they are, or what they believe to be possible. The notion was first developed in the context of school education by Reid, who explains it thus:

> Once . . . things achieve social and cultural significance, they acquire a life of their own. They become institutionalized in a dual sense. They need institutions to preserve them, but they also *become* institutions in

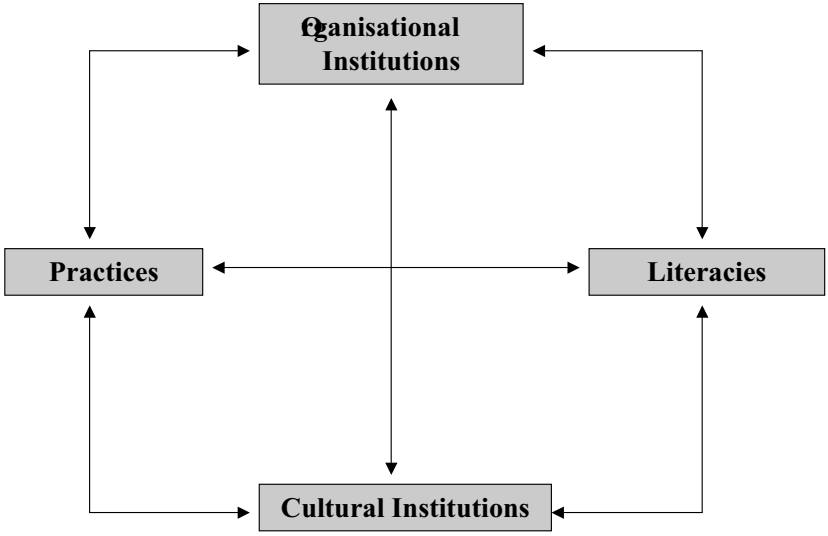


Figure 15.1 A model of categories of social influences on sustainable development and learning.

> the more elusive sense of an idea that is integral to a culture and seen as significant by most of its members. Being in the third grade becomes an important defining characteristic of a person – as does being a third grade teacher.
>
> (Reid 1999: 111, original emphasis)

By way of illustration, it is clear that 'novice teacher' is also – in exactly the same terms – a kind of cultural institution. It is a meaningful and almost universally understood term, which many students at universities around the world would accept as applying to them. In case study three (Chapter 6) we have seen how the United Nations Re-orienting Teacher Education to Address Sustainability initiative has sought to challenge and change perceptions of what it means to be a trainee or novice teacher so that, broadly speaking, the role becomes less about apprenticeship and more about agency for change.

The term 'practices' in Figure 15.1 refers to the established, time-honoured ways of working that are associated with many professions and trades. These may develop considerable inertia and present a major obstacle to change. At the same time practitioners may feel that adhering to them is essential for the maintenance of their own sense of identity. For example, issues of this sort are clearly involved in creating an identity as an engineering student, and subsequently as a qualified engineer. Progress towards sustainable development, in the terminology of Wellens *et al*. (2006), may well require that these be challenged. In case study seven (Chapter 10), the Royal Academy of Engineering visiting professors scheme, we find an interesting example of this actually happening. When used as

a resource for teaching, the Jubilee River flood alleviation scheme case study requires students and lecturers to take a positive view of collaboration by engineers with other specialists (such as planners, landscape architects and ecologists), and to develop a readiness to accept that apparently sound engineering solutions may fail, creating a need for adaptiveness and remediation.

Finally, the term 'literacies' is used here to refer to the different ways in which people may interpret signs and signals that they receive from the natural and social worlds. Stables and Bishop (2001) have pointed out that the term 'literacy' is often used in a very imprecise way to signify desired educational outcomes. So, for example, to speak of 'environmental literacy' is to suggest that there is, in a sense, an environmental 'text' that should be read in a particular, correct way. The metaphor here depends for its power on the comparative idea that written texts mean what the author intended them to mean – a proposition that literary theory has long since abandoned. In fact, it makes good sense to think of the environment as a text, as a set of signals to which we respond. It is even reasonable to say, as we have seen in our discussions of the society/environment relationship, that this 'text' is partly 'written' by humans. But there are many different, often competing ways of 'reading' it. Consider, for example, case study two (Chapter 5) of the MESA initiative, in which different disciplinary 'readings' of the environment (from the perspectives of, *inter alia*, economics, geology, meteorology, conservation biology and so on) must compete in a context of limited resources and imperfect communications with the literacies of mining operatives, national and international political leaders, military figures, development agencies and many others. All of these make sense of the signals they receive in different ways and, we should note in passing, some of them have been trained, by universities, to consider their own particular 'reading' to be an objective one. All of them are also likely to be affiliated to organisational institutions of different kinds, to respect particular cultural institutions, which may be more or less widely shared with others, and to be steeped in particular practices. If this analysis suggests extraordinary complexity, then it is perhaps worth re-stating here the objectives of the MESA initiative, which show considerable awareness of just how complex things are:

- to enhance the quality and policy relevance of university education in Africa in the context of sustainable development and the achievement of the Millennium Development Goals;
- to increase knowledge of education for sustainable development (ESD), so that future business managers, scientists and political leaders of the continent will incorporate ESD principles in their decision-making;
- to raise awareness, spreading a new way of thinking about development and society beyond university boundaries, so reaching inside the many other social circles in which students and teachers live their lives;
- to offer new opportunities for collaborative projects between university management, teaching staff, students and representatives of the private sector and civil society.

One very clear implication of our developing argument is that student (and teacher) learning in higher education in relation to sustainable development cannot be *solely* based on a process that begins with personal experience in the Kolbian sense. We have, rather, identified a need for learners to be challenged by the (possibly, to them, very strange and marvellous) experiences and perceptions of others. In fact, however, this situation does not represent anything new in pedagogic terms. It is merely a particular manifestation of an issue that goes to the heart of teaching in higher education. Laurillard discusses this wider issue in the context of the example of a physics lecture about the force of gravity.

> We certainly use our everyday experience to help interpret the meaning of the physics lecture, and to an extent that helps. But it is important to go beyond that to attain the true scientific meaning. The physics lecture cannot, however, offer any new experience of the world to match this new idea. It offers only a different way of thinking about apples falling, of seeing them as being essentially similar to planets orbiting the sun, or atoms orbiting an electron. Every academic subject faces this same kind of challenge. . . . Everyday knowledge is located in our experience of the world. Academic knowledge is located in our experience of our experience of the world.
>
> (Laurillard 2002: 21)

Laurillard uses the term 'mediated learning' to describe the learning of descriptions of the world that originate outside the learner's own direct experience of the world, and which allow knowledge to be developed of the ways in which others experience it. The present authors (Scott and Gough 2003) have incorporated this terminology into a model of learning in relation to sustainable development. This model is shown in Figure 15.2.

The model accepts that whether or not sustainable development happens does not depend only on what people learn, and certainly not only on what happens within structures of formal education. Many factors influence the sustainability outcome and some of these are enumerated in the box at the foot of the diagram (economic policy, social policy, legal context and so on). We should note that these factors will be influenced strongly by organisational institutions and will be operationalised in the context of an ongoing interplay between established cultural institutions, practices and literacies. They will also have a direct influence on what people learn, both within formal and non-formal educational processes and beyond. Quite simply, people learn things all the time, but they do not necessarily learn what they are taught.

This said, learning is important and it does occur as a result of deliberate educative interventions, including those that occur in universities. Indeed, universities are unique in one very important respect, which is that the actions of their graduates feed back in a relatively short time and potentially very influential fashion into the context of learning and sustainable development. Graduates make, or can make, a difference to economic policy, social policy, technological innovation and so on.

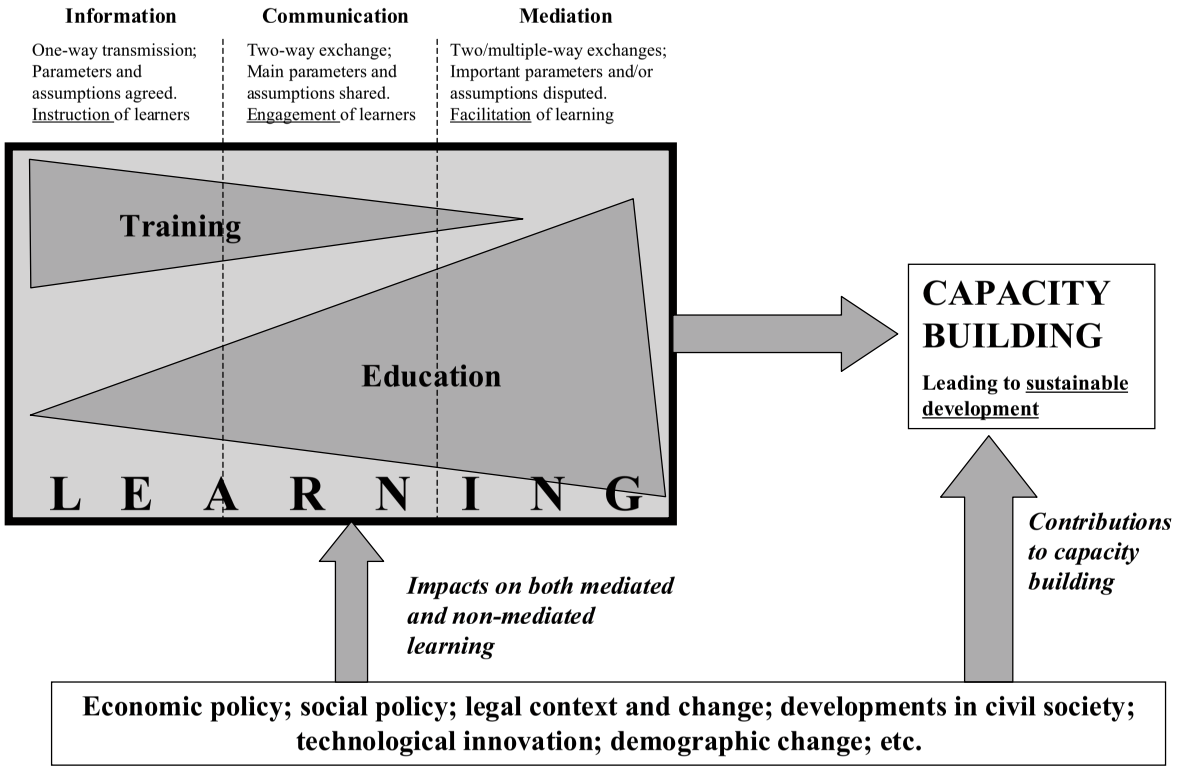


Figure 15.2 Information, communication, mediation: contributions to capacity building.

Within the model, learning is conceived as taking three forms:

- *Information*. Here, understandings that the learner has already developed through direct experience, or through previous educational interventions, are compatible with the aspect of sustainable development being taught, given only that new information is provided and understood. For example, procurement officers (case study six) are typically quick to institutionalise more sustainable practices when these can be clearly shown to save money.
- *Communication*. This involves a process of two-way exchange. It is likely to succeed when the learner's existing knowledge is compatible in principle with the new, taught knowledge, but when particular, context-specific details need to be worked out or clarified. In case study one we saw how University Leaders for a Sustainable Future worked to facilitate this kind of communication through the establishment and maintenance of the Talloires Declaration, so facilitating exchanges on how to match sustainability principles to local circumstances between over 320 signatories in more than 40 countries.
- *Mediation*. As we have seen, learning in relation to sustainable development may often involve the juxtapositioning of multiple perspectives, which are perhaps apparently (or actually!) incompatible or opposed, in a context of uncertainty and incomplete knowledge. It is this mediated learning that is essential if challenges to 'positionality' are to be mounted within higher education as a means to social transformation. The work of the Royal Academy of Engineering (case study seven) provides a particularly good example of work of this kind, as we have already implied. However, interesting lessons are also to be learned from case study four, which concerns the work of the Higher Education Funding Council for England (HEFCE).

This is because, in the development of its approach to sustainable development, HEFCE has been obliged to concern itself with more than just the potential for mediated learning between disciplinary specialists and professional bodies, and the institutions, practices and literacies that they embody – important and complex though this is. HEFCE has also found itself attempting to facilitate a process of mediation between both different perspectives on sustainable development and different views of what a university is for. This is clear from the responses to the reactions to the HEFCE circular, *Sustainable Development in Higher Education: Consultation on a Support Strategy and Action Plan*, which are described in case study four (Chapter 7). For example, a particular *task-based* perspective is in evidence at the university which stated that:

> The funding council takes . . . an approach to sustainable development that focuses on the environmental issues and pays scant attention to the ethical, social and moral dimensions of sustainability. Perhaps this is not surprising given the composition of the external advisory group. It is our

> belief that sustainability has to be approached through preparing our graduates as global citizens which also requires leading by example.

A more *pragmatic* perspective is suggested by the following response:

> The University . . . is committed to the implementation of sustainability in a wide range of operational areas (e.g., estates services, energy supply, purchasing and waste management), and to support research and teaching that seeks to address environmental issues, as part of the University's wider academic portfolio. But the University is not persuaded that the concept of sustainability espoused in the strategy should form a central principle of institutional management.

Similarly, a sense of the real world view of a university's purpose can be detected in the response: 'If achieved, the action plan and support strategy are clearly linked. There are many sensible and encouraging comments included in both; however, there are major barriers to overcome.' Whereas from a more ivory tower view we read: 'It is not the job of universities to promote a particular political orthodoxy; it is their role to educate students to examine critically policies, ideas, concepts and systems, then to make up their own minds.'

HEFCE's research initiative to establish a baseline of activity in universities in England in relation to sustainable development is under way at the time of writing. It may well provide further insights into, and opportunities for, processes of mediated learning in relation to higher education and sustainable development.

This chapter has sought to illuminate issues of individual learning in higher education in relation to sustainable development. It has not abandoned that focus – after all, statements issued by universities are produced through the actions of individuals or groups of individuals, and institutional-level agreements like the Talloires Declaration also lead to learning by individual people. Nevertheless, it should be clear that, in the last few paragraphs, the notion of learning at the institutional level has begun to loom large. This, we believe, is inevitable. Chapter 16, therefore, focuses on the possibility of learning of a more social nature.

Chapter 16

Collective learning in higher education

The term 'collective learning' is used in this chapter simply as a means of grouping together a range of conceptualisations such as organisational learning, social learning and network learning. What these are taken to have in common is that, for all of them, learning is said to occur at some level above and beyond the individual person. Whether this is a literal possibility, or whether only an individual can learn and therefore conceptions of collective learning are necessarily either metaphorical or reducible, is a question that we shall leave for others to explore.

Before proceeding we should also note that a halfway house exists between individual learning and collective learning in the form of individual learning through teamwork. In this, individual learning is harnessed to the achievement of a team task. The process is well illustrated by a recent project at the University of Southampton, which sought to explore the dynamics of teamwork training.

> The team skills training environment is experiential in nature, designed around the principles of Kolb's learning cycle (Kolb 1984). Students work in groups on a variety of tasks that require them to work together. Each task provides the focus for a subsequent review activity in which students have the opportunity to reflect on what happened during the task with the other group members, sharing their reactions and observations of the reactions of others involved. From this process students are able to integrate their experience with other information and knowledge they have, develop greater understanding of why things happened in the way that they did and establish key learning points for future team tasks. These learning points are then applied to the next task so that their new learning can be tested and practised, after which the cycle begins again.
>
> (Pritchard *et al*. 2007: 6)

Individual learning by its members is usually seen as important to an organisation's capacity to change and survive over time, and we might expect that any

organisation would require that a minimum of teamwork occurs simply *to be* an organisation. However, it is also possible to think of learning as a process that is in some sense collective, at any level from the team to the organisation as a whole, and beyond to inter-organisational networks (Knight and Pye 2005). Such learning would add something to the network, organisation, team or group, over and above the particular learning of separate individuals within it. Its effects might be expected to endure, even if members of the original collective subsequently left or were replaced.

It may further be argued that learning across all levels is essential for organisations and groups of organisations to adapt to major internal and external environmental shifts and challenges such as those presented by sustainable development. If this is so, then the implications for learning in a complex, multifaceted and widely networked institution such as a modern university are far-reaching and multidimensional. Such learning may be expected to occur within and between nested sets of elements (faculties, departments, centres, course teams, administrative functions and so on), and it needs to be understood in terms of an extensive but diffuse literature of network behaviour, including work on communities of practice, organisational learning, network learning, e-learning, mediated learning and network design (e.g. Argyris and Schön 1978, 1996; Lave and Wenger 1991; Senge 1992; Tidd 1997; Tsang 1997; Hayes and Allison 1998; Tagliaventi 2006).

There are a number of ways in which people in organisations are believed to change their ways of thinking and acting. In the face of a specific problem this might happen through feedback from others (Weick 1979). It might happen through reference to other organisations (DiMaggio and Powell 1983) and, interestingly enough, this might be described as anything from 'mimicking' to 'benchmarking'. It might happen through bringing in outsiders with new ideas (Kamann and Bakker 2004). However, as we saw in Chapter 15, internal barriers within (or between) organisations frequently operate to impede learning, and may take the form of inflexible adherence to particular practices, literacies and/or cultural institutions (Gough and Scott 2001). Further, when useful learning does occur it will not necessarily be the planned result of any deliberate intervention. It may also, sometimes, be a source of discomfort for the learners.

It is clear that collective learning is both particularly problematic and, potentially, particularly valuable in circumstances where relevant knowledge is incomplete and diffuse, and where it may be either academic or experiential in nature. This precisely describes the situation relating to sustainable development (Scott and Gough 2003). Further, as Laurillard (2002) points out, individuals may possess valuable experiential knowledge, which is 'situated' by virtue of its development within 'communities of practice'. That is, it has been developed in relation to a particular context and with reference to particular organisational and cultural institutions, practices and literacies. As a result it may be highly contextualised and difficult to communicate to those outside the community of practice (Brown and Duguid 1998) – although this may be exactly what is required for, say, the development of more sustainable ways of living. Successful learning interventions at this organisational level would therefore seem to require continuous, creative

facilitation and management to ensure that knowledge from different sources is not just communicated but understood. The resulting processes may be described in terms of a number of different theoretical frameworks, including semiotic learning theory (Stables and Gough 2006) and cultural–historical activity theory (Kerosuo and Engeström 2003).

What clearly emerges from this discussion is that learning (however conceptualised) within and between networks of individuals, groups and organisations is likely to be an important feature of any successful initiative linking higher education and sustainable development. Every single one of our seven case studies involves the operation of one or more networks and anticipates that elements of those networks will learn from each other.

- Case study one: University Leaders for a Sustainable Future co-sponsored an interesting exercise in international networking in the shape of the Halifax Consultation of October 2005. Experts were assembled from around the world and given the opportunity to engage in focused, structured exchanges around a specific task (generating a higher education/sustainable development research strategy) and through a specific networking tool (the Delphi process). Interestingly, the informal outputs of this event, in terms, for example, of the establishment of an ongoing basis for the exchange of ideas, seem at least as significant as the formal outputs.
- Case study two: The Mainstreaming Environment and Sustainability in African Universities (MESA) project is enormously ambitious in terms of linking institutions (and individual academics) across the continent that have a shared understanding of each other's problems. In particular, this network enables the pooling of institutional capacity (in terms, for example, of infrastructure, skills and resources) and the sharing of inputs obtained from the rest of the world. For example, Akpezi Ogbuigwe was one of those who attended the Halifax Consultation, and MESA enables the benefits of that participation to be spread.
- Case study three: the UNESCO Re-orienting Teacher Education to Address Sustainability project has been focused around the creation of a global network to enable practitioners from around the world to gain insights into the successes and difficulties experienced by others and to draw on expert inputs to create tools for collaborative learning. A particularly good example of such a tool is the Teaching and Learning for a Sustainable Future multimedia teacher-education programme, which uses an impressive suite of pedagogies and is available free in convenient formats.
- Case study four: the work of the Higher Education Funding Council for England (HEFCE) is slightly unusual here in that rather than creating a network it is seeking to stimulate particular kinds of activity within a network that already exists. The 130 institutions of higher education in England, although fiercely independent in many respects, are also linked in a number of ways. For example, the Higher Education Academy has academics from

across the sector among its fellows and is supportive of a role for universities in the pursuit of sustainable development.

- Case study five: in their account of sustainable development/rational nature management in Russia, Kasimov and Masurov report the fruits of networking between specialists in different disciplines, both during the time of the Soviet Union and in the more recent history of the Russian Federation. What emerges most strikingly is the importance that they attach to linking scientific understanding to the creative interpretation of past experience. It is hard to see how this can happen without the collaborative networking of a wide range of individuals and institutions.
- Case study six: the research conducted under the auspices of the UK National Health Service Purchasing and Supply Agency used an online learning environment to create networks of practitioners engaged in the solving of a sequence of specific, topical, practice-related problems. Participants then presented their solutions to a wider network of policy-makers. One particularly noteworthy outcome was that some participants have maintained their network links beyond the end of the project, and continue to participate in policy-level discussions at the national level.
- Case study seven: the Royal Academy of Engineering visiting professors scheme has the participating professors as the core of its network. They meet together on a regular basis to share ideas. However, the project has also led to wider networking, which shares its insights and draws in lessons from elsewhere. So, for example, a representative of the Academy plays a central role in advising HEFCE on the ongoing development of its sustainable development initiatives.

All of these networks are different. Research (by the authors) into the role of learning networks in international biodiversity conservation, funded by the John D. and Catherine T. MacArthur Foundation in 2005 on behalf of the World Wildlife Fund (WWF), led to the development of a network analysis and design tool as a means of both classifying existing networks and, potentially, custom-designing new ones to meet particular learning purposes. This tool is presented in Figure 16.1. Not all categories will be relevant to all networks and it is very likely that the full analysis of some networks – particularly those operating within specialised contexts – will require the use of other categories in addition to those listed. The intention is that, through the use of the tool, either a comparison of particular networks across a set of standard categories is facilitated or the deliberate design of a particular network is facilitated through the raising, in a systematic way, of important issues and choices.

It will be seen that this tool is designed to yield strictly factual information about any given network (such as its name, its sources of funding, its approach to evaluation and its means of disseminating its work) along with more qualitative analysis based on two theoretical devices introduced earlier in this book. The first of these devices is the model of categories of social and personal influences

Key characteristics checklist

Network name: .....

Key members: .....

Collaboration across:

	Yes/no
Agencies	
Disciplines	
Practices	
Philosophies/methodologies	

Structure:

	Formal	Informal
Collegial		
Hierarchical		

Purpose:

	Main	Subsidiary
Outputs		
Outcomes		
Impacts		
Process		

Expectations for learning:

	Cognitive (knowing)	Affective (emotional)	Conative (action and interaction)	Integrated
Within the network				
Beyond the network				
Between networks				

Figure 16.1 Network analysis and design tool.

Scale:

	Permanent	Occasional
Local		
Regional		
National		
International		

Technology:

	Newsletters	Email	Virtual	Video link	Meetings	Shared/ collaborative experience
Yes/no						

Driven by:

	Trust	Rules	Competition	Chance/ opportunity
Yes/no				

Funding:

	One member	Some members	All members	External
By:				

Issues addressed:

	Single (S) or multiple (M)	Identified externally	Identified by internal leader(s)	Identified collectively
Strategic approach				
Opportunistic approach				

Evaluation:

	Regular	Sporadic	End	None
Yes/no				

Figure 16.1 Continued

Dissemination:

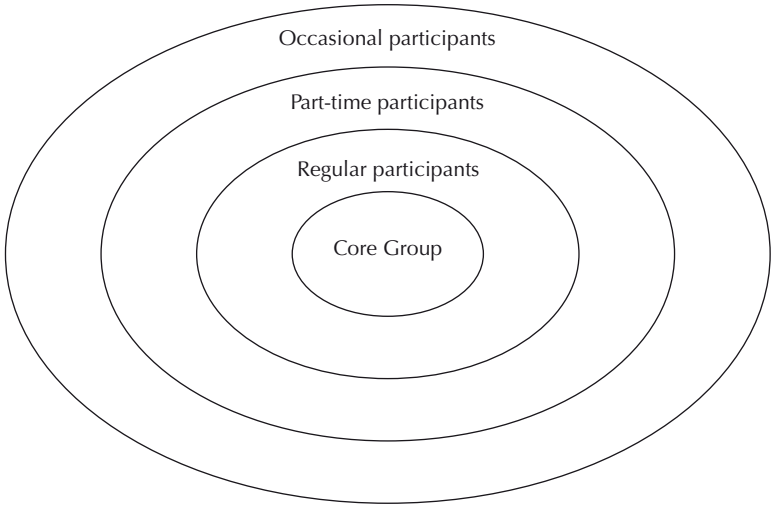
	Internal only	To wide/non-specialist audiences	To narrow/specialist audiences
Email			
Newsletter			
Reports			
Websites			
Conferences and seminars			

Network content analysis

What are the main organisations involved in this network? How are they related to each other?
What is each of these organisations committed to? For example, are they committed to endangered species conservation? A charter or statement of purpose? Creating value for shareholders? Value for money? Brand maintenance? Electoral popularity? Social equality? Increased market share or dominance of their sector? Educating citizens? And/or something else?
What *literacies* are involved in the network: i.e. how do participants in the network understand or 'read' the natural world? For example, do they favour the language of biology? Ecology? Economics? Poetry? Industry (and if so, which)? Public administration? Education? And/or something else?
What *practices* are implicated in the network? For example, teaching? Cost–benefit analysis? Psychological profiling? Marketing? Biological research? Anthropological research? Park management? Democratic governance?

Figure 16.1 Continued

Network communication structure analysis



	Who?
Core group	
Regular participants	
Part-time participants	
Occasional participants	

How does communication occur within each layer?

How does communication occur between layers?

How is the degree of participation of particular individuals and organisations determined?

Who is in the core group and how are they selected?

Figure 16.1 Continued

Network learning profile

	Formal education	Training	Non-formal education and learning
Information			
Communication			
Mediation			

What learning does the network actively promote?

How does it do this?

Figure 16.1 Continued

on sustainable development and learning illustrated in Figure 15.1, and the second is the information/communication/mediation model of learning shown in Figure 15.2. Hence, the 'Network content analysis' section might identify the Re-orienting Teacher Education project as being committed to the enabling and facilitating philosophy of UNESCO (a cultural institution embedded in an organisational one), guided by a literacy derived from an established tradition of education for sustainable development (ESD) and focused on the practices of teacher education. The Royal Academy of Engineering scheme, which makes use of the status enjoyed by senior professors (another cultural institution), is particularly interesting because it seeks to retain its focus on engineering literacy while extending and developing it, and engages with a range of practices including flood control, mining and automobile manufacture. Similarly, the 'Network learning profile' might reveal that some of the work of the MESA project is concerned with non-formal information provision (such as the open MESA lecture of 2006) whereas, by contrast, some of its other activities are focused on mediation in the training sector – an example being the education innovations workshops for university teachers. A further source of qualitative information within the tool is the 'Network communication structure analysis', which explores the structure of a network in terms of its core and more peripheral members, and asks how communication occurs between them.

Finally in this section we should note that there is increasing interest in the use of information technology in one form or another as the basis for networks and for learning at the collective level. The term 'networked management learning' has been used by Hodgson and Watland to describe:

> learning by managers that is supported by ICT (information and communications technology) used to connect learners with, in particular, other people (learners, teachers/tutors, mentors, librarians, technical assistants, etc.) as well as to learning resources and information of various kinds and types.
>
> (Hodgson and Watland 2004: 99)

However, although the notion of 'virtual communities' has acquired some currency, many of those involved in them stress the importance of face-to-face meetings, along with the need to shake hands and see somebody's face (Maznevski and Chudoba 2000; Walker 2001). Research suggests that, to help virtual teams succeed, organisations need to invest in opportunities for face-to-face interaction.

This finding from research is supported by case study six (Chapter 9) on learning for sustainable procurement in the UK health sector, in which great importance was attached to initial, face-to-face interactions between members of virtual teams. Indeed, the initial face-to-face workshops had the building of working relationships between participants as a key organisational driver. Over the two days, every participant was given cause to work in a group with every other participant on at least one occasion. Those who would subsequently be members of the same virtual team worked together frequently and were required to complete paper-based, online and presentational tasks together. They were also required to reassemble at the midpoint of the six-week virtual learning phase to take part in a videoconferencing event. This had the effect of recementing their sense of personal colleagueship. As already noted, some of these virtual teams have endured beyond the end of the project, and there seems no doubt that this owes much to the establishment of solid interpersonal relationships at an early stage. It is likely that these teams will participate in an instructional capacity when future projects are run – so, perhaps, providing an example of added value through learning at a strictly organisational level.

In fact, the design of the sustainable procurement learning initiative was informed by previous experience obtained at the University of Bath during the design (by the authors) of an e-learning training programme for conservation managers employed around the globe by the WWF. These managers were specifically concerned with a project called 'ecoregion conservation', which was long-term, multidisciplinary and concerned, in effect, with the achievement of sustainable development across large geographical areas (such as the Bering Sea or the Chihuahuan Desert). They were very varied in both their academic backgrounds and their professional experiences. Most of them had never met each other or were only slightly acquainted.

Through a series of eight 'virtual workshops' this programme enabled participants to engage with the operationalisation of WWF's published strategy for ecoregion conservation, both through short group activities and in relation to larger, long-term, overarching tasks. Throughout, the Chihuahuan Desert ecoregion was used as an example and a basis for activities, so grounding the work in issues

that were real, topical and of kinds likely to be representative of the current experience of all those involved. Further, at a late stage in the participants' progression through the programme, a preplanned but – to them – totally unheralded emergency (rapid depletion of a key local environmental resource) was simulated to force each virtual team of learners to bring its collective skills to bear quickly and effectively.

Yet for all its careful preparation and innovative e-learning pedagogy the ecoregion conservation training was not a success. Although some excellent work was produced within some virtual teams, and although some learning certainly took place, participation and completion rates were less than satisfactory. No doubt some of the problems experienced were technical in nature. For example, some participants had inadequate access to the internet during the period that the programme was scheduled; many of the exercises proved to be more time-consuming than either the facilitators expected or the participants had allowed for; and some of the activities were clearly inadequately explained to participants. However, it was also very clear that even normally confident individuals tended to be reluctant to participate online in anything other than the most conservative fashion when dealing with people whom they did not know and had not met. We might conclude that, although successful collective learning in the higher education setting, and in relation to sustainable development, usually entails a great deal of complexity, it can be undone by the simplest of failings.

One shared aspect of both the WWF online learning programme and the UK health sector sustainable procurement training project, which it subsequently informed, was that they were conceived from the outset as serving two distinct purposes. One was to meet the training requirements of an external client of the university. The other was to generate useful data and research insights. It is to the question of the linking of research and teaching, and the significance of this for higher education institutions seeking to engage with sustainable development, that we turn in Chapter 17.

Chapter 17

Linking learning and research

In Chapter 15 we noted the influence of the Kolbian tradition of learning in higher education, and its particular compatibility with the *paradigm shift* perspective of sustainable development. In fact, this tradition has a long history of association with linked learning and research in relation to issues of social transformation, particularly those concerning social justice and the environment. It builds, particularly, on foundations in education and management. In education we should mention the influential work of Stephen Kemmis and his colleagues (for example Carr and Kemmis 1986; Kemmis and McTaggart 1988; Kemmis and Wilkinson 1998), and also Elliott (1991). In management, the contribution of Peter Reason and his associates (for example Reason 1988, 2006) seems particularly significant. Of course, all of these authors also have their own particular intellectual antecedents.

Kemmis's work was developed – with particular reference to 'environmental education' but with a clear understanding of this term as comprising both environmental and social justice elements – by Robottom. At the heart of his approach is action research, which:

> is mediated by *praxis*, by practitioners' critical reflection upon their professional activities. It aims at *personal* improvement through praxis applied to the dialectic between thought and action. It also aims at program and institutional improvement through praxis applied to the dialectic between individual action and societal structure and history (that of the program, or the institution, or society at large). Action research promotes rational decision-making in the sense that the practitioner (or group of practitioners) is able to choose between alternative courses of professional action, the respective rationales of which have been subject to deliberation by the practitioners themselves.
>
> (Robottom 1987: 109–10, original emphasis)

Subsequently, Robottom and Hart (1993) attempted a synthesis of this approach with that of Reason (1988), drawing particularly on the latter's concept of

'new paradigm research' and adducing three key lessons for research and teaching in terms of:

- a need for 'deep enquiry' that is more holistic in nature (the enduring influence of Kolb can clearly be seen here);
- the importance of developing 'critical subjectivity' that avoids the alienation of knowledge from its source associated with strictly objective enquiry;
- the merit of a constructivist view of knowledge as being formed in, and for, action.

We should note that this tradition continues to be influential. For example, in her account of work linking university teaching and research with issues of social justice, Walker writes:

> Our personal experiences of practice are significant in our action research stories, even though the academy still demonstrates a limited tolerance for the personal, the popular and the passionate – which seems strange when education is so embedded in our personal lives and the subtle messy details of the everyday.
>
> (Walker 2001: 31)

And again, Lotz-Sisitka and Raven (2004) cite Robottom's work specifically in their account of research in the Gold Fields Participatory Certificate Course programme in southern Africa – work that seeks critically to develop an understanding of the relationship between higher education and sustainable development in that context.

However, this particular tradition of action research has also been criticised from within the field of education, and specifically from the perspective of environmental education. These criticisms raise again some of the issues of individual and collective learning discussed earlier, most particularly the concern that individual learning is typically situated within a pre-existing social context. If research and learning in relation to sustainable development are to occur in tandem through the shared reflective practice of academics and students then, it has been argued (Walker 1997), proper account must be taken of the understandings that these people bring to the situation.

Practitioners in higher education – both academics and policy-makers – have beliefs about the nature of effective teaching and learning. These beliefs are likely to be about how students learn, how teachers learn, the meaning of sustainable development and so on. They may not always be held consistently. For example, a particular academic could 'espouse' (Argyris and Schön 1978) a particular view of effective practice and sustainable development while being guided in their day-to-day professional work by a quite different 'theory in use'.

Work in the field of educational change offers one possible clue to the range of influences on the theories of which practitioners may hold. Blenkin *et al.* (1997) note the following possible perspectives for educators:

- *Technological*. Desired learning results can be achieved through efficient and effective instrumental action.
- *Cultural*. Learning can best be achieved when practitioners and others defer to cultural norms that are deep-rooted and, for the most part, intuitive and implicit.
- *Micropolitical*. Learning is contingent on micropolitical power struggles within educational institutions.
- *Biographical*. Practitioners' views of learning depend on where they are in their careers and what is happening in the rest of their lives.
- *Structural*. Practitioners' views of learning are influenced significantly by broad social trends.

All of these perspectives may combine to influence personal theory-formation about teaching, and therefore about how teaching relates to research and, in fact, sustainable development. Speculatively, it is not hard to find parallels between the educator perspectives of Blenkin *et al*. (1997) and the perspectives on sustainable development identified in Chapter 2. For example, a lecturer with a *technological* perspective on learning might be expected also to have a technocratic perspective on sustainable development, and one with a micropolitical or biographical perspective on learning might take a *pragmatic* view on sustainability.

Robinson (1993) has further developed Argyris and Schön's (1978) work on organisational learning to argue that practitioners have personal 'theories of action' that express the meanings, values and purposes behind their actions. These theories are used by practitioners to make sense of, and attempt to solve, practical problems. Theories of action co-evolve with, and typically exhibit the same complexity and context-specificity as, the personal practitioner theories of teaching and learning discussed above. They are an attempt to resolve competing claims and uncertainties as these are experienced by that person, within the constraints (and opportunities) of their particular context. It is these established theories of action, it has been argued, that may sometimes be neglected within the action research tradition described above.

We would argue that our case studies provide evidence that this point of view is valid in some circumstances. For example, the great variation in the responses that the Higher Education Funding Council for England (HEFCE) has received to its sustainable development initiatives (case study four) seems to suggest that they are being interpreted in fundamentally different ways within different institutions. Most interestingly for the present discussion, it is quite clear from continuing HEFCE-funded research with English universities that some institutions have an integrated – or at least complementary – approach to teaching and research in relation to sustainable development, whereas others are active in both teaching and research but treat them quite separately (many also, it should be said, report little activity for reasons that they consider to be good ones, and have no articulated 'approach' to sustainable development at all, not even one of *laissez-faire*). The result of the existence of varying practitioner theories is that carefully designed, research-grounded initiatives may be seized on enthusiastically

by academics who are, for example, disposed to see an instrumental role for their teaching; personally committed to sustainable development; and able to represent the combination of the two through their practice, to their peers, as appropriate professional behaviour. On the other hand, those same initiatives may well be determinedly ignored by a lecturer who is an enthusiastic advocate of the ivory tower view of the purposes of higher education, who sees 'sustainable development' as a suspiciously manipulative policy slogan, and who works exclusively within a collegial professional network committed to scientific objectivism. The challenge, therefore, is to start from where people are and not to make too many assumptions about where that actually is. We can see that, in rather different ways, both University Leaders for a Sustainable Future (case study one) and the Royal Academy of Engineering (case study seven) have begun to do this – the first by creating an environment of facilitation in which different institutions can work out their own approaches, and the second by drawing on the standing of the visiting professors to establish the academic and institutional status of sustainable development knowledge in engineering teaching and research.

With all this said, we should also note that university teaching and research may well be linked for quite pragmatic reasons that have very little to do with particular theories of how people (teachers, students and others) learn things. Jenkins *et al*. (2003) note that universities quite routinely claim that a strong link exists between their teaching and their research, but that in reality this 'link' often turns out to be aspirational rather than factual. From a real world view the claim might be made because it is supposed that the best university courses will be those in which cutting-edge knowledge is presented by those responsible for its generation. From an ivory tower view the same claim might result because the university is seen as a shared endeavour by student and academic. However, Jenkins *et al*. review a considerable body of research evidence which suggests that, particularly at undergraduate level, staff research is not very significant for student learning. Against this they also note a body of more recent research that does appear to support the existence of a positive link but which finds that it is contingent on processes of management.

We turn to a discussion of management in higher education in the next chapter. For the present, however, we note the observation of Jenkins *et al.* (2003: 29) that: 'In the final analysis our views and actions on teaching-research relations are in part (or even large measure) about what we see as the pedagogic purposes and roles of universities and academics in society.' If this is so, then we must ask whether the incorporation of sustainable development into the work of universities, in a manner compatible with their proper 'purposes and roles', requires or is aided by a linking of teaching and research. We would argue that it is, revealing in the process something of our own 'theory of action'.

In Chapter 12 we sought to show that 'the environment' is a fluid concept at the intersection of 'Nature' and 'society'. It is subject to substantive changes (for example in pollution levels, sea levels and climatic patterns) and also to changes in our human understanding of it (which may be scientific or spiritual, for example, and which may be more or less borne out by events). Information about it is nec-

essarily incomplete. We have no choice but to learn, and we learn different things in different ways. Academic research is one of those ways, and an important one. It is not the only one.

In Chapter 13 we argued, following Isaiah Berlin, for the aggressive rejection of all accounts of social progress, however well intended, that propose any kind of 'final solution' or harmonious end state. Our contention in the end was, first, that it is *obvious* that no such thing is possible and, second, that attempts to demonstrate the contrary in practice have invariably ended in disappointment or catastrophe. One thing we can say with absolute certainty is that, in relation to both facts and values, society's current thinking will prove not to be the same as that of future generations whose own well-being is so central to today's notion of sustainable development. It is not a question of *whether* learning will happen – it will – and it is only partly a question of what *should* be learned – because we cannot, in the present, know the full answer. But it *is* a question of how we manage our learning. In Chapter 14 we took this a stage further to suggest a rational basis for such processes of learning management. Given this, we might model three types of approach to learning and sustainable development (see also Scott and Gough 2003) as follows:

In *type 1* approaches it is assumed that, first, the underlying problems confronting sustainable development are essentially environmental in nature and, second, that these can best be solved through appropriate, targeted environmental and social measures.

It is certainly the case, and would be expected from our own foregoing analysis, that unambiguously environmental factors can sometimes lead to (what appear to be) unambiguously social consequences. Diamond (2005) analyses a number of societies, both modern and ancient, with a view to discerning the factors underlying their collapse or survival. Two examples of collapsed societies of particular interest here are those of the Greenland Norse, who disappeared in the mid-fifteenth century, and Easter Island, whose remaining inhabitants were discovered in a miserable state by Captain Cook in 1774. For the Greenland Norse the main factors leading to collapse appear to have been cyclical cooling of the climate; inappropriate knowledge, cultural values and lifestyles, particularly those relating to dairy farming, Christianity and Europeanness; scorn for the pagan Inuit and a refusal to learn from them; and inappropriate structures of land and property ownership derived from the Norse 'homeland'. This resulted in a waste of resources (such as the production of luxury exports and the use of scarce shipping to import religious jewellery, bells and stained glass). Easter Island was prone to extreme deforestation because of a range of large-scale environmental factors including, for example, the island's remoteness from the soil-replenishing benefits of both the Central Asian dust plume and the volcanic ash fallout from the south-west Pacific. These were exacerbated by human impacts, including the destruction of bird populations and the use of trees for religious and political reasons, particularly relating to statue construction.

There is much here that a modern 'type 1 sustainable development consultant' might have helped with, given modern techniques and resources. Research might

have shown that the growing season on which Greenland Norse farming depended was consistently shortening, and that timber-replenishment rates on Easter Island were at unsustainable levels. These findings might have been presented to social leaders, who might, perhaps, have responded by initiating strategies to selectively adopt Inuit technologies (in the case of the Norse) or to move to more scientific forestry management (in the case of the Easter Islanders). These actions might very well have done some good, and some people's lives might have been better, not to say longer, in consequence. There seems no reason at all, however, why the new cadres of Norse–Inuit technologists or Easter Island forest managers would need to engage directly with the original researchers.

In *type 2* approaches it is assumed that the 'type-1ers' have got it the wrong way round. It is not the environment that causes problems for society, but society that causes the environment to be a problem, by organising itself in ways that are inappropriate for one reason or another. This view is sometimes associated with 'final solution' type conceptualisations for which everything would be harmonious if only societies could organise themselves according to properly just principles, or around some kind of 'ecological metaphor' (Bowers 1993, 1995). Surely, however, it is also perfectly clear that environmental catastrophes are sometimes consequent on forms of social behaviour and organisation that are stupid, immoral – or just ill-conceived. A 'type 2 sustainable development consultant' would also have had much to say to the Greenland Norse and the Easter Islanders. Social research might have shown that in both cases everyday personal and social practices were wasteful, or that existing forms of social organisation resulted in inequalities that were not only bound to be aggravated by resource depletion but also directly contributed to it – as, for example, political and religious leaders aggrandised themselves. Recommendations might have included anything from tradeable tree-felling and bird-killing permits (on Easter Island) to the setting up of collaborative theatre groups with the Inuit (in Greenland). These would quite possibly have been useful but, again, there seems no particular reason for the population as a whole to be directly engaged with the researchers.

However, we should note that both the Greenland Norse and the Easter Islanders were threatened by factors of nature – for example the lack of the dust plume and changing climatic cycles – about which they simply *didn't know that they didn't know*. No research would have been possible into these matters, not only because the requisite research techniques had not then been developed but also because there was no possible way in which they could have arrived at the basic research question. The fact that we, in the modern world, are now familiar with these particular possibilities in no way detracts from the fact that there are (almost) certainly factors affecting our own environmental and social well-being about which we, ourselves, do not know that we do not know.

In the end, the Greenland Norse and the Easter Islanders probably got the worst of everything. They seem to have favoured explanations of a religious or political nature, which may, sometimes, have made things worse both environmentally and socially – if praying doesn't work you pray harder and build bigger churches or raise more statues; and if you see the problem as one of hostile encroachment by

the Inuit then you fight them instead of learning from them. Our type 1 and type 2 consultants would certainly have been a help, but only up to a point.

There is, however, a third possible way of bringing research and learning into the picture: this we term *type 3*. It depends upon the notion of the co-evolution of society and its environment, theorised in the context of agricultural development by Richard Norgaard (1984, 1994). For Norgaard, human activities 'modify the ecosystem, while the ecosystem's responses provide cause for individual action and social organization' (1984: 528).

Such co-evolution is not necessarily beneficial to humans and does not necessarily result in 'development' or 'progress'. Humans are able to influence ecosystems (i.e. the environment) through their social institutions, including those that promote learning, but in a complex, non-linear, feedback-modified fashion which is unlikely to result in precisely the outcomes initially planned, and is capable in principle of inducing catastrophe. Similarly, although ecosystem trends may threaten or promote human life they should be extrapolated with caution, as human institutions can be expected to adapt and, in adapting, influence the process of ecosystem change itself. A small-scale but very instructive example of this is found at Velvet Bottom in the Mendip Hills in south-west England where the natural environment was significantly modified by lead mining in Roman and possibly pre-Roman times. The resulting environmental degradation has, over 2,000 years, led to the development of a unique and biodiversity-rich environment, which is now a nature reserve and tourist attraction. Further, social institutions have now come into being actively to prevent further ecosystem change.

Accepting the idea of co-evolution has important implications for learning, as this seems central to the co-evolutionary relationship between society and nature, and therefore to any theory of change capable of dealing with reality in its full complexity. People learn (or fail to), organisations learn (or not), but, in a sense, the environment always 'learns' as nature responds to the results of human learning and activity.

Human learning, however, (whether individual or institutional) is essential because we cannot depend exclusively for guidance about how to behave on *either* the extrapolations of present trends into the future (regardless of whether these indicate catastrophe or abundance) *or* on our understanding of the past. A consequence of the co-evolutionary view is that, except in creation myths, there has been no 'golden age' of the environment to which we can seek to return. Times past should be seen as points on a continuum of change, not as natural equilibrium positions capable of restoration by one means or another.

From a type 3 perspective the key skill is learning, individually and collectively, to manage society's interactions with its environment. It involves the rigour of being clear about:

- when we *really* know something (we might decide to teach it);
- when we *really* don't (we might decide to teach the parameters of the doubt involved);
- the need, sometimes, to make important choices in the *absence* of incontestable (natural or social) scientific guidance.

It is in this third case, we argue, that a close relationship between teaching and research is likely to be helpful. Graduates need to be aware not only of the extent of knowledge but also of its limitations. Researchers need to be able to develop their agendas for enquiry in the light of feedback from students and graduated practitioners of the contexts and value judgements that frame their work. If the Greenland Norse or the Easter Islanders had any chance at all, it lay in learning to live – and to value – different kinds of lives. A 'type 3 consultant' would have taken careful note of what the other two consultants had to say, and then worked incrementally with the population as a whole to understand the possibilities for, and obstacles to, change. Along the way, new priorities for research, and for teaching, would have been identified.

Quite probably, no one would have listened to our type 3 consultant. After all, the 'type-1er' would have been able to offer quantifiable evidence in pitching for the contract, and the 'type-2er' would perhaps have appealed attractively to people's outraged sense of social justice. By comparison, type 3 seems complicated, fussy and uncertain. But, in the modern world, it does have the advantage of bringing ivory tower thinking into engagement with real world sustainability problems and, most particularly, with the people who must live through them or work to solve them. That is why, perhaps, evidence of aspects of a type 3 approach appears in so many of our case studies, from the expert-practitioner engagement found to various degrees in the ULSF, MESA and UNESCO examples to the development of research-based case studies for teaching undergraduates by the Royal Academy visiting professors and the deliberately consultative, open-ended training of procurement managers working in the UK health sector.

Chapter 18

Managing sustainable development in higher education

Context and principles

Case study four (Chapter 7) provides an account of the work of the Higher Education Funding Council for England (HEFCE) in relation to sustainable development, and mention has been made on a number of occasions of continuing activity sponsored by that organisation. In particular, a consortium consisting of staff of the Policy Studies Institute, the PA Consulting Group and the Centre for Research in Education and the Environment (CREE) is, at the time of writing in 2007, engaged in research to establish a baseline of research, teaching and estates management in universities in England.

The formulation of this task, in terms of 'research, teaching and estates management', reflects pragmatic assumptions about what universities do. This question, 'What do universities do?', is not entirely separate from, but should not be confused with, the central question addressed by this book, which is 'What is a university for?' Our overarching question is concerned with the proper qualitative significance of higher education in society. To state in broad terms what higher education institutions do, however, is helpful as a starting point for a discussion of their management practices, just as it is for HEFCE's commissioned research. We begin, therefore, by borrowing ideas from the working documents of that research, according to which universities:

- generate advanced knowledge and understanding of the world, and of the role of humans and the impacts and implications of human activities within it;
- pursue this purpose through research and teaching;
- certify advanced knowledge, through decisions about and assessments of what is researched, taught and learned (decisions about curricula and research programmes), and through how well it is researched, taught and learned (assessment and evaluation of teaching and research);
- are major employers, procurers of goods and services, users/consumers of natural resources and owners of land and buildings;
- are important local and community institutions.

The context in which they do these things is, in various degrees, beyond their direct control, although they may well have influence over it. This is to say that the many and various stakeholders in institutions of higher education may have clear ideas about how they would like to influence those institutions, but may well also depend on them in some way, for example for technology, training, certification, employment, custom or institutional support. In short, a university is an open system. Duke puts it like this:

> People behave in their own different and often purposeful ways 'informally' within the formal planned structure of the organization; and the organization, with the vital if elusive character referred to as its culture, is not an island unto itself. It can only be understood and exist in its societal context or environment. In an open system there is interplay of energies and forces both below and beyond the view and reach of management. It is permeated by external forces replicated, reflected and living within it.
>
> (Duke 2002: 40)

It is into this kind of nebulous, shape-shifting entity that the introduction of sustainable development (a concept with at least equally nebulous institutional provenance) must be managed. Duke continues by pointing out that there are managers in higher education who behave as if their institutions are entirely sealed off from the outside world, so that the control of human behaviour and performance is a largely straightforward, mechanistic and linear matter. To this we might add that there have been instances in which the management of sustainable development principles in higher education seems to have been based in a rather similarly linear conception. One instructive example of this, in the opinion of the authors, was the UK's 'HE21 project'.

HE21 was a national educational initiative that began in 1997. It aimed to infuse sustainability into the teaching and management practices of higher education and was funded by the UK government and managed by a sustainability-focused non-governmental organisation called Forum for the Future. Its objectives were to generate and promote best practice in relation to sustainability across the UK higher education sector, thus effecting change. Anticipated outcomes for the project included:

- the formation of a committed group of higher education 'trail blazers';
- the generation of curriculum specifications covering the core learning agenda for sustainability in relation to four disciplines at undergraduate level – design, engineering, business and teacher education.

A national survey of institutional practice was undertaken, which sought to assess the current status within UK higher education of 'sustainable development education'. Following this, HE21 prepared learning specifications through a web-based consultative process, which also involved desk-based research and input

from academics. Subsequently, 25 partner universities were invited to take part in the project and use the specifications in their own institutional developments.

It seems clear now that this intelligently conceived and carefully executed project produced relatively little enhancement of sustainable development teaching. Indeed, as we shall see, it has now been superseded by other initiatives that have learned from its lessons. First, although the HE21 learning specifications for the four disciplinary areas represented relevant sustainability concepts in a valid way, no processes were elaborated to help institutions take action in the context of their individual open-system parameters. Second, the questionnaires used in the preliminary national survey asked for information in a format that, at least in some cases, did not fit well with what universities wanted to say. Further, there was a lack of transparency about the process by which the results of the survey gave rise to the learning specifications. This meant that those who had contributed to the survey did not always feel that they had ownership of the specifications. Third, it emerged that it is one thing to provide additional legitimacy (through, in this case, participation in a national project) to work that is already securely in progress, and quite another to provide an impetus for the introduction of new sustainability activity. This is particularly so given that, within both the curricula of higher education institutions and the individual course option profiles of students, the introduction of new elements may be possible only if they replace something else.

In short, the main lesson to be learned from HE21 was that sustainable development cannot be introduced and embedded into higher education institutions just by establishing its relevance, its importance – or even its necessity. This is because of the nature of universities as institutions.

In the quotation from Duke's work above, the culture of universities is referred to as being 'vital if elusive'. Ramsden (1998) has sought to illuminate an aspect of that culture which seems very significant for the present debate through a discussion of what he terms the 'two cultures' of management and academia. This is illustrated in Table 18.1.

We should note in passing that it would be wrong to equate the two positions proposed in Table 18.1 for managers and academics with the distinction between, respectively, a real world view and an ivory tower view introduced in this book. It is perfectly possible, for example, that the 'academic imperatives' – which managers may be thought by academics to misunderstand – may be requirements imposed by real world view teaching in the pursuit of highly instrumental ends. However, Table 18.1 does make available an important insight into the management of sustainable development initiatives, because it shows how it is possible for them to fail *both* if they are introduced in a top-down, managerialist fashion *and* if they originate through bottom-up processes initiated by individual lecturers or researchers. If managers are given the task of introducing sustainable development across a university's activities they may well be frustrated by academics' insistence on questioning *both* the meaning and validity of the term itself *and* the warrant for managers to interfere in the academic content of teaching and research. If academics (or groups of academics) are persuaded that sustainable

Table 18.1 Two cultures in higher education management

Academics' problems with management	*Management's problems with academics*
Lack of understanding of academic imperatives; denial of specialist expertise	Self-indulgence; lack of relevance; denial of managerial competence
Interference with the right to work autonomously; excessive supervision	Attempts to challenge proper administrative authority
Rejection of collegiality and the right to open decision-making	Excessive emphasis on discussion and due process; time wasting; inefficient meetings; unwillingness to take responsibility
Pressure to lessen commitment to an 'invisible college'; rise of corporate culture; individual needs ignored	Poor departmental and institutional cohesion; marginal loyalty to work unit and university; lack of entrepreneurial spirit
Less time to do core tasks because of increased administrative load; larger classes; less able students; low morale	Unwillingness to share burden imposed by tighter budgets; negativism; culture of complaint and accusation
Softening of key distinction between academic and support staff	Inability to accept blurring of roles in the modern university
Increasingly intrusive quality processes	Lack of accountability
Erosion of core values of commitment to discipline and professional control	'Overprofessionalism'; narrow, excessive specialism; slowness to change to accommodate new external demands

Reproduced from Ramsden (1998: 27).

development is important within their discipline, they may be frustrated by management insistence on (for example) standard processes of quality management, as well as by the reluctance of managers to help spread the sustainability word to other disciplines. Managers who have learnt caution from their previous experiences may be slow to invest their personal credibility in what may sound to them very much like just another 'here today, gone tomorrow' policy slogan or academic fashion.

A prominent development in the UK that builds on the experience of HE21 is the Learning for Sustainable Development Curriculum Toolkit developed through the Higher Education Partnership for Sustainability (HEPS). This toolkit was developed from work carried out by Forum for the Future with the University of Antofagasta in Chile. It provides an ambitious methodology intending to inform learning activities in short courses, whole degrees and outside higher education, for example in business. In particular, this methodology endeavours to manage the institutional context of initiatives on a case-by-case basis through a seven-stage approach.

First, a 'learner profile' is drawn up to map the world from the learner's perspective (Johnston and Buckland 2002: 17). The 'learner', e.g. a particular type of professional or graduate, and the organisations or environmental aspects with which the learner interacts most are placed near the centre of the map. Those with whom interaction is infrequent and/or weaker are placed further out. Second, prospective course content is identified by listing the knowledge and skills necessary to manage each interaction in a way that is consistent with sustainable development. The categories 'ecological', 'social' and 'economic' are used to organise these lists, but it is stressed that interesting entries are likely to span categories. Third, identified knowledge and skills are scored in terms of their ability to contribute to a sustainable society. This enables, fourth, the specification of desired learning outcomes and, fifth, the design of delivery mechanisms. The sixth stage is a 'values audit', designed to check whether the course, as now designed, is compatible with the values of staff and students. Following this, a course guide can finally be prepared.

In 2004, HEPS published *Learning and Skills for Sustainable Development: Developing a Sustainability Literate Society; Guidance for Higher Education Institutions* (HEPS 2004). The purpose of this was 'to help higher education institutions to integrate sustainability literacy into the curriculum of their learning programmes'. The booklet notes that:

> The main part of this guide – section three – explores some of the key elements of good practice in integrating sustainability literacy into the provision of all courses in the higher education sector, and proposes a toolkit to guide practitioners. Based on existing good practice, it provides useful tools to help course designers identify and prioritize sustainability elements in any existing or new courses. This guide recognizes that there is no set model to help course procurers, designers and deliverers integrate sustainability competencies into current provision. Our hope is that it will provide sufficient balance between direction and self-discovery to enable practitioners to feel sufficiently competent to get started, to learn through the use of these tools and to feel that they are on the right track.
>
> (HEPS 2004: 5)

This approach therefore recognises the significance of the contexts in which learning takes place and is a determined attempt to generate practical progress towards sustainable development, undaunted by the difficulties of the definition of terms or institutional inertia. There is no doubt that it makes a valuable contribution, although the issue of the difficulty of *creating* rather than simply supporting a desire for change is not resolved.

So far in this chapter we have predominantly been concerned with considering the significance of some of the internal aspects of university cultures. However, universities do their work in the context of a wider environment of regulation and expectation, and at the most general level there is considerable evidence that these

external relationships have been subject to globally significant trends. For example, Kelsey identifies similarities in the development of tertiary education policies around the world, seeing these as evidence of 'a coherent policy agenda which is promoted through interlocking networks of international actors and agencies, which cross-fertilize with the officials, politicians, entrepreneurs and commentators who influence policy at the national level' (Kelsey 1998: 51).

Yielder and Codling write in similar vein from an Australasian perspective:

> The 1990s, in particular, were also characterised by the growth of competition and market forces in higher education. Paralleling, and to some extent fuelling this change, was a progressive move towards recognising the private benefits of higher education. These significant developments in higher education have taken place against a state-institution tug-of-war over the fundamental issues of institutional autonomy, academic freedom and accountability. At the same time, a similar trend has occurred within institutions, with increasing tension between collegial and managerial practices on the one hand, and individual academic freedom and personal accountability on the other.
>
> (Yielder and Codling 2004: 316)

Here we see the internal tensions identified by Ramsden 'reflected' (to use Duke's word) at the global scale. One of the most recent manifestations of these broad trends is the 2006 Leitch Review of skills in the UK (HMSO 2006). We describe this in some detail here, and discuss its particular implications for sustainable development in higher education, because we believe it to be indicative of wider international trends.

Lord Leitch was commissioned by the British government in 2004 to undertake an independent review of long-term skills needs in the UK. He produced an interim report (HMSO 2005) in 2005 and his final report a year later. He recommends a far-reaching suite of reforms, setting ambitious targets benchmarked against the top quartile of Organisation for Economic Co-operation and Development (OECD) countries. To achieve these targets would require a doubling of national attainment at most skill levels.

For institutions of higher education the most significant target is that by 2020 more than 40 per cent of adults should be skilled to graduate level or higher. Among the recommendations advocated to achieve this target, and others, are:

- strengthening the employer voice on skills through creation of a new Commission for Employment and Skills;
- increasing employer engagement with and investment in skills training;
- reforming sector skills councils who will approve vocational training;
- launching a new 'pledge' for employers to voluntarily provide more training in the workplace – there is a proviso that if inadequate progress has been made by 2010 employees should be given a statutory right to workplace training;

- increasing employer investment in higher level qualifications, especially in apprenticeships and at graduate and postgraduate levels;
- raising people's awareness of skills and their value;
- creating a universal adult careers service.

Following the publication of this report, the Higher Education Funding Council for England (HEFCE) has already declared (HEFCE circular letter 03/2007) that 'a key long-term priority for HEFCE will be to increase delivery of accredited provision at Level 4 [i.e. at undergraduate level] and above for learners already in the workforce.'

In the light of this, shrewd university vice-chancellors are positioning their institutions to be able to take advantage of the extra funding available for appropriate course provision. This, of course, is exactly what they are paid to do and no one should complain. However, we should also be clear that what we have here is really a case of the real world view, writ rather large. For example, the interim report executive summary provides the following insight into the drivers behind Leitch's view of the underpinnings of curriculum design.

> Skill deficiencies are reflected in employers' experiences. In survey evidence from across the UK, employers report significant skills shortages within their own workforce and in the pool of labour from which they recruit. Recent evidence shows persistent recruitment difficulties across the skills spectrum, in low skilled service jobs as well as in skilled craft jobs. This affects the ability of firms to grow and become more productive and profitable. Almost one third of firms who report skills gaps in their workforce say that these gaps prevent them from modernising their business to move into higher value added – and more productive – economic activity.
>
> (HMSO 2005: 6)

We would hope that no one is opposed to efficiency as such. Efficient production generates its outputs with the least possible use of inputs, and it is therefore hard to imagine how development that is maximally sustainable can be inefficient. Of course, pointless, wicked and stupid things can be done efficiently, just as sustainable ones can, but in those cases it is not efficiency that is the heart of the problem but rather pointlessness, wickedness and stupidity. We would also hope that no one wishes people who want to work to be unemployed, or firms that could produce useful things to be unable to do so because people who would like to work for them do not have the requisite skills. Having said this there are serious problems with Leitch's linkage from skills surveys to (higher) educational design.

First of all, we are entitled to have some general doubts about the likely validity of these survey results. Might employers be inclined to exaggerate recruitment difficulties? Might they have a perfectly rational preference for a large 'pool of

labour' (from their own perspective), which would bring with it costs to society on a wider level? Might the linkage they perceive between a greater availability of skilled labour and anticipated increases in productivity and profitability be, in reality, less than robust?

Second, we can ask how far these findings form a logical basis for the remedies proposed. It is reported that individuals with particular skills were absent at particular moments in time. It does not follow that those moments could have been foreseen and the shortages preplanned out of existence. Indeed, and more broadly, there are serious historical reasons to doubt absolutely the efficacy of labour market planning – although this point might be an unpopular one with academics as well as with businesspeople and politicians, because by itself it suggests the wholesale replacement of universities with something far more spontaneous and market-driven.

Third, we return to a point that we first made in Chapter 1. Nobody really knows what future skills needs will be. To link training too closely to present shortages seems likely to limit future options. This links to our discussion of options in Chapter 14. Our fourth point links to the discussion of rationality in that chapter, and also to our consideration of the ideas of Berlin and Sen in Chapter 13. Surely there is more to it than this? We do not want the real world view to be expunged. We simply think that ivory tower-type opportunities also need to be provided to every student, because to do so is properly educational in a democracy and we think that it will have socially useful results too.

In concluding this section it is interesting to return once more to the perspectives on sustainable development identified in Chapter 2. Some of these are perfectly well able to engage with Leitch-style instrumentalism in higher education, and there seems no reason why researchers and lecturers should not take advantage of this. From a *technocratic* perspective there will surely be a future need for people with skills in environmental management, as society as a whole will need to solve environmental problems. Those who have a positively oriented *globalisation* perspective will see these skills opportunities as having international significance. And from the point of view of those who eventually do this work there will be a *pragmatic* need to know about sustainable development.

In this conception of things we should note, however, that there seems to be no place at all for the *paradigm shift* perspective, or anything like it, just as there is no sign of the ivory tower. In our view this needs to be challenged for two reasons. First, a purely technocratic approach will not by itself deliver sustainable development. Second, such an approach is (again, by itself) inadequate for the proper purposes of higher education, which must entail facilitating the rational self-development of human beings.

In Chapter 13 we noted how the distinction between society as object of sustainable development and society as agent for the achievement of sustainable development could be effectively collapsed. This synthesis entails another, that of 'sustainable development' with 'education'. Foster writes:

> Education properly conceived embodies and deploys our heuristic intelligence as the fundamental contemporary form of responsible – and that is, ultimately sustainable – human living. Like all real life, it is instrumental to nothing (though it is relevant without limit) and subserves nothing but itself.
>
> (Foster 2001: 164)

In the next two chapters we further develop this view in the context of higher education management and with reference to our seven case studies.

Chapter 19

Managing change

Just as we can think of universities as being either the agents or the objects of changes towards sustainable development, so we can see them as the agents or the objects of wider changes in society. This means that any discussion of institutional change management in relation to sustainable development takes place within a context of competing narratives about higher education and social change in general. This would be complicated enough if every individual academic or administrator, and every institution, adhered consistently to just one of the available narratives. They do not and, in fact, they often cannot. For example, we have seen already that the Higher Education Funding Council for England (HEFCE) is currently powerfully supporting both one agenda, which sees English universities as drivers of increased national economic competitiveness, and another, which sees a need for those institutions to respond to a global sustainability agenda that has enhanced equity in international relations at its heart. Those within HEFCE who are responsible for these different strands of its work are well-informed and principled people. How can this situation be?

Our own view, following the work of Thompson and others (Thompson and Warburton 1985; James and Thompson 1989; Schwarz and Thompson 1990; Thompson *et al.* 1990; Gough 1995; Thompson 1997; Scott and Gough 2003), is that, given the existence of uncertainty (about the precise nature of sustainable development, the future out-turn of events and the exact place of higher education in relation to them), the existence of different and apparently incongruent strategies and plans is something wholly to be wished for. Building on a tradition of work in cultural anthropology, Thompson argues that individuals and organisations typically respond to uncertainty by attempting to reduce it to zero, through an appeal to one of a small number of archetypal 'rationalities'. For the purposes of the present discussion it is useful to think of these rationalities as the fatalistic, the hierarchical, the individualistic and the egalitarian.

To simplify rather brutally, each rationality applies a different rule for the purpose of sense-making. In the view of *fatalists* there is nothing very much to be done. In a competitive and unequal world, what will be will be. A university, therefore, might most usefully be seen, monastery-like, as a place of retreat. In its purest form the ivory tower view of the purpose of a university depends, minimally, on the existence of this option. *Hierarchists*, however, have a quite different

view. Things make sense when they follow rules. Inequalities are unavoidable but should result not from competitive success or failure but from a rational ordering derived from logical first principles. A university's response to sustainable development will derive from the regulatory environment imposed by the legitimate agencies of the state and be operationalised through good governance and quality assurance.

In an *individualistic* rationality, sustainable development is an opportunity. Money can be saved around the campus by reducing energy use. There is research funding to be won, student demand to be met and the requirements of graduate professional bodies to comply with. In short, a strong sustainability portfolio is one possible way in which a university can achieve an edge in the marketplace. According to this view the world is a competitive place. Each institution's, and each person's, success or failure is in their own hands. Things make sense if they work and there is no place within the budget for ivory towers.

Finally, for the *egalitarian* rationality, things make sense if they are equitable. Sustainable development is not a business opportunity and to suggest otherwise is, at the very least, mildly disreputable. Sustainable development is about justice, and so is university education more widely. Neither should be predominantly about either competition or hierarchical rules – whereas fatalism is a moral disgrace.

Whether this analysis – to which the present discussion does not do full justice or anything like it – is an adequate account of the human response to environmental and social uncertainty is a matter of debate. However, we may say that there are certainly instances in which individuals and organisations appear to have sought to complete incomplete knowledge by extrapolating from what they do know according to broadly fatalistic, individualistic, hierarchical or egalitarian suppositions. Most importantly, perhaps, this 'cultural theory' approach offers an explanatory framework within which to consider apparently contradictory behaviours by individuals and institutions. Quite simply, the 'rationality' that they apply in relation to any particular issue will vary according to the loyalties that they feel are uppermost in that particular case. This insight has, for example, been used to explain the behaviour of some corporations, who may be highly 'individualistic' in their dealings with external agencies and competitors but very 'egalitarian' in their internal management processes. Similarly, therefore, we should not be surprised to find HEFCE apparently adapting its principles from one policy to another when these must serve different groups of stakeholders. Nor should we be surprised if it turns out that particular HEFCE staff members (or anyone else) adopt other rationalities in relation to their personal sustainability behaviour depending on whether they are acting as, for example, a parent or a householder rather than an employee.

The notion of 'plural rationalities' is useful in three ways. First, it helps in classifying, and so simplifying, the many different accounts that there are of higher education purposes and practices. Second, it equips us to cope with inconsistent behaviour. This is important because inconsistent behaviour is often what we find. Third, it provides the basis of an argument that we wish to commend: that when uncertainty is present it is useful to pursue a wide range of initiatives and to be tolerant of apparent incoherence between them. Thompson himself has referred to

this as a deliberately 'clumsy' approach. It is needed because all four rationalities are likely to capture some of the truth but none of them is likely to capture all of it. Until some things resolve themselves and particular uncertainties are removed (when, we can be sure, they will be replaced by others), one should advance cautiously on all fronts. It will perhaps be clear that this position is in some ways similar to that proposed on options in Chapter 14.

We might usefully test these propositions against some of our seven case studies. University Leaders for a Sustainable Future (ULSF) (case study one) have a founding philosophy that is clearly *egalitarian* in nature. For example, their association with the Humane Society of the USA and their 2006 participatory initiative to bring about change towards sustainability in global food systems clearly illustrate this, as does the co-founding in 2000 of the Global Higher Education for Sustainability Partnership (GHESP). ULSF also works collaboratively with higher education institutions but seeks to use their own internal *hierarchical* structures as a lever for change. Indeed, even the organisation's title is suggestive of this orientation. The Talloires Declaration commits signatory universities to certain principles, and it is a cause for concern within ULSF that those obligations have not always been followed through. Indeed, it would seem that some institutions may have used accession to the Declaration as a form of 'greenwash', a sop to egalitarian pressures while, perhaps, individualistic or hierarchical considerations actually took priority. We should note here that a particularly notable characteristic of ULSF is its capacity for rather conservative self-assessment. There is no doubt that this strategy of pursuing an essentially egalitarian agenda by means of the hierarchical internal structures of higher education institutions has produced useful and enduring results.

The UNESCO Re-orienting Teacher Education initiative (case study three) has obtained purchase on the problem in exactly the reverse fashion. It acquires *hierarchical* legitimacy from its link to the UN. Indeed, the UNITWIN/UNESCO Chair on Re-orienting Teacher Education to Address Sustainability, Professor Charles Hopkins, personally mounts a persuasive case for the project, which not infrequently includes reference to decisions of 'world leaders'. Further, this UN connection is embodied in a number of high-status documents that establish a body of principles and reference knowledge. These include Chapter 36 of Agenda 21, the 2005 *Guidelines and Recommendations for Re-orienting Teacher Education to Address Sustainability* document (UNESCO 2005), and much in between. However, these sources of legitimation are brought to bear on highly *egalitarian* objectives, including a balanced exchange of economically more-developed country expertise for economically less-developed country indigenous knowledge. A similar approach is found in the MESA initiative (case study two), which also makes use of UN authority and status, and the Royal Academy of Engineering example (case study seven), which draws on the *hierarchical* status of the Academy and its visiting professors to bring about some highly participatory and *egalitarian* thinking and pedagogy.

The Moscow State University example (case study five) is intriguing in ways that the present authors do not feel fully competent to judge. It would seem to

juxtapose underlying political intentions, which are highly *egalitarian*, with a determined *hierarchical* conception of knowledge and the means of its creation. Finally, the UK health sector sustainable procurement training example (case study six) adopted an unusually *egalitarian* design, laying its core concepts open to definition and redefinition by participants, but sought, as a higher-level outcome, to enable them to engage individually and collectively with the established national policy-making hierarchy.

In Chapter 2 we drew attention to Habermas's (2003) point that only personal, context-specific answers are now possible to questions about what people should do, but proposed that 'sustainable development' is an idea with the potential to establish a cross-cutting context of universal, collective merit. If it is to do this it must engage with the multiplicity of perspectives that people have, rather than attempt to promote one over another. For this reason we have insisted on maintaining openness to a range of perspectives on both sustainable development and higher education, and have proposed frameworks for taking account of different types of learning and different institutional loyalties, practices and literacies. We continue in this 'clumsy' fashion by finding merit in a range of possible perspectives on change management in higher education.

One account of contemporary global trends in higher education, as we saw in Chapter 18, is that of market-focused globalisation. This reports that, increasingly, universities around the world have been subject to a 'new public managerialism' (Milliken and Colohan 2004) in which they must complete for students, research funding and other resources by offering the best academic products at the most efficient rate of return. An important reported consequence is the removal of responsibility for determining the purpose of a university from universities themselves (and the internal collegial processes that they should properly be expected to employ) and its relocation with those who pay for, or in some other way have a right to, their services. This is then held to change dramatically the key strategic role of university management and leadership, from being one based in philosophy and principle to one of anticipating and adapting to market forces. There has been, in our own terminology, first, a shift from university as agent of change to university as object of change and, second, a triumph of individualistic over egalitarian rationality, with the concept of 'the market' providing the focus of contestation in both cases. In fact, at least from the perspective of sustainable development, this account oversimplifies matters. First, it is perfectly normal for large commercial organisations to create demand for new products, and one might think of the university as a sustainability agent in doing this as it creates its own market niche. Second, the debate about educational privatisation and markets is a complex one. An interesting illustration is to be found in an exchange between Tooley (2003) and Brighouse (2000, 2004). Although this focuses on school education, it touches upon a particular issue that we shall return to later. This is that the concept of 'the market', in the abstract, is a poor proxy for the fundamental difference in conceptions between individualistic and egalitarian views of education. It is at least possible to argue, as Tooley does (see also Gough 2006), that in some circumstances a market can lead to more, not less, equality.

However, the point for practical management purposes is that, although there are both those who believe that managerialism is a damaging trend and those who believe it is a wholly democratising one, neither managerial nor collegial processes are necessarily inimical to sustainable development in higher education. So, for example, our case studies of both health sector sustainable procurement and the Royal Academy of Engineering take advantage of opportunities arising in the marketplace – the first for cost savings and other benefits through procurement, and the second through changing employability criteria for engineers. By contrast, the MESA case study is largely driven by a spirit of idealism and collaboration in the face of considerable resourcing difficulties. It would be our contention that the management of the extension of sustainable development in higher education is best seen as an incremental process that engages on a case-by-case basis with the concerns that those involved have, and the sense that they make of their situation. It may, therefore, appropriately appeal to the wishes of individuals and organisations to comply with rules and regulations, to behave collaboratively or justly, or to achieve substantive or market benefits. It is not likely to succeed if sustainable development is associated exclusively with a political position, such as anti-market egalitarianism, simply because the tensions between egalitarian and individualistic ways of thinking are unlikely *ever* to be resolved. This, we would note, is fully consistent with the view of rationality and development discussed in Chapter 13 and elsewhere, and derived from the work of Amartya Sen. People (whether students, academics, managers or higher education stakeholders) may rationally be self-interested or altruistic. The important thing is that the processes of higher education should enable them to make better choices about how they prefer to be.

With this discussion in hand, we now consider a number of contemporary issues in change management in higher education and explore their relevance for sustainable development. The first of these concerns the role of middle management. This is particularly important because if, as we have suggested, change towards sustainable development in all aspects of university life depends upon a mixture of top-down and bottom-up initiatives in relation to teaching, research and estates management, then it is middle managers who in large part form the nexus at which these things meet.

Ramsden makes a case for university management which recognises that change is constantly occurring, and which enables institutions to seize the unique opportunities that the future is likely to offer, while drawing creatively on the experience and good practice of other organisations. He identifies leadership at the head of department level as being potentially central to this, because there we find:

> the critical coupling between conventional academic culture and the needs of the innovative university. It will not be satisfactory for these leaders to focus on their own disciplines or their own staff; they will need to integrate their work units' goals with the wider vision of the institution and link their local decisions to the environment beyond it.
>
> (Ramsden 1998: 266)

As we saw in Chapter 18, from the point of view of sustainable development this linkage might be significant in either direction, because enthusiasm for sustainability may originate either at the institution's senior mission-setting level or among junior academic staff. We wonder if this might be the missing link, for example, in attempts to influence university sustainability performance through the signing of declarations at senior manager level or, again, through the networking of individual tutors. Further support for this possibility emerges in the work of Clegg and McAuley (2005). They note that, since the 1970s, the view taken of the role of the middle manager in the literature of management has gone through four phases (although each of the earlier phases has persisted to some degree):

- as representing core organisational values;
- as a self-interested agent of control – an obstacle to the empowerment of employees by senior management;
- as an agent of senior management;
- as a transmitter of organisational core strategic values – a mentor and guide.

Clegg and McAuley suggest that, in the fourth, most recent manifestation, middle managers may have the potential to develop new forms of collegiality that are well-placed to respond to the demands of rapid social change. This is consistent with accounts from elsewhere. For example, Warner and Crosthwaite (1995) note that changes in appraisal systems from the 1990s onwards have led heads of department, in particular, into a connecting role which enables them to contribute more fully to the strategic planning of their institutions. We would argue, however, that for this to be significant in advancing sustainable development in higher education two conditions need to be met. First, there would need to be something to connect with on at least one side of the equation – either within departments or in senior management. Second, to make successful connections, those involved would need some understanding (and tolerance) of the multiple understandings that there may be of the justifications for moving towards sustainability.

The second issue is that of universities behaving like businesses. Shattock (2003), drawing on the work of De Geus (1997), lists four characteristics of successful companies and critically applies these to the case of higher education institutions. The first is sensitivity to the environmental and social context. Of course, a university could achieve this without espousing sustainable development as such, but not without being very much alive to the issues that underlie it. Shattock's second characteristic is strong internal cohesion, both vertically and horizontally, around a conception of a community. This perhaps reinforces the earlier discussion of the role of middle management. It also makes a case for either shared rationalities, literacies and so on or a tolerance and understanding of different perspectives. Speculatively, we wonder whether the latter is more likely to be a source of dynamism and creativity – and this is important because the third characteristic is a willingness to entertain idiosyncratic approaches and innovation. However, the final characteristic is conservatism in financial management, and Shattock links this to institutional autonomy in universities. As we shall see,

this relates to the question of barriers to sustainable development in higher education, which we discuss in Chapter 21.

A third management issue we highlight here is that management responses to policy initiatives and changes often involve a redesign of institutions or processes. Some have suggested tightly drawn methodologies for managing complex change (e.g. Ford *et al*. 1996). Others have focused on general principles. For example, Hoyle and Wallace (2007) propose irony as a frame for understanding educational reform and responding to it. Of course, the approach preferred for confronting externally originating change will depend very much on whether one sees oneself as implementing or opposing it. In any case, it seems important to note the findings of a study in three countries (England, Sweden and Norway) by Kogan *et al*. (2000), which concluded, *inter alia*, that:

- changes in formal structures do not necessarily change relationships and behaviours; the deeper one gets into an institution's systems, the less the impact is likely to be;
- national, social and political differences mean that similar reforms may have different effects in different countries and may work over different timescales;
- national policies are important, but so are many other things, including the tastes and preferences of students and academics;
- changes at the national, institutional and disciplinary levels are likely to be only partially coordinated.

All of this, we believe, makes the case that it is more important to focus on the characteristics of those who are managed than on the fine detail of what, in a perfect world, a sustainable university might be expected to look like. Mission statements and grand declarations have a place in the leadership of institutions, but sustainable development, however exactly it is understood, has real implications for real people, and managers need to understand them if they are to make progress.

This brings us finally to the notion of a 'learning university' (Duke 2002), which we think compatible with our developing notion of 'learning *as* sustainability', in which the object and the agency of change are combined. For Duke, sustainability is a key challenge and opportunity for universities, but he writes:

> If learning to manage means learning to see round corners and over the next rise, to anticipate at least some of the consequences of actions which appear blindingly obvious when it is just too late, there is room to learn to manage the learning university if only by more reflection. Reflection in isolation is, however, rarely successful for even the most clever and charismatic leader.
>
> (Duke 2002: 142)

Chapter 20

Managing across the organisational boundary

In Chapter 18 we observed that universities are open systems. Sustainable development is an idea that touches on very many aspects of management across their boundaries. Economic, environmental, social, political and cultural factors form the substance of both discourses about sustainable development and the wider context of higher education. It is for this reason that University Leaders for a Sustainable Future (case study one) (ULSF) has been able to secure institutional signatories to the Talloires Declaration in more than 40 countries. This document commits them to the following 10 institutional actions:

1 *Increase awareness of environmentally sustainable development*: use every opportunity to raise public, government, industry, foundation and university awareness by openly addressing the urgent need to move towards an environmentally sustainable future.
2 *Create an institutional culture of sustainability*: encourage all universities to engage in education, research, policy formation and information exchange on population, environment and development to move towards global sustainability.
3 *Educate for environmentally responsible citizenship*: establish programs to produce expertise in environmental management, sustainable economic development and population and related fields to ensure that all university graduates are environmentally literate and have the awareness and understanding to be ecologically responsible citizens.
4 *Foster environmental literacy for all*: create programs to develop the capability of university faculty to teach environmental literacy to all undergraduate, graduate and professional students.
5 *Practice institutional ecology*: set an example of environmental responsibility by establishing institutional ecology policies and practices of resource conservation, recycling, waste reduction and environmentally sound operations.
6 *Involve all stakeholders*: encourage involvement of government, foundations

and industry in supporting interdisciplinary research, education, policy formation and information exchange in environmentally sustainable development. Expand work with community and non-governmental organisations to assist in finding solutions to environmental problems.

7 *Collaborate for interdisciplinary approaches*: convene university faculty and administrators with environmental practitioners to develop interdisciplinary approaches to curricula, research initiatives, operations and outreach activities that support an environmentally sustainable future.

8 *Enhance capacity of primary and secondary schools*: establish partnerships with primary and secondary schools to help develop the capacity for interdisciplinary teaching about population, environment and sustainable development.

9 *Broaden service and outreach nationally and internationally*: work with national and international organisations to promote a worldwide university effort towards a sustainable future.

10 *Maintain the movement*: establish a secretariat and a steering committee to continue this momentum and to inform and support each other's efforts in carrying this out.

All of the items on this list involve management action. Most of them involve working beyond institutional boundaries. However, when universities reach beyond their boundaries they often do so not in a corporate fashion but with specific reference to one principle dimension of their activity – that is, in relation to research, teaching or the management of estates. Research, as we saw in Chapter 17, may or may not be linked to teaching – and learning. The knowledge it generates is central, for better or worse, to the progress of sustainable development. However, if we think of sustainable development in the way that we have described it in this book – as a rational process of growth in relation to the social, environmental and economic contexts of human life on Earth – then it would be odd not to be able to reverse this statement: sustainable development (so conceived) is central to the progress of (much) research. This reformulation is useful in one way and not in another. It makes it clear that research can contribute to sustainable development without being about sustainable development, without mentioning sustainable development and, in fact, while taking a critical or dismissive stance to the idea of sustainable development. As a rather striking example of this last point, one of the most influential and frequently cited publications in the study of education and sustainable development is Jickling's (1992) 'Why I don't want my children to be educated for sustainable development'. At the same time, however, to include *any* research that has a bearing on balanced social, environmental and/or economic progress under the heading of sustainable development makes it difficult to achieve any kind of operational focus for managing the way forward. Current research in progress for the Higher Education Funding Council for England (HEFCE) has addressed this difficulty by adopting the following definition after consultation with the UK research councils – bodies that fund public research. Sustainable development research is defined as research that contains a significant

element of work related to either or both the natural environment and natural resources, *plus* a significant element of work related to either or both economic or social issues. 'Natural environment' here is taken to include managed landscapes. We should note in passing that the definition has also been adapted to provide a rule for determining whether university courses should be considered as examples of sustainable development teaching.

University research also has an important role to play in the development of public policy and, of course, public policy is an important driver for the commissioning of particular forms of research. A particular by-product of this cycle in recent years has been the growth of interest in interdisciplinary research. Difficulties remain, however: for universities in providing suitable structures for research of this kind, and for academics in collaborating with others who may begin from very different foundational assumptions. However, there is an extent to which sustainable development, as a public policy objective, may have begun to drive university management and administration. For example, in Britain, the newly proposed Living with Environmental Change (LWEC) initiative, led by the Natural Environment Research Council (NERC), involves over 10 different partners, including research councils, government departments and the devolved administrations of the UK. Over its proposed 10-year duration it is likely to involve academics of different disciplinary backgrounds from a significant number of higher education institutions. Managers will need to be responsive to their needs.

However, it should be said that these observations are very much based in a consideration of a developed country, and specifically a UK context. It is therefore unsurprising that, among our case studies, we find the clearest impetus for interdisciplinary research linked to public policy formation in the UK-based case studies. The health sector sustainable procurement training example (case study six) was itself a collaboration between two academic disciplines (education and management) and it engaged with staff of hospitals and health-care trusts at different management levels, senior representatives of government ministries and agencies, a range of non-governmental organisations, local government, and researchers in other fields. It would be fair to say that it cut across, and placed some strain upon, established departmentalised management structures within the host university. To lend weight to a point made in Chapter 19, flexibility and receptiveness to new possibilities at the head of department level was important to its success. The project was established through a collaborative process among stakeholders, which explored the possibilities and potential for research before any substantive budget was made available. This is a way of working that one might expect to find becoming more common in relation to sustainable development research. Even so, it seems clear that the systems universities use to manage research often assume a linear model in which a funder invites bids, academics submit them, a choice of preferred contractor is made, the money is allocated and the research then begins. The Royal Academy of Engineering example (case study seven) is also innovative in its approach, and also engages with a wide range of stakeholders in its design, including professional engineering bodies. Indeed, we find emphasis on stakeholder involvement, and on a holistic, cradle-to-grave

approach, in the Academy's 'guiding principles of engineering for sustainable development'. All of the materials developed through the scheme illustrate an awareness of cross-disciplinary issues.

Among our non-UK case studies the situation is much less clear, as is shown by the following two examples. In the Moscow State University example (case study five) there seems to have been cross-disciplinary research of the very highest quality in relation to sustainable development, but very little effective engagement of that work with practical policy-making processes. It may be that this situation is now changing. In the MESA example (case study two) the need for interdisciplinarity and multiple stakeholder engagement in research is sometimes glaring. For example, we quoted the example of the Nile River Basin, which is used within the Education for Sustainable Development Innovations Course Toolkit. The issues here involve different political jurisdictions, different economic and cultural practices, and different disciplinary specialisms. However, there must be some doubt as to whether adequate resources and institutional capacity exist to address them.

It is in terms of the management of their estates that we might expect that universities would find the easiest and clearest benefits from adopting a commitment to sustainable development, and indeed this is borne out to some extent by, for example, the experience of ULSF. A set of headings under which such management might be classified is:

- key resources used (energy and water);
- carbon emissions;
- construction, refurbishment and maintenance;
- waste and recycling;
- procurement and supply chain;
- ethical investment;
- biodiversity;
- travel management;
- community engagement.

It will be seen that whereas some of these offer quick wins – for example in terms of cost savings through reduced energy use – others may incur costs (campus biodiversity protection or community engagement) or be controversial with staff or other stakeholders (travel management or ethical investment). Sound environmental management of estates can be demonstrated through accreditation schemes such as ISO 14001, which applies to those environmental aspects over which the organisation has control and over which it can be expected to have an influence. A great deal of technical advice is also readily available, for example on carbon management (from the Carbon Trust; http://www.carbontrust.co.uk) and sustainable procurement (UK Government 2006). Strictly environmental matters may be linked to social justice issues through the notion of ecological footprinting (Chambers *et al*. 2001), although this methodology is not without its difficulties in some applications. For example, appeals to the notion of 'equal shares' of the Earth's resources raise questions about the practicality, as well as the economic,

social and environmental desirability, of such an arrangement. Procurement issues necessarily entail both environmental and social dimensions of sustainability, as questions need to be asked about both kinds of impacts along the supply chain. A company using Forest Stewardship Council (FSC) certified timber may also use child labour and vice versa. One of the issues facing sustainable procurement management is the assessment of trade-offs between different effects.

One can find examples of institutions in which apparently very successful attempts have been made to link, or at least achieve congruence between, estates management and the curriculum. For example, Jenks-Jay (2004) reports an example of 'systemic sustainability' at a college in the USA. This includes a large environmental studies programme involving staff from 16 departments, an environmental council that advises the college president on sustainable campus matters, college forest lands that are managed under the FSC's green certification standards, sustainable design and environmental building standards and so on. However, it does seem fair to say that, as comments from USLF indicate, more general progress in this direction is patchy at best. Part of the problem is undoubtedly the very wide range of professional practices (for example procurement, financial management, construction, architecture, engineering) with which initiatives of this kind must engage. Issues of estates management do not feature predominantly in our case studies because, in the end, the key issues for university estates management are essentially the same as those facing other large organisations. Our focus here, and the focus of our case study informants, has been predominantly on the unique contribution that universities might make through their research and teaching.

Turning now to teaching in higher education institutions we might usefully distinguish between courses that are essentially about sustainable development in some form and courses that are about something else but which incorporate important sustainability principles. Here we concern ourselves with the second of these possibilities. This is not to say that training for those who wish to specialise in sustainable development is unimportant, but it seems likely that supply, demand and educational professionalism will between them be sufficient to do the job. However, a sustainable world will require more than just a cadre of sustainable development specialists, and a world in which everyone was first and foremost an expert on sustainable development would hardly be sustainable. It is the unique potential contribution of higher education to prepare engineers, doctors, teachers, managers of all kinds, policy-makers, shipping agents, financial managers, journalists and film directors, whose contribution to the world, in their particular professional capacity, will be one that makes it more rather than less sustainable. We have already seen that in some places there has been some innovative work to promote sustainable development in the university curriculum whereas in others there has been some indifference or opposition. Certainly the trend seems to be a broadly positive one. For example, even as this chapter was being written, Portsmouth University in the UK was able to report that it now integrates a significant element of sustainable development education into the work of the following organisational units:

- School of Languages and Area Studies;
- School of Social and Historical Studies;
- School of Environmental Design and Management;
- Department of Civil Engineering;
- Department of Mechanical and Design Engineering;
- Department of Electronic and Computer Engineering;
- School of Architecture;
- School of Art Design and Media;
- School of Creative Arts, Film and Media;
- Centre for Enterprise;
- School of Biological Sciences;
- School of Earth and Environmental Sciences;
- School of Health Sciences and Social Work;
- Department of Geography;
- Portsmouth Business School.

However, challenges remain and, as we have suggested, these relate to perceptions of what the proper business of a university is and how this relates to sustainable development. In exploring this question we now consider the idea that universities have a central role in the development of citizens, and that ideas of sustainable development are implicit in this (see Dobson and Bell 2006 for an extended discussion of this and related issues). We think that it is generally accepted that there is a link between sustainable development and learning. It is also widely believed that there are connections between citizenship and learning (or, at least, citizenship and education) and between citizenship and sustainable development. The relationship is therefore a three-way one.

The relationship between education and citizenship has been explored by Crick (1999) in work that has been influential in the development of citizenship curricula in England. Crick's work focused on schools but his account of the significance of citizenship seems equally applicable in higher education:

> Any worthwhile education must include some explanation and, if necessary, justification of the naturalness of politics: that men both do and should want different things, indeed have different values, that are only obtainable or realisable by means of or by leave of the public power. So pupils must both study and learn to control, to some degree at least, the means by which they reconcile or manage conflicts of interests and ideals.
>
> (Crick 1999: 339)

Crick himself briefly suggests the need for continuity of learning into adult life, as the 'reconciling' and 'managing' that are central to the process he describes are open-ended skills applicable in developing social (and environmental) contexts. This recognition of a need for continuity of learning is also central to a wider literature within the field of lifelong learning. For example:

> Central to a learning society is the proposition that the economic, social and cultural challenges confronting individuals and social formations in the late twentieth into the twenty-first century make reliance on initial education as a preparation for the full extent of adult life unsustainable. The capacity to meet those challenges requires continuing learning and recurrent opportunities to learn. As with individuals and organisations, the notion of a learning society signifies a reflexivity to processes of change which is characteristic of contemporary times.
>
> (Edwards 1997: 174)

If it seems on the face of it that the notion of a 'learning society' (that is, collective learning) and Crick's conception of individual citizenship are rather different points of origin from which to arrive at the view that there needs to be continuity between learning in the school and learning in later life, then it should be remembered that both are, at least to some extent, responses to perceived social challenges that seek to employ learning in an instrumental way. However, at the same time they have accepted within them the idea that learning is implicit in the practice of citizenship and citizenship is implicit in the practice (not just the content) of learning: that is, as we learn, we live, and as we live, we learn.

This conception also seems fully compatible with notions of 'global citizenship' (Heater 2002; Noddings 2005), which are now particularly influential through their adoption by non-governmental organisations such as Save the Children, Oxfam, UNICEF and Christian Aid. Nussbaum (2002) argues that understanding the world from perspectives other than one's own is essential for any responsible citizen judgement. To be a world citizen is to understand that there are myriad differences in the ways of living and thinking throughout the world. 'Different' does not necessarily imply 'good' or 'bad', and the familiar is not necessarily the best.

As we have noted elsewhere (Gough and Scott 2005), in simple graphical terms the relationship we are describing here looks *not* like the one set out in Figure 20.1 but rather like the one in Figure 20.2.

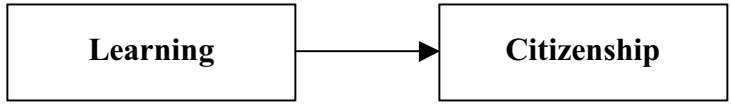


Figure 20.1 Learning and citizenship I.

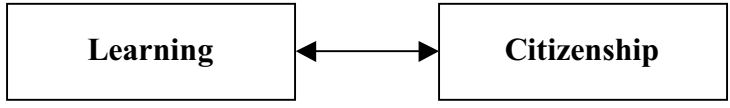


Figure 20.2 Learning and citizenship II.

In Chapter 17 we introduced a three-way classification of educational interventions. Type 1 educational interventions are identified as those in which it is assumed that environmental problems have environmental causes. This leads to an attempt to identify solutions through natural-scientific enquiry. In the process new information may be identified, which must be communicated. Once this communication has taken place, appropriate behaviour change is expected to follow. Such approaches, therefore, cast both learning and citizenship as tools for the achievement of environmental maintenance. The model they espouse is shown in Figure 20.3.

Type 2 interventions, on the other hand, work from the premise that the core problem of environmental sustainability is not environmental at all but social. What citizens need, it is claimed, is not natural-scientific insights and technology, but rather social-scientific insights and technology through which they will come properly to understand the social obstacles to sustainability and thus see the need for appropriate, collective, social, political and environmental action. In the field of education, such interventions have often been associated with pedagogies in the Kolbian tradition (see Chapter 15) and with socially critical curriculum theory. A particularly lucid and influential example is Fien (1993).

The model essentially entails two rounds of learning. In the first, people's eyes are opened to social and environmental truths. In the second, they learn (with others) how to live sustainably, typically through collective action. This is shown in Figure 20.4.

There are certainly instances in which both type 1 and type 2 approaches have been successful. For example, in case study seven the core message to undergraduates, that sustainable engineering is good engineering, is supported in many cases by quite straightforwardly factual (type 1) accounts of the environmental effects of particular alternative engineering processes. And in case study three we referred to the (type 2) UNESCO Teaching And Learning For A Sustainable Future multimedia teacher-education programme, which has clearly had, and continues to have, a substantial impact.

However, approaches of type 1 or type 2 suppose (in some cases correctly) that what counts as 'pro-environmental' or 'pro-sustainable' development, or 'good citizenship' behaviour, can be specified, and that, through learning, appropriate

Figure 20.3 Type 1 interventions.

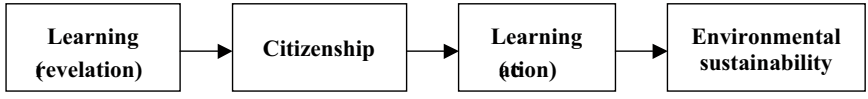


Figure 20.4 Type 2 interventions.

cognitive (thinking), conative (action) or affective (feeling) skills can be induced or developed that will contribute to bringing these about. The main debate, in this view, is about which set of skills or competencies should be the primary target for learning. From a type 3 perspective, however, the key skill is learning to manage, individually and collectively, a nexus of environmental and citizen behaviour in the context of problems that may have multiple, contested definitions and shifting, contingent solutions. This learning will take place in the context of multiple external influences on the learning process (Figure 15.2) and competing stakeholder loyalties to particular institutions, practices and literacies (Figure 15.1). It is therefore precisely the kind of learning that we find attempted in case study six on sustainable procurement training and also in the Nile River Basin context described in case study two. These examples appeal to ideals of both national and global citizenship. The Nile River Basin requires national decision-making in the context of an international resource, and also involves the presence of nomads. Health sector procurement involves purchasing from around the world. Diagrammatically we might represent this kind of learning as shown in Figure 20.5.

If we accept the logic of this argument – that type 3 learning is likely to be indispensable to higher education which produces citizens capable of sustainably developing their world – then the question arises of how such learning is to be assessed.

In a recent paper Boud and Falchikov (2006) refer to a body of work that explores forms of assessment which have a positive effect on subsequent, lifelong learning, and most particularly the idea of 'constructive alignment' between assessment tasks and the learning activities in the intended outcomes. Hence, for example, the assessment of an undergraduate engineering student or a graduate undergoing teacher training would focus on their learned ability to continue learning once in employment. Interestingly for the present context, in an earlier paper Boud (2000: 15) has referred to 'sustainable assessment', defined as assessment

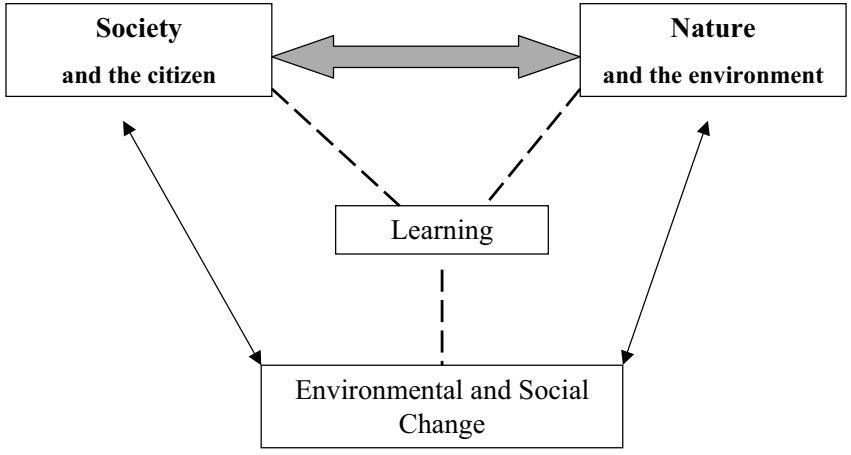


Figure 20.5 Society and nature: learning and change.

that 'meets the needs of the present without compromising the ability of students to meet their own future learning needs.' Boud and Falchikov go on to argue that both summative and formative assessment systems and practice can act to constrain students' subsequent learning behaviour. Although accepting that it is not at present possible to specify definitively the approaches to assessment that might foster appropriate future learning activity by students, and although recognising that any initiative along these lines would necessarily be conceived at the programme rather than the unit level, they set out a number of 'ways of thinking about everyday practices – in teaching and learning or assessment activities – that emphasise preparation for learning that is socially constructed, participative, embedded and necessarily contextualised' (Boud and Falchikov 2006: 408). In summary, these involve:

- engagement with standards, criteria and problem analysis;
- emphasis on the importance of context;
- collaborative working;
- the use of authentic representations and problems;
- transparency of knowledge so that the nature and purpose of tasks are clear;
- fostering student reflexivity;
- building learner agency;
- taking account of risk, and of confidence of judgement;
- promoting the seeking of feedback by students;
- requiring the portrayal of outcomes for different purposes.

Boud and Falchikov conclude that assessment has a key role in preparing students for the learning that they will engage in during the rest of their lives. Their focus is on professional learning, but it seems clear that there is a similar challenge for students' citizenship learning. These assessment tools do not exist, at least not in any complete or readily available form, but developing them seems to be an important challenge. For example, with reference to our seven case studies:

- A commitment on the part of higher education signatories to the Talloires Declaration (or other statements of sustainability intent) that they would develop sustainable assessment practices would be challenging but would be of assistance to them in meeting other obligations under the Declaration, particularly those that commit the institution to a culture of sustainability and to education for environmentally responsible citizenship.
- The availability and international recognition of such assessment procedures would support the objectives of the MESA project, particularly the enhancement of the quality and policy relevance of university education in Africa and the raising of awareness about development and society possibilities beyond university boundaries. The intention would be to combine international credibility with appropriateness in the African context.
- It is quite clear that teachers need to be equipped to learn throughout their professional lives and that assessment in teacher-education institutions might usefully address this.

- Much the same point might be made for the undergraduate training of engineers and the in-service learning of procurement professionals.
- HEFCE has a legitimate interest in encouraging best practice in assessment procedures in higher education institutions in England.
- In the case of nature management in Russia, 'sustainable assessment' might offer one route to the creative interpretation of experience mentioned by Kasimov and Masurov.

We are now in a position to summarise our arguments to this point. We begin the next chapter by doing so before drawing conclusions, pointing to future possibilities and offering an answer to the question with which we began: 'What is a university for?'

Chapter 21

Higher education and sustainable development

An identity of interest?

We might summarise the argument so far as follows. Universities are open systems. They are discrete entities, capable of planning their actions and coordinating their internal component parts. At the same time they have fluid and permeable boundaries across which they interact with a wide range of external agencies and groups (Chapter 18).

Most of these interactions can be classified as teaching, research or administration (Chapter 20). A particular tension exists across all three of these domains (in administration because it must service the other two). We might think of this as a tension between stability and change, and between certainty and speculation. It is fuelled by, on the one hand, the imperative to archive, protect, apply and bequeath existing knowledge and, on the other hand, the imperative to challenge that knowledge, to break through into unexplored territory, to go beyond problem solving into comprehensive problem redefinition. The 'breakthrough' has always been the gold standard of research. It is breakthroughs that win Nobel Prizes and shift paradigms. In the present, however, and as we have seen, there is an expectation that *everyone* will face new, presently unimaginable circumstances in their lifetimes with which, in one way or another and for better or worse, they will learn to deal. This means that the tension between the known and the unknown is just as strong in teaching – particularly university teaching – as it is in research. We have sought to capture this tension with our rough and ready distinction between the real world and ivory tower views of what a university is for (Chapter 1). Particular people, at particular times and places, may want the answer to be one or the other; but it is inescapably both.

The word 'inescapable' is appropriate here because this tension is also characteristic of societies (Chapters 12–14). One might question whether this is necessarily true of *all* societies, but we would suggest that it is certainly true of societies that have universities. In fact, it is to universities that societies delegate a large part of the responsibility for informing their management of the problem of, as

Diamond (2005) puts it in the title of his book, 'choosing to fail or survive'. As his historical analysis well illustrates, this choice involves, crucially, knowing at any time which knowledge to revere and which to abandon. However, we should note that the importance of ideas has been understood for a very long time and was apparent even in the modern era, long before anyone began a discussion about sustainable development.

The significance of sustainable development for higher education, we argue, is the potential that it has, not as a specialism within departments of economics or environmental science or sociology or politics, but as a fresh and necessary challenge to the way that ideas are classified into economics, environmental science, sociology, politics and so on. Unfortunately this potential is lost if sustainable development is allowed itself to *become* an academic specialism, one that makes reference to other knowledge only to insist on its irrelevance. Consider, for example, Figure 21.1, which represents a common and very influential representation of sustainable development.

Here, sustainable development is regarded as that which goes on at the intersection of three areas of disciplinary concern. In this conceptualisation, what exactly would we find at point A? What aspect of social life is entirely separate from economic institutions, actions, causes and consequences? Or free of intimate inter-relationships with the natural environment in which the society exists – even though, apart from anything else, its molecules constitute every one of that society's individual members?

At point B, what economic activity can there be that is independent of society's engagement with its environment? And at point C, given only that our interest is in *the* environment – the one that has value and meaning for us – rather than in any

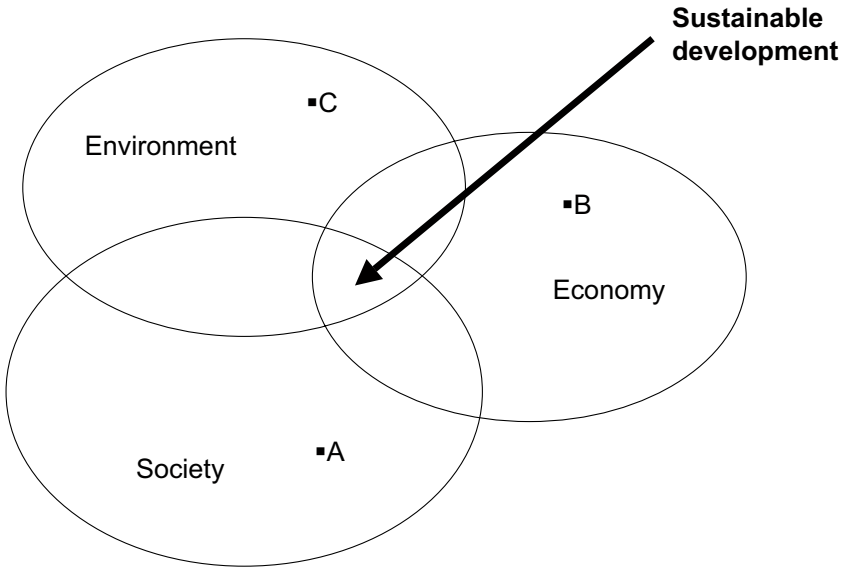


Figure 21.1 A common representation of sustainable development.

old environment that might come along, what aspect of that environment is unattached to socially constructed understandings and free of economic significance?

The point of asking these questions is not to argue for the abandonment of social, economic and environmental specialisms within the academy. We have, after all, found it convenient to use these divisions ourselves. But is important to restate that they do not represent the only possible structure within which questions can be explored and knowledge developed. On the contrary, because they have been found useful in the past, they have become embodied in our institutions, practices and literacies (Chapter 15). If we are guided by Figure 21.1, sustainable development in higher education will be imprisoned at the intersection of established artefacts of the academy. Our proposal is much more radical. We see it as a fresh and challenging frame of reference for thinking about everything a university is and does.

University graduates perform important roles in society. One of these is as citizens. University teaching informs future citizenship behaviour by design or by default. University research may or may not be linked to teaching, and has impacts on the wider context of social and economic policy, legal process, technological change and so on – within which lives are lived, citizenship practised and further learning achieved. Both teaching and research are (increasingly) international in nature and therefore bear upon issues of global citizenship, policy, structure and lifelong learning. Global citizenship crucially involves the awareness and balancing of competing perspectives (Chapter 20).

However, perspectives do not always diverge and compete. Problems may turn out to have relatively straightforward solutions around which they can converge. For example, particular instances of, say, child labour or radioactive contamination may be amenable to resolution through the uncontroversial application of existing natural- or social-scientific knowledge or technologies, perhaps with the complementary employment of established approaches to individual and/or collective learning (Chapters 15 and 16), and perhaps through some linkage of learning and research (Chapter 17). *Any* perspective on sustainable development (Chapter 2), or on the proper purpose of a university (Chapter 1), is likely to commend and promote such a resolution.

Other problems are different. Knowledge may be incomplete or contested. Uncertainty may be irreducible. Decisions still have to be made, however, and these are therefore likely to be arrived at by appeal to preferred frameworks for sense-making (Chapter 19), in which 'preference' results from institutional context (Chapter 15). To the extent that the notion of sustainable development is invoked in all this, the perspective taken in relation to it by an individual or group will arise from these factors.

We have suggested a range of responses to this overall situation, which we believe to be mutually consistent. They include:

- innovative, context-sensitive pedagogies (Chapter 15 and elsewhere);
- cross-disciplinary research linked, when appropriate, to teaching and learning (Chapter 17 and elsewhere);

- purposive design and management of networks (Chapter 16);
- 'clumsy' management of institutions that tolerates and encourages divergent approaches (Chapter 19);
- connective middle management (Chapter 19 and elsewhere);
- 'sustainable' forms of assessment (Chapter 20).

We find examples of many of these kinds of initiatives in our seven case studies, and would hope to have contributed to the development of a unifying theory that might inform the appropriate transference of successful good practice to new and different settings. In part, this endeavour builds on, and is indebted to, the work of other writers on sustainable development and higher education, particularly Corcoran and Wals (2004). We differ from them, however, in making our central question not 'What can higher education do for sustainable development?' but, rather, 'What can sustainable development do for higher education?' and, beyond that, 'What is a university for?' We have advanced a model in which the role of higher education is in accord with Sen's (1999, 2002) account of rational behaviour as the continuing development of preferences over what preferences to have, and freedom as the capability to choose a life that one has reason to value. Universities, we think, should promote rationality and freedom, and in our view, following Berlin (2002), these qualities are inalienably associated with tolerance for a plurality of values.

Many advocates of sustainable development would at this point object that the above formulation neglects the social justice issues that are properly central to sustainability. For example, Agyeman and Crouch (2004) argue, in the context of higher education, for a conception of 'sustainability as justice and equity'. Can a university pursue such a conception while also promoting freedom and value-plurality? Our answer would be not only that it can but also that exploring this question is properly a part of the function of a university whereas unreflective promotion of one side or the other of traditional dichotomies such as 'freedom versus equality' or 'markets versus planning' is not. Both pairs of terms reflect Thompson's (1997; and see Chapter 19) opposition between individualistic and hierarchical rationalities. Under uncertainty we tend to assume that we need one or the other. But higher education is there to expose and examine assumptions, not promulgate them.

The fact that it is frequently supposed that social inequalities are an unavoidable consequence of the operation of markets has led some to believe that the pursuit of egalitarian goals requires the market to be constrained or abandoned, and others to believe that the (to them) manifest advantages of the market justify the rejection of egalitarian goals. However, Ronald Dworkin (2000) argues that the concept of the market is indispensable to the achievement of equality. In making this case Dworkin does not dispute that the operation of markets has often, in practice, led to increased inequalities. However, he proposes three things: first, the only conception of equality credibly able to guide policy is equality of resources – that is, that the allocation of resources to each person's life should be equal; second, that this conception requires a metric for its operationalisation; and, third,

that such a metric can only be provided through the unique capability of the market to order the relative preferences of a large number of individuals.

Central to Dworkin's argument is the distinction between an actual market and a hypothetical market. In the latter, the values of some key parameters (such as individuals' disposable incomes, or access to information) are not set at the levels actually occurring in society, but are imputed. Hence, models can be constructed in which the consequences of chance, historical circumstance, social influence – or, indeed, hard work – can be eliminated as required. At the same time other parameters, such as personal tastes or opinions for example, may be assumed to be those that people actually express. It then becomes possible, as a theoretical exercise, to ask what kind of outcomes might result from the operation of the market under the circumstances selected. The central function of the market in this process is to ensure that the resources devoted to one person are valued in terms of their importance for others. The outcomes represent a synthesis of equality and freedom.

Dworkin goes on to develop this approach as a means to prioritise considerations of social equality in practical policy-making, for example in relation to health care. The details lie beyond the scope of this book but the point at stake is that the underlying question has been changed. It is no longer whether, in some absolute way, unregulated markets produce more or less justice but, rather, whether and how the market can inform society of what justice actually requires. This is, in our view, a more appropriate question for a university to pursue than 'How can a conception of sustainable development based in a blanket preference for a particular way of thinking be implemented?'

It is also, we would argue, at least potentially more productive in terms of real sustainability gains. This is because sustainable development, if it ever happens, will be a process in which everyone learns all the time. Its cause is unlikely to be advanced by any group that simply asserts its right and authority to teach others without learning itself. Aiding collaborators to do what they want to do (such as promoting contextually appropriate increases in equality) more effectively will be more helpful than telling them that they should really be doing something else. Respecting the varied institutional and professional contexts of collaborators recognises that they not only have unique contextual insights and strategic understandings but also have ongoing institutional commitments that demand much of their attention and which mean that progress in relation to sustainable development will be heavily contingent.

Similarly, a learning orientation that encourages, facilitates and supports sequences of small steps may well be more productive than proposing giant leaps on the grounds that, for example, such sustainable development is urgent. It is particularly important that experience and confidence be achieved at a pace that makes sense to all stakeholders. As problems, failures and disappointments are to be expected, the priority must be for all to share and learn from them.

The fact that the United Nations General Assembly has designated 2005–14 as the 'decade of education for sustainable development' strengthens higher education's potential role, but teachers and researchers in universities know that their

job is to promote learning by their students and pursue new knowledge rather than promote sustainable development. Thus, if sustainable development does require learning, then learning goals must be a fundamental part of it. Environmental and other goals – supposedly to be achieved through learning – will not do by themselves just because experts with no contextual authority deem them important. Further, even when it is possible to say what needs to happen from a particular perspective (development, say) and/or a particular discipline (economics, say), such perspectives (or disciplines) are not necessarily congruent. Under these circumstances simply seeking to promote learning without too many other preconceptions seems the only sensible way forward. What people learn matters because it informs and enables what they can do next. Reassuringly, however, what people learn is not always what others try to teach, which is why people, and what they learn, are crucial to sustainable development. Such factors are fundamental to higher education institutions being able to align themselves with sustainable development, and for progress to be made in ways that make contextual and cultural sense to them. As Foster has written:

> In the higher educational context, this relation would mean not only the effective disappearance of the distinction between people's working and learning lives, but also a commitment to a learning model in the way society draws on research in its policy and decision-making. Government and industry already recognise their clear need for work in universities which develops analyses and methodologies as improved planning, policy and decision-making tools for the environmental and other technologically challenging spheres. However, the effectiveness, social robustness and thus legitimacy of these instruments can only be as good as the attunement of users to the full complexity of the values, understandings and problem framings now interacting within the environmental and comparable arenas. In a learning society providing or improving policy and management resources *for* users would crucially involve exploring *with* users the contested social meanings and ends in pursuit of which such resources have to be deployed. This model of engagement would operate on a number of levels, involving longitudinal interactive research and learning partnerships and a wide-ranging 'menu' of modular management learning and training material as well as the more traditional higher-educational programmes.
>
> (Foster 2001: 163)

Finally, this brings us to the question of 'barriers'. As we have noted elsewhere (Scott and Gough 2007) in discussions around sustainable development and higher education, the idea of barriers to change features strongly. For example, the report by the Higher Education Funding Council for England (HEFCE) on its own consultation (HEFCE 2005b: 9–11) dwelt on the issue; a UNESCO-supported conference in Sweden in 2005 focused on 'drivers and barriers for implementing sustainable development in higher education'; and the research report from the

UK Higher Education Academy adduced 'four major barriers to the successful embedding of ESD into many of the subject disciplines in HE':

1 an overcrowded curriculum;
2 its perceived irrelevance by academic staff;
3 limited staff awareness and expertise;
4 limited institutional drive and commitment.

(HEA 2005: 5)

However, none of these is particularly novel or unique to sustainable development or, it should be said, to higher education.

In each of these examples, and in the wider literature, barriers are inevitably viewed as impediments to progress to be sidestepped, vaulted over or hurled aside in one way or another. This negative (barrier = obstacle) perspective is commonly found in the fields of institutional development and the management of change, as well as in wider society in which all sorts of barriers are striven against through social policy, for example the glass ceiling, poverty, illiteracy, access to education and discrimination on grounds of age, gender, sexuality, ethnicity and so on.

But in wider society, the idea of a barrier as a positive, protective feature is also widespread. Most often, perhaps, they take physical forms, for example flood defences, retaining walls and protection against weather, micro-organisms and poisons, as well as more mundane things such as skin and clothes, which offer humans the most basic protection of all. There are also barriers erected for the social good, for example the idea of a job qualification, entrance requirements for access to university courses, regulation and legislation that act to discourage crime and so on. In the light of this it seems important to ask whether there are any such positive barriers in relation to sustainable development and universities, and what the arguments for them might be. We do this by re-examining the evidence from case study four that universities gave in response to the 2005 HEFCE *Consultation on a Support Strategy and Action Plan*.

In none of the university responses would there seem to be any evidence of any *internally erected* barriers to the freedom that academics have to research and teach about sustainable development issues as they see fit – and clearly the reverse is true in some responses. One university expressed a commitment to 'preparing [its] graduates as global citizens', for example.

However, in another case it is possible to see a university taking a stance against what it sees as HEFCE's prescription, as a protective barrier that operates at a number of levels, serving to shield the university itself and both staff and students from undue external pressure and influence to act or think in particular ways, whilst enabling internal freedom of action, which might, of course, itself be used to advance a sustainability agenda. Another reading of this is that the university's stance offers staff and students protection against the university itself.

This tension between externally driven ideas and internally set agendas is found throughout all of the sustainable development higher education initiatives put in place in England over the last 15 years, and probably more widely. To a

degree, of course, this has been a creative tension in which ideas have grown through interactions. However, to re-state aspects of our earlier arguments, universities cannot simply set out to attempt to meet future skills needs because what those needs will turn out to be depends on a range of factors, some of which are uncertain or unknown. One such factor is the influence of the higher education curriculum itself in determining (rather than meeting) such needs.

Similarly, universities cannot in instrumental fashion teach *now* for sustainable development *in the future*. The precise requirements for sustainable development will also depend on a range of factors, some uncertain, some unknown. Again, one such factor is the influence of the higher education curriculum in determining (rather than meeting) those requirements. There will be many others relating to, for example, changes in relative prices over time, technological innovation, shifts in values and preferences, the progression of global warming and climate change, the resolution (or not) of political conflicts, and the occurrence of unanticipated natural events such as earthquakes and floods. In a liberal conception, universities, and the individuals they educate, should be at the cutting edge of society's creative response to unfolding future circumstances. This clearly is not achieved by making them the uncritical repositories of present conventional wisdom – whether in relation to higher education *or* sustainable development – as determined by elite groups, government committees or, for example, through generic teaching and learning frameworks, and generic ESD modules. In this sense the protection that some universities offer their staff and students through a policy of enabling and encouraging, but not prescribing, internal developments can be seen as a valuable safeguard: a barrier to defend rather than to set aside.

Universities value knowledge and for that reason they demand clarity about what is known and how. Universities also value the pursuit of knowledge and must, therefore, insist on its present and on-going incompleteness – in the face of those who, for whatever reason, wish to extrapolate to final, general truths. Sustainable development touches on all aspects of our intellectual lives and will require us to husband what we know, eschew glib certainties and confront the future with an open, learning orientation. To this extent there is an identity of interest between higher education and sustainable development.

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