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Systems thinking: Understanding sustainability

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Introduction

In our increasingly complex world of change and uncertainty, particularly in the context of climate change, the notion of sustainability is often raised as the key issue for decision making in the 21st century. But sustainability is itself a contentious term and often used in misguided ways depending on the context of use. This course introduces ways in which systems thinking can help support processes of decision making amongst stakeholders with different, often contrasting, perspectives on sustainable development in order to generate purposeful action to improve situations of change and uncertainty.

The perspectives of the authors of this course

As recognition of multiple perspectives is an important skill to develop in relation to systems thinking you should note that this course has been written by three authors who are referred to in the text – **Chris Blackmore**, whose background in education and environmental and rural development projects led to her use of systems ideas for exploring interconnections between environment, development and learning; **Jake Chapman** whose background in energy research, including campaigning for energy conservation and renewables, helped him develop an appreciation of systemic nature of these issues and **Ray Ison** whose experience of scientific approaches to natural resource management that historically excluded people from considerations led to his interest in more systems-based approaches to managing which enable participation by stakeholders in defining their systems of interest.

This OpenLearn course provides a sample of level 2 study in Computing & IT

Learning Outcomes

After studying this course, you should be able to:

- engage with the domain of sustainable development
- contextualise any experience in the domain of sustainable development
- critically read, interpret and analyse some accounts of environmental, development and sustainable development issues and situations
- identify systems of interest in some sustainable development situations
- identify types of hierarchy that are meaningful in the domain of sustainable development.

1 Exploring your understanding of sustainable development

Have you come across the term ‘sustainable development’ before? My guess is that some of you will have and some will not. This course is written to try to take account of both these positions. We will say more about what we as authors mean by sustainable development in Sections 3 and 4. For now I want simply to describe it in very broad terms as ‘bringing environmental and development issues together with the future in mind’. I realise this statement is open to different interpretations and what we and others mean by environment and development are also explored further in Sections 3 and 4. But I do not at this stage want to offer too rigid a definition before you have had a chance to explore this general area and to start to contextualise your own experience through completing some initial activities.

In Activity 1, which follows, you will be asked to collect and analyse a few news articles. I want you to do this over the next few days rather than straight away. But you are likely to find it most useful if you complete it *at the latest* before starting Section 6. Your answer to Activity 2 will be purely for the purpose of taking stock of how you understand sustainable development at this stage. You may find it useful to note down the answers to both of these activities so you can return to them later in the course as a reference point when considering your own learning. Your answers may also serve as a useful reminder about how it feels to be starting to consider, or to reconsider, this domain (depending on whether it is new to you). Doing this may help you to understand the perspectives of others when you are well entrenched in all the specialist language later on. There is no right or wrong answer to either of these activities.

Activity 1 Engaging with the issues

Over the next few days collect up to six news articles that cover either environmental or development issues (or both) from newspapers, magazines, radio, TV/video or the Internet. Read or listen to these articles and answer the following questions for each article.

1. What was your first reaction to the article? (For instance did you find it: interesting, boring, funny, dull, alarming, moving, reassuring? How did you respond to it: with agreement or disagreement, belief or disbelief, scepticism, criticism, concern, compassion, resignation?)
2. What is the environmental or development issue being discussed?
3. In what sense do you think it is an environmental or development issue or both? (Are the words environment and/or development used or does it conform to a definition or impression you have of what these terms mean? If so, try to explain that definition or impression.)
4. Whose issue does it appear to be? (Just that of the writer or are people mentioned who are affected or who seem to be concerned or who hold views on the issue?)

5. How do you feel about the issue being discussed? Do you identify with it in any way or not? Do you consider it to be your issue or someone else's?
6. Is there any mention or inference of boundaries, direct or indirect effects or interconnections?
7. Does the article mention or imply anything about the future? If so what? (Doom and gloom, hope and encouragement or anything else?)
8. Is the term 'sustainable development' (or 'sustainable' or 'sustainability') used in the article? If so, in what context? If not, does the article bring environmental and development issues together in any way, either explicitly or implicitly? If so, describe how this is done. If not, just note whether the issue is considered in isolation or whether any links are made or implied to other issues or events.

Activity 2 What does sustainable development mean to you?

Take just a few minutes to note what the term sustainable development means to you before you engage with any arguments for or against. First, use a spray diagram or mind map to draw out different meanings of the words 'sustainable' and 'development'. Write down a few comments or questions about the meaning of the whole term to you, either as part of the spray diagram or alongside. Then make some links with your own experience. For instance, you may have come across the separate words or the whole term in particular contexts before or be reminded of other concepts you have explored either in this course or elsewhere.

2 Searching for ‘system’ in sustainable development situations

Read the three newspapers articles below. They offer some different perspectives on transport, environment and global warming. Try not to read them as ‘fact’ but to notice the issues raised, people involved, authors’ assumptions etc. When you have read these articles, there are some activities based on them. So you may either wish to look ahead to find out what you will need to do or alternatively read the articles first and be prepared to go back over them.

Action to curb traffic growth

by Nicholas Schoon

Private car use will keep on rising, along with the harm it does society, unless Government takes much firmer action to prevent it, ministerial advisers warn today. The UK Round Table on Sustainable Development, set up after the Rio Earth Summit to advise the Government on long-term economic and environmental issues, reached its conclusions after making a study of Northampton, a fast growing town near the M1 whose inhabitants and businesses are more car-dependent than the average.

Although the county and borough (town) councils had good intentions and wanted people to make more use of public transport, bicycles and walking, economic realities dictated otherwise. The councils either lacked the powers needed to act decisively in favour of more environmentally friendly forms of transport or feared that if they did important local businesses would desert Northampton for other, more car friendly towns.

The report singles out Barclaycard, which employs 2,500 in Northampton. It moved from the town centre to a new site, on the edge of town, which was poorly served by public transport, causing a large increase in car travel. The council did not dare to decline planning permission for the move.

(*The Independent*, 14 February 1997) Events concerning the location of Barclaycard have moved on between the time when this article was written and the time of writing this course. But I have decided to include it because it still provides a useful example in terms of different systems of interest. Similar events are still occurring elsewhere at time of writing.

Environment struggles for a place in people’s hearts

Leyla Boulton reports that public concern to improve matters is undermined by a sense of helplessness

Guinness and the environment have a surprising amount in common, says Peter Cooper, a consumer psychologist who helped give the Irish black beer mass appeal.

Like the environment, Guinness used to be respected but not something people felt was for them until they ‘got into it’, he says. Today there is a high level of public concern and anxiety for the environment but a sense of helplessness about what can

be done. Most of my friends and colleagues would agree. They see sustainable living as something for hairshirt-clad 'green' eccentrics.

When I tell people I do not own a car, their reaction is almost invariably one of pity – or disbelief that my family and I feel richer and happier using public transport, hiring a car when we need one.

Those who do not share this pervasive eco-scepticism tend to be either the very old or the very young.

Ten-year-old Susannah Peel, for example, frequently reproaches her mother for 'bringing us up in such a dirty world'. Her sister Lilly, a 20-year-old student of English literature, is also worried about the environment but takes a more worldly-wise view. She believes the main reason for people's neglect of the environment is a combination of laziness and lack of alternatives. 'People always go for the easiest option,' she says, arguing that the British recycle far less than Germans because Britain lacks a door-to-door system for collecting glass, paper and plastic.

But the British may also have a point in shunning the German zeal for recycling. Weekend forays to the bottle bank may be a waste of time if people continue to do much greater harm to the environment by wasting energy, which might contribute to global warming.

As for a lack of alternatives, Britain has a thing or two to learn from Germany's superior public transport system.

But the experience of Zurich, Switzerland's financial centre, which for the past 20 years has waged war on the car, shows the environmental regulation must be accompanied by a change of mentality. Many people, remaining attached to their cars, have simply stopped travelling into the city centre, driving instead to out-of-town malls where parking is free and plentiful. Tom Gladwin, an environmental management professor at New York University's business school, has identified a much more fundamental obstacle to change. In a paper entitled 'Why is the Northern Elite Mind Biased Against Community, the Environment, and a Sustainable Future?' Prof Gladwin contends that society is suffering from 'collective irrationality'. The possible reasons for this include a 'repression of the ecological unconscious' – in short a desire by humans to dismiss from their minds environmental truths that are too awful to accept.

Greenpeace, the environmental pressure group, contends that individuals have nothing to feel guilty about: it is up to governments to set the right incentives for people to change.

'To expect individuals to deliver outside the framework made by government is futile,' says Chris Rose, deputy director of Greenpeace. 'You get into high-pain low-impact solutions. People realise that's a pointless sacrifice.'

Joanna Sutton of Going for Green, a government quango, believes the way forward is for government to relentlessly market a clear message on what individuals can do.

She concedes, though, that this could turn into the longest marketing campaign in history.

'I don't think this is going to be something we can achieve in a generation but the problems are so severe the environment cannot be a lost cause.'

(*Financial Times*, 30 August 1997)

Climate disaster map pinpoints ‘no-go’ areas for insurers

by Nick Nuttall, Environment Correspondent in Buenos Aires

Vast areas of the world are becoming uninsurable as global warming triggers devastating and costly rises in sea levels, as well as droughts, floods and increasingly violent storms.

Experts fear that some nations especially those in the Caribbean, parts of Asia and the Pacific, face greater economic hardship. They believe insurance cover, vital for attracting inward investment to develop tourist resorts, protect homes and businesses, will become prohibitively high. In some areas it may disappear entirely as insurers protect themselves from multibillion-pound claims.

The increasing concern, which comes as representatives of more than 100 nations and governments, including John Prescott, the Deputy Prime Minister, attend the United Nations convention on climate change in Buenos Aires this week, has been heightened by the first map to pinpoint regions where natural and man-made climate change will hit hardest.

The climate disaster map (Figure 1), which is circulating among the world’s major insurance firms, has been compiled by scientists and researchers at Munich Re, one of the world’s largest re-insurance companies.

Dr Anselm Smolka of Munich Re said the map, which couples the impacts of climatic events caused by El Nino with those predicted to result from more atmospheric greenhouse gas concentrations, was plotted using information from the UN Intergovernmental Panel on Climate Change and centres such as the Max Planck Institute.

Dr Julian Salt, a disaster assessment expert with the Loss Prevention Council, which advises the Association of British Insurers, said yesterday that the new research was ‘concentrating the minds’ of insurers worldwide.

It shows where there is increased risk on top of all the natural hazards. ‘‘We are fast approaching the situations where some parts of the world are becoming uninsurable,’’ he said.

The map shows where rising sea levels and more frequent storms may swamp islands in the Caribbean, Indian Ocean and the Pacific and where reductions in rainfall, such as over the grain-growing areas of the United States can be expected.

In Britain, the map underscores the increasing vulnerability of property and structures to higher windspeeds buffeting the country from the Atlantic. The coastline of the North Sea, including the east and south-east coasts of Britain, is at increased risk from a rise in the sea level.

Dr Salt said that publicly insurers will reject suggestions that insurance may be removed or premiums will rise. Privately, however, these ‘politically charged’ options are being considered, he said.

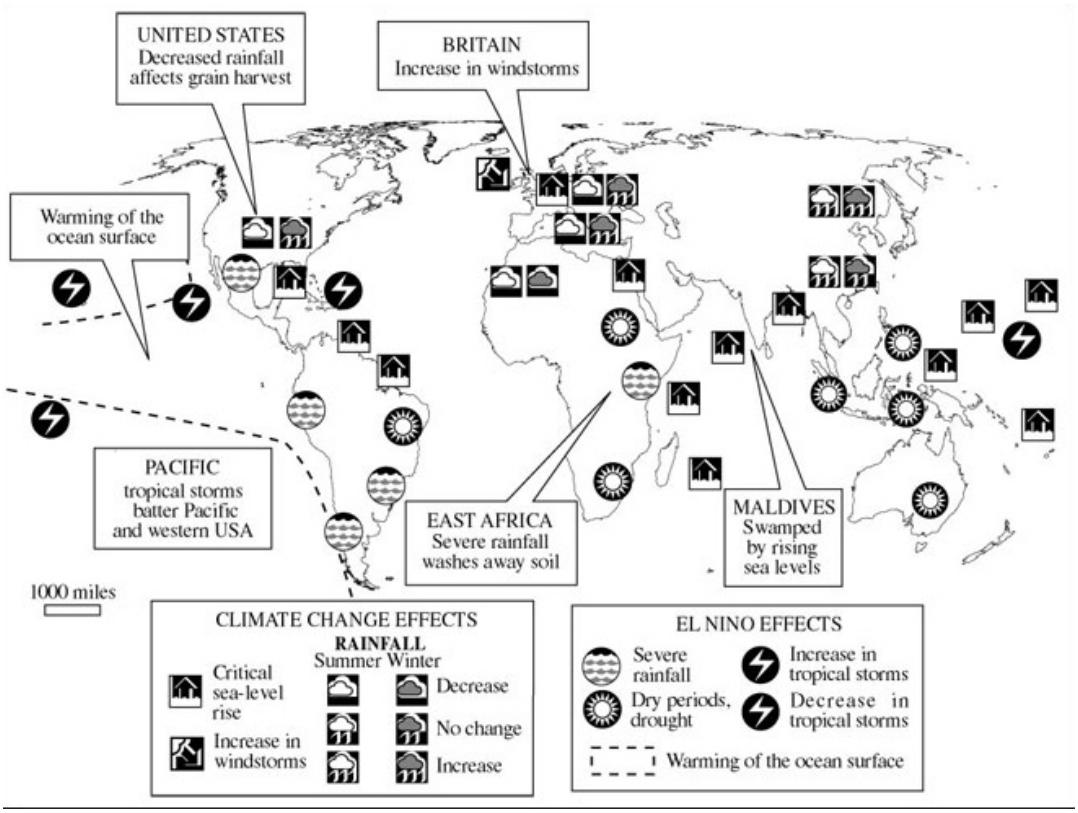

Figure 1 Map showing rising insurance risk from climate change according to Munich Re

> He said that in countries such as the Maldives, vulnerable to increased storms and rising sea levels, global warming could affect tourism, the primary industry.
>
> Andrew Dlugolecki, a key member of the UN Environment Programmes insurers' initiative, said there was an urgent need for new, imaginative ways of covering vulnerable regions and nations.
>
> 'I am quite certain that there are some areas which will be unprotectable and may disappear. A major problem is brewing,' he said.
>
> (*The Times*, 9 November 1998)

Activity 3 Analysing the articles you have just read

This activity is based on the three articles you have just read.

Answer all questions for each article.

1. Go through each article systematically listing the people who seem to be involved or affected; events mentioned; elements of structure and process in the situation.
2. Pause and think. Do you relate to any of the points you've listed? (For instance would you include yourself in any of the groups of people? Were you aware of the events mentioned or involved in any way? Do you relate to any of the other elements?) Write down any ways in which you do identify with people, events, structure and process you have listed in answer to Question 1.
3. Draw a rich picture of each situation described. Locate yourself in the picture – either as observer or where you feel included in any group mentioned.

4. In your view are there any perspectives missing from the articles that you would find helpful to understand in analysing the situations described? If so, which are those that you would consider most important to investigate if you had the opportunity to do so? How might you find out about these other perspectives?
5. Now consider the structural elements in each situation. Do you recognise any hierarchies? List all those you can find. Note any uncertainties about positions of some elements in hierarchies or whether the structure is hierarchical. Do you relate to any of these hierarchies? For instance are the areas in which your decision-making takes place represented – or not? If you do recognise any hierarchies, do you relate to them or do you experience them as 'someone else's hierarchies'?

There are several possible hierarchical structures to be found in the articles (to do with people's groups, organisations, nations, species etc). Identify a single hierarchy from one of the articles and try and represent it now in a systems map, using the recursive nature of the systems map with its different levels of system and sub-system to draw out the hierarchy you have found. Figure 2 may be of assistance in identifying some different levels in a hierarchy.

Figure 2 'Identifying a hierarchy?' (Wadsworth, 1991)

Discussion

(I have included here just a part of my answer to Question 5 and the final task in the activity to give an idea of what is intended.)

Hierarchies

Organisations: Local businesses/Town Council/County Council/Government/UK Round Table

Mobility: Walking, bicycle, public transport, cars/modes of transport/Northampton transport system

Spatial: Town centre/out-of-town/national (e.g. road network, M1)

Uncertainties

As an advisory body I am assuming the UK Round Table is at a higher level of the hierarchy than government, however if judged in terms of responsibility for decision-making Government may be at a higher level with the cross-sectoral Round Table represented at a lower level. Similarly town and county council's, although apparently

ranked hierarchically (county surrounding town and therefore at next level up), may just split responsibilities rather than have a hierarchical structure.

I am uncertain about the ‘mobility’ hierarchy. In the sense of mobility combined with flexibility it may be possible to rank the individual modes of transport but they could also be represented as individual sub-systems within a ‘modes of transport’ sub-system which in turn was within a ‘Northampton Transport System’.

Relating to hierarchies?

Yes – I can relate to the ‘local business’ level, as it is the closest organisational equivalent to the university where I work. I also relate to the Government and UK Round Table levels in this context, as I have been involved in some of their wider discussions on sustainable development. I relate to all levels of the transport hierarchy to some degree. I relate to out-of-town sites and national ‘spatial’ networks. (I was thinking of roads though they are not specifically mentioned in relation to each stage of the hierarchy.)

Someone else’s hierarchy?

I don’t have much direct experience of Councils so don’t really relate to that part of the organisations’ hierarchy.

The hierarchy I identified is shown in Figure 3.

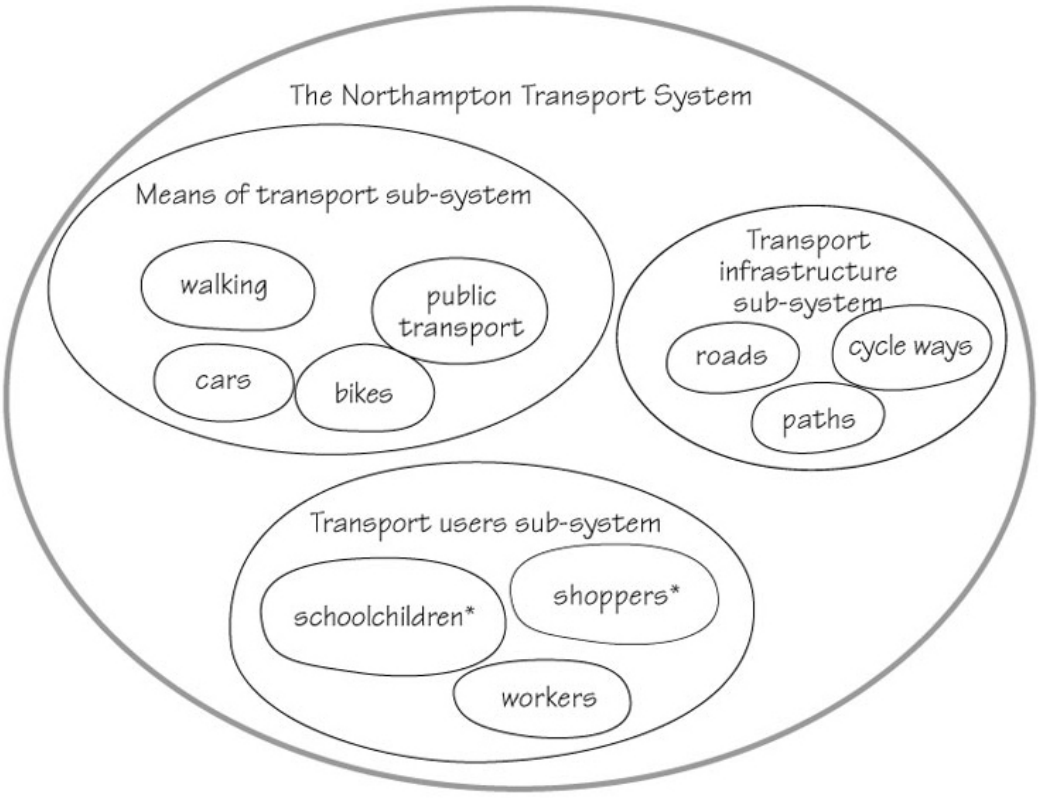

Figure 3 The Northampton Transport System

Activity 4 Making connections between situations

What links can you find between the three articles? For instance, are there issues that overlap? Are some of the same groups of people mentioned? Can you recognise any causal links between one situation and another? Try to find one recurring theme or group of people and explain what connections you see.

Was there enough detail in the articles for you to be able to make the connection easily or did you have to draw on your own experience, other perspectives or previous knowledge?

Discussion

I found several links between these three articles as well as within them. For instance in the first article there is reference to the car as harming society and not being ‘environmentally friendly’. In the second article there is reference to cars used on weekend forays to the bottle bank which might contribute to global warming. And in the third article there is reference to ‘man-made’ climate change and the effects of more atmospheric greenhouse gas concentrations. Details I needed to be able to make these connections from my previous knowledge included:

- that cars do produce greenhouse gases (for instance carbon dioxide)
- that the uncertainty referred to in ‘cars might contribute to global warming’ is probably reference to the multiple-cause nature of global warming.

This last point is also picked up in the third article with the emphasis on both natural and man-made climate change, not just to one or other.

I’m aware there has been considerable uncertainty for many years about the nature and scale of the effects of people’s activities on global warming given that these effects seem to have been countered by other effects such as holes in the ozone layer. At time of writing (early in 2000) as far as I’m aware, the link is internationally accepted to have been established, hence such organisations as the UN Intergovernmental Panel on Climate Change.

(I will continue to include some of my activity answers but only where I think they may be useful to you. They may help to exemplify another perspective but I would expect my answers to activities to be different from yours as they relate to experience. For instance your answer to Activities 3 and 4 may be very different from mine and for that reason I have not assumed that you will find the local to global hierarchy the most meaningful, so I suggest (below) an additional systems map as optional. SAQ answers on the other hand tend to reiterate what is in the course so will all be included and you can expect your SAQ answers to be similar to mine.)

The notions of ‘hierarchy’ and ‘levels’ are important in systems practice, useful in structuring and grouping elements when exploring a system of interest. I became conscious when reading a number of similar articles to those included here – and noting different people’s reactions to them – that there are many different hierarchies which individuals find meaningful in the domain of sustainable development. In the three articles for instance, you may have focused more on people – individuals and social groups – or on physical environmental elements and weather systems. If you have done this you may wish to extend the activity now in a different way to come up with a systems map that includes both human and non-human subsystems as it is important to remember the interdependence of these elements in the context of sustainable development. Separating

them out in your thinking at this stage may be restrictive and result in difficulties in engaging with some of the material later on in this course.

The interdependence of humans and our environment means that systems practice in the domain of sustainable development cannot concentrate on human factors alone. In my view it is essential that political, economic, social, biological and physical dimensions be seen as parts of one system so that we recognise the effects of our actions. If you have not come across sustainable development before, or through the activities are identifying different systems of interest to mine with different boundaries, you may find this last sentence a bit opaque. I will not go into this at the moment but this line of reasoning will be discussed further as we develop the course. (You may want to note at this stage any questions this raises for you so you can check back later on.)

On the basis of the above articles and several others (not included here) that I used in my attempt to answer Activity 1, I have listed the following hierarchies (see Table 1). I notice some overlap between the categories and also some gaps. From your perspective, are there other hierarchies you are aware of that are not included here? (Perhaps from other academic disciplines or from your own experiences?) In the next activity I am going to ask you to try to contextualise these within your own experience.

Some possible hierarchies for structuring sustainable development situations are given in Table 1.

Table 1 Hierarchies for structuring sustainable development situations

Organisational	Single organisational:
	Individual/group/team/company
	Multi-organisational:
	sector/bigger sector/cross sector/all
Community	Individual/network/bigger network
Geographical	Local/regional/national/regional/international/global
Spheres	Physiosphere/biosphere/noosphere/theosphere[1]
Being and consciousness	Matter/life/mind/soul/spirit[1]
Cultural	A hierarchy that ranks collective worldviews[1]
Personal	A hierarchy that individuals find natural to them, which may
	be one or more of the above or something quite different

[1] Ken Wilber's work (e.g. Wilber, 1996) is one source of these ideas on hierarchies. Wilber refers to them as 'holarchies' after Arthur Koestler's term 'holon' which refers to an entity that is itself a whole and simultaneously part of some other whole, i.e. what T306 refers to as a system.

Activity 5 Identifying types of hierarchy you find meaningful

Think about the hierarchies listed above in the context of your own experience.

Either

a. if you feel the list in Table 1 has little or no meaning in relation to the articles you have just read write down why and try to put forward an alternative. (The aim of

this activity is to help provide a way of becoming aware of your own and others' perspectives and the hierarchies you and others choose is a part of that.) Or

b. modify the list to make it a list of hierarchies that you can identify with. If the words I've chosen coincide with those you would have chosen leave them in, otherwise take them out and/or replace them with your own. For instance if you identify with the 'community hierarchy', which networks? (Perhaps, family, extended family, other community groups, etc., though these types of groups could just as easily be grouped as social hierarchies, or perhaps grouped in the context of worldviews rather than the external factors that link them as cultural hierarchies.)

The concepts of hierarchies and system levels seem to me to be central to sustainable development, where individuals' actions are relevant to a range of levels. Hierarchies are also important to consider because systems possess emergent properties that their sub-systems do not. It is not always possible to predict what properties may emerge at different system levels in different people's sustainable development systems of interest. But for a systems practitioner in this domain I believe it is helpful to recognise different system levels to work out how to facilitate interaction and to realise that these systems will not simply be a sum of their parts. One relevant example I and a colleague noted from our experience, was when UK environmental and development educationalists with interests in sustainable development got together as the Education for Sustainability Forum to prepare and follow up educational objectives of the Rio Earth Summit (Blackmore and Smyth, 1999). Environmental and development educationalists with interests in sustainable development focus on many of the same issues of people and their environment, though with different emphases. They could be thought of as sub-systems of an Education for Sustainability (or Education for Sustainable Development) system. There may be as much variation *within* these formulations of sub-systems as *between them* because of different interests and understandings of environment or development. However, it seemed to us that a system that included them both and allowed them to interact showed quite different properties from its sub-systems. This was important for us to note in helping to facilitate interaction at the whole system level as it affected how we thought about who to involve and how. For instance, we found it useful to recognise both the whole system (i.e. Education for Sustainable Development) and different sub-systems of interest in drafting advertising material for workshops. It meant that a broad range of people recognised this material as an invitation to take part in events in which their own system of interest was a part. Some were drawn by the idea of education for sustainability or sustainable development, others more by environmental or development education in the context of sustainable development.

Peter Checkland (Checkland and Scholes, 1999) argues that the main changes that can occur through purposeful activity relate to structure, process and outlook or attitude. Checkland recognises that different observers will attach different importance to different hierarchies, with the choice of level always being observer dependent. This is shown in Figure 4 in the context of a simple example of painting a house. Checkland attributes the functions of what to do (P) how to do it (Q) and why do it (R) to the different system levels – system, sub-system and wider systems respectively. I can relate to this by considering the systems map I selected for my answer to Activity 3. For instance I would consider 'means of transport' at the system level – the *what*, cars at the sub-system level – the *how* and the Northampton transport system at the wider system level – the *why*. Can you relate Checkland's ideas in Figure 4 to your own answers to Activity 3? Note down any comments.

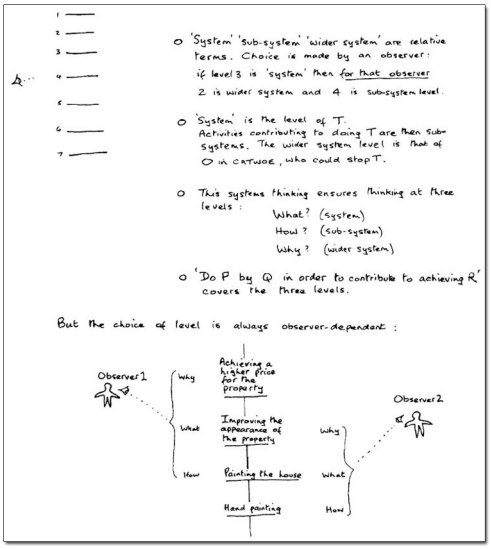

Figure 4 Choice of level is observer dependent (Checkland and Scholes, 1999, p. A24)

SAQ 1

How may the concepts of hierarchy or systems levels be used in analysing sustainable development situations? Why does the author (Chris) think it is important to recognise them?

Answer

Elements of structure in sustainable development situations often seem to be hierarchical, so different system levels can be identified in systems of interest. The author thinks different people will find different hierarchies meaningful, so identifying them will show how people are thinking and what they consider to be important. She thinks of hierarchies and system levels as central to sustainable development, where individuals’ actions are relevant to a range of levels. She also make the point that hierarchies are important to consider because systems by definition possess emergent properties that their sub-systems do not.

SAQ 2

Explain what is meant by the Figure 4 caption ‘Choice of level is observer dependent’.

Answer

The caption refers to Checkland’s point that the main changes that can occur through purposeful activity relate to structure, process and outlook or attitude. Checkland recognises that different observers will attach different importance to different hierarchies, with the choice of the levels – system, sub-system and wider system – always depending on what an observer selects as significant. It is also useful to explore different levels to those originally identified so as to check that action is focused at the right level.

I hope by now that you will have identified some systems, explored some hierarchies you find meaningful and recognised recursion in some sustainable development situations through answering the activities. I now want to move on to look at a broader historical

account of sustainable development from different perspectives than the articles at the beginning of this section

3 Contextualising sustainable development in terms of historical events

Now that you have had a chance to explore your own understanding of sustainable development and to identify some 'systems of interest' in sustainable development situations I want you to consider this domain in its historical context. My reason for introducing this account at this stage is that in exploring sustainable development situations later in the course and elsewhere you will need to understand some of the references to this history that others make. Many practitioners, including some systems practitioners, have been trying to bring together issues of environment and development at different levels of decision making. While the term may be open to many different interpretations it has already become an established domain of practice for many.

Before we look at this historical context, here's a further cautionary note about language. As you read this course it is important to recognise that the concepts of 'environment' and 'development' are used and understood in many ways. The term 'environment' is often understood as that which surrounds and affects an entity. But some people use the term very broadly and others in a much narrower sense. In the context of systems and T306 generally, environment is a systems concept, referring to the context for a system-of-interest. It is recognised as affecting the behaviour of that system. However the term environment is often used in a different sense when talking about sustainable development, referring only to the 'ecological', 'natural' or 'biophysical' environment. This can be confusing so as authors we will try to make clear how we are using the terms as we consider specific situations. But when you come across the term 'environment' in this course you may also find it useful to pause and check the sense in which it is being used. However hard we as authors may try to be explicit about our perspectives and to appreciate those that others have we no doubt have our own blind spots in the language we use.

The term 'development' will be used in several ways in this course, for instance to describe:

1. 'world' development in the two different ways that Alan Thomas (Allen and Thomas, 1992) identified as (a) a historical process of change and (b) deliberate efforts by all kinds of organisations and social movements as attempts aimed at progress and improvement, and
2. particular site-based infrastructural projects, such as roads and supermarkets, in the sense of new developments or redevelopments.

What follows is a historical account that has been put together by two of the course's authors, Jake and me. It started as two separate interpretations of events we thought were relevant to sustainable development but there was quite a lot of overlap so we decided to combine it into one account. It is an attempt to look at a wider system (as we see it) which could form the context to systems of interest you may have identified in the news articles. However, as a historical and chronological account it is not just a snapshot of a wider system in one moment in time – systems of interest are not static – their boundaries and characteristics change with time and observer choice.

(I suggest you read the following account right through in the same way as you did with the news articles in the previous section – trying not to read it as 'fact' where it is evident

that values, beliefs and circumstances have affected the authors' perspectives. Notice the issues raised, people involved, authors' assumptions, etc. There is a series of activities to be completed after you have read it and a final note on use of terms that will take you to the end of Section 4.)

History suggests that there have always been people who have been concerned about the future welfare of humankind. This concern has been based upon extrapolations of current activities and awareness that past civilisations have collapsed when challenges have not been faced. Depending upon your disposition you may regard those who are concerned about sustainable development as

- wise people giving timely warnings
- examples of pessimists let loose, or
- downright dangerous doom-mongers.

All these epithets have been attributed to people who have issued such warnings (indeed they have all been attributed to one of the authors of this piece by the press at one time or another!).

There are many theories as to why for instance the Ancient Egyptian, Sumerian, Mayan and Polynesian civilisations collapsed (you may be familiar with some of them from TV documentaries or books). Among them are theories that the pattern of human demands in those societies damaged their environmental support systems. When combined with other external environmental changes and various social, cultural, political and economic circumstances, this meant that those societies could not adapt to the combination of changes in time and so could not continue their ways of life (Ponting, 1991; Clayton and Radcliffe, 1996). Such interpretations of these events acknowledge multiple causes and systemic effects.

3.1 Predictions

One of the better known historical figures who predicted difficulties for the future was Malthus (1798). He noted that whereas food production seemed to increase linearly with time, populations grew exponentially (a constant percentage each year – see T553 for further details). It does not take long for the exponential growth to exceed the linear growth by a large factor, and thus predict large-scale starvation. Other well-known classical economists, such as Ricardo and Mill (around 1800), predicted that the scarcity of resources would eventually lead to the cessation of economic growth – thereby earning economics the title 'the dismal science'. Observations of the (then) present that had implications for the future (our 'now') were also made. For instance in 1947 Mahatma Gandhi was quoted as saying 'the earth has enough for everyone's need but not for their greed'. Rachel Carson's book *Silent Spring* in 1965 made connections between use of pesticides in agricultural development and diminishing numbers of birds with predictions that this trend would continue unless farming practices were changed. In 1972 a small book, *Limits to Growth* was published by an American group who used systems dynamics to develop a model of the global economy. Their analysis purported to show that even making optimistic assumptions about resource availability and curtailing population growth, the world economy would collapse within 50 to 100 years. (The world modelling part of the story will be expanded in a subsequent course.)

These historical examples of prediction are useful in that they make it clear that, whilst concerns about the future may be well founded, the future is unknowable and often turns

out to be profoundly different from the fantasies of both pessimists and optimists. Many of the disasters forecast in the past have been avoided by technological developments. Take for example the Victorian forecaster who calculated that if the growth in horse traffic continued at the (then) current rate, by 1950 London would be covered in three feet of horse manure each year! Motor cars replaced horse traffic, so the problem of dung was avoided. Though it is perhaps arguable whether this was more or less of a problem than the present congestion and pollution due to motor traffic! The limited resources referred to in the Limits to Growth model have been expanded many times by advances in technology making it possible to extract oil from hostile environments and precious metals from low grade ores, albeit not without various knock-on effects for communities and their environments. The optimists point to these historical precedents and assume that technology and the ingenuity and abilities of people will always enable us to escape from the dilemmas currently forecast. Indeed from one perspective the forecasts of future disasters are made precisely to encourage people to avoid them – they are self-defeating forecasts.

But is this optimism justified? Are there any reasons why current forecasts of future problems should be taken more seriously than those made in the past? There are several factors that seem to us to make the current position different in principle from the past.

This principle difference is that the scale of human activity on earth is now approaching the same scale as the natural cycles that occur around the globe. The use of fossil fuels over the last one hundred years has changed the composition of the atmosphere. Human engagement with other parts of ecosystems is causing hundreds of species to become extinct each year and the effects of human activity are evident well beyond the immediate locations in which we live. Many of the resources that were used to drive industrial development in the 19th century are now exhausted, or uneconomic at present to remove, in the areas where they were initially extracted (for example tin in Cornwall and oil in Texas). Water extraction rates exceed the annual flow of some rivers. However they do not run dry because wastewater is returned to them. Vickers (1966) noted that the River Thames could once have been considered as an independent physical system, part of the given environment and primarily a way in which water from a stable catchment area found its way to the sea. He reflected on the effects on the river of people's activities (for example flood control, distribution of water, pumping and use for transportation and sewage disposal) and predicted that the Thames would virtually disappear within what he described as a human socio-technical system. He felt it would become dependent on new physical constructions, new institutions, and a new attitude to the use of water and the regulation of the whole water cycle. His observations still seem very appropriate in the context of sustainable development more than thirty years later, as indicated by the following quote from Klaus Topfer, UN Under-Secretary General and Executive Director of the United Nations Environment Programme in 1998.

> At the beginning of the 18th century, there were less than a billion people in the world sharing less than a million cubic kilometres of freshwater. In 1900, there were about 2 billion people sharing the same amount. Now there are more than 6 billion people and the freshwater supply has remained constant.

Another difference is that with the increased scale of human activities comes an increase in associated effects and disparities between rich and poor. For instance a vicious circle relationship has been identified by many between poverty and environmental degradation. Others have stressed the 'effluence of affluence' claiming that the underlying cause of environmental degradation is wealth as opposed to poverty (Holmberg 1991, Sandbrook 1992; see also Figure 5). This point is made in a specific context in Box 1.

Box 1 Environment and wealth in Nigeria

It should be noted that poverty and the poor are not uniquely connected with the environment degradation syndrome. The affluent and the powerful have perhaps an even stronger connection with the problem. The difference is essentially in the modes of activities and associated products through which the environment is degraded. For instance, nobody seems to see the direct link between the share-holding of the powerful and the rich and the pollution caused by manufacturing industries. But everybody notices the overgrazing of the rangelands by the cattle of the poor herdsmen.

(NEST, 1992, pp.17–18)

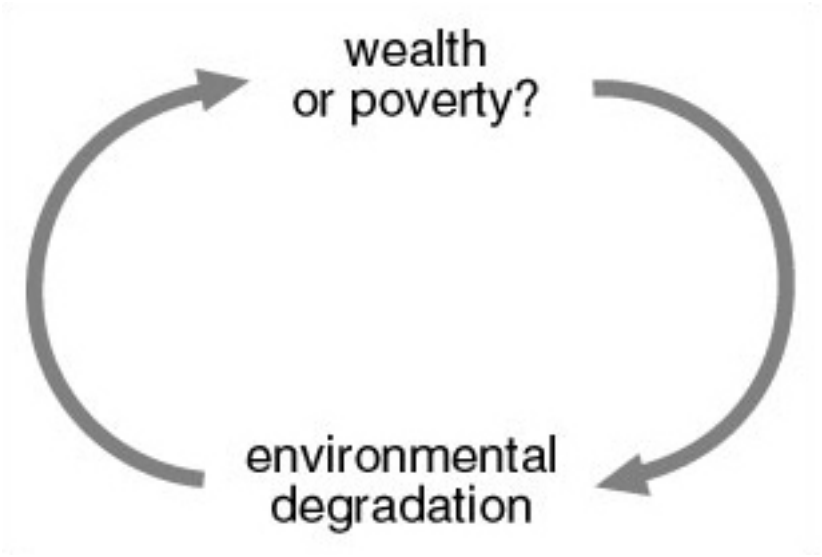

Figure 5 The vicious circle relationship of wealth or poverty and environmental degradation

Increases in energy and resource consumption in many parts of the world have also been increasingly inequitable. This has led to differentials in capacity to trade due to differences in power and bargaining positions in world markets.

Concern about the future has led to other activities besides prediction, particularly on the international stage. There was increasing recognition among governments, business and industry, non-governmental organisations and international agencies that action by one or a few countries alone would be ineffective unless matched by others.

3.2 Linking environment and development

In 1972 an international conference held in Stockholm in Sweden attracted large numbers of people from governments and non-governmental organisations (NGOs) who felt they were stakeholders in environmental issues. From that conference emerged a clear theme that environment and development issues were inextricably linked. Around this time the term ‘sustainable development’ first started to appear.

In 1980 the International Union for the Conservation of Nature and Natural Resources (IUCN), the World Wide Fund for Nature (WWF) and the United Nations Environment Programme (UNEP), all organisations that see themselves as dedicated to preventing environmental catastrophe, produced the World Conservation Strategy. This strategy

stressed the interdependence of conservation and development and called for the vitality and productivity of the planet to be safeguarded.

In 1983 the Brandt Commission, chaired by the former West German Chancellor Willi Brandt, reported on North/South relationships; see Figure 6. (The term 'South' in this context is or was often used interchangeably with the terms 'third world', 'developing countries' and 'less developed countries'. 'North' in this sense is used to apply to the rest, the so-called 'developed' or 'industrialised' world. With increased globalisation since 1983, while there are still many development issues between regions, the boundaries have changed in some senses and the divisions are considered at time of writing to be artificial and to cause unhelpful polarisation and stereotyping in some sustainable development situations. For instance the contrasts between rich and poor occur within as well as between countries and there is considerable diversity in terms of development within both South and North.)

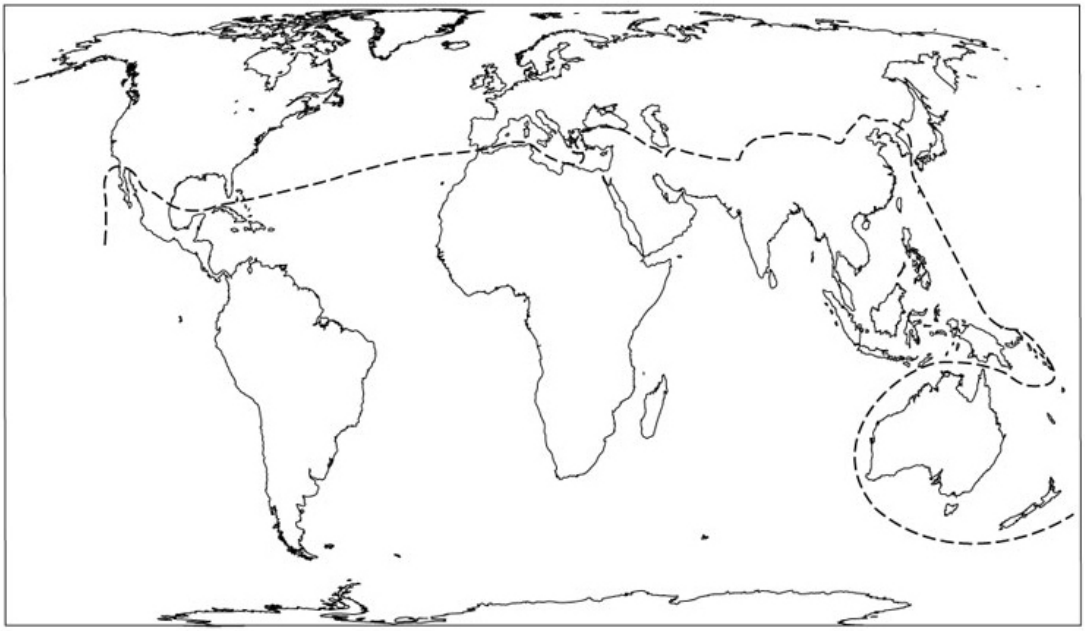

Figure 6 Map showing Brandt's North/South divide (Smith and Warr, 1991, p. 245)

3.3 The Brundtland report

As a result of recommendations from the Stockholm conference and Brandt Commission, the World Commission on Environment and Development (WCED; also known as the Brundtland Commission, after Gro Harlem Brundtland, the then Prime Minister of Norway, who chaired the Commission), produced its report 'Our Common Future' in 1987. The Brundtland definition of sustainable development became particularly well known.

> Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

What this definition succinctly emphasises is that the core issue is one that involves trading some present consumption or development or satisfaction with some aspect of the welfare or development or satisfaction of future generations. This concern has deep emotional roots in human beings, especially in people who have, or expect to have, children of their own. Parents forego many types of current satisfaction in order to provide

for the future of their children – and this drive has clear biological and evolutionary advantages. Issues that threaten the sacrifices made by parents generally raise very strong emotional reactions – reflecting the high commitment and value placed on this concern for the future.

A brief account and interpretation of events around the time of the Brundtland report came from Richard Sandbrook, then Executive Director of the International Institute for Environment and Development:

> Two important factors helped bring the report in to the public domain. Firstly Mrs Gro Harlem Brundtland, the chair of the commission, became the Prime Minister of Norway shortly after working on the report in 1987. She was thus in a position to promote the conclusions of the report at the highest possible level. And this she did. Ironically, she was joined by Mrs Margaret Thatcher, the UK Prime Minister who had originally opposed the Commission. But, as a scientist, Mrs Thatcher had become deeply concerned about the discovery of the hole in the ozone layer. As a result she decided to promote the environment issue at the United Nations and was joined by Gorbachev, Mitterrand and Gandhi. Thus the international beauty contest of world leaders was set in motion. By the end of 1988, some 50 national leaders had come out in strong support of the conclusions of the Commission, with many calling for a major event to discuss and act upon the Brundtland report.
>
> (Sandbrook, 1992, p. 16)

3.4 The United Nations Summits and Commission for Sustainable Development

The major event mentioned by Sandbrook took place in 1992. The Earth Summit – the United Nations Conference on Environment and Development – held in Rio de Janeiro was the largest gathering of heads of government that the world had ever seen. 178 government delegations attended, there were also around 50,000 non-governmental representatives and over 5,000 press and thousands of civil servants (Lindner, 1997). From the Earth Summit conventions emerged on: climate change and biodiversity; a set of guidelines of forest principles; a declaration on Environment and Development and ‘Agenda 21’, an extensive international agenda for action for sustainable development for the 21st century. Agenda 21 was endorsed by all government delegations present and received a wide range of input and support from NGOs.

After the Earth Summit the UN Commission for Sustainable Development was established to promote the process of sustainable development and to address the issues and actions identified in Agenda 21. Lindner (1997) described Agenda 21 as ‘40 chapters that cover almost everything about the planet and how humans interact with it’ (p. 4). It includes social, economic, conservation and resource management dimensions. Agenda 21 calls for radical changes in the way many live their lives in order to address global issues, ranging from protecting atmospheric, oceanic and freshwater resources to conserving biodiversity, transfer of environmentally sound technology, managing forests, wastes and biotechnology to combating poverty and protecting human health (Quarrie, 1992). Stakeholders in Agenda 21 processes, which take place at a range of

different levels – from global to local, include nine overlapping 'major groups' who identified themselves or were identified by others. These major groups are:

- women
- children and youth
- indigenous people
- NGOs
- local authorities
- workers and trade unions
- business and industry
- scientific and technological community, and
- farmers.

There are in addition many participants who identify with issues such as freshwater, tourism and education rather than with the major groups.

There are in addition many participants who identify with issues such as freshwater, tourism and education rather than with the major groups. There were many more events at international, regional, national and local levels that followed the Earth Summit. In 2002 a further summit – the World Summit on Sustainable Development (WSSD) – took place in Johannesburg, South Africa. Whereas the Brundtland era focused on 'North-South' interactions and the realisation that we didn't know enough about the inter-relationships between ecological, social and economic dimensions, WSSD focused more on political and social dimensions of sustainable development and issues of participation, governance and the creation of networks of stakeholders and partnerships.

3.5 Increasing globalisation

Perhaps one of the most significant changes between 1992 and 2002 was increased evidence of globalisation, particularly in economic terms such as trade, finance and growth of multinational companies. Besides conferences and events there are other aspects of this global view of issues associated with development. There are other fundamental reasons why issues associated with sustainable development arouse deep feelings within people. It is not accidental that many of the examples of issues are associated with global or international levels of decision making and action. It was one thing for the coal fires in London to create smogs (a mixture of fog and smoke) that caused significant numbers of inhabitants to die of respiratory diseases. It is quite another for the global use of fossil fuels to change the global climate so that sea levels rise and threaten large parts of the world's population with flooding. Most of the interest in sustainable development is not parochial – it is not the inhabitants of Cornwall protecting the interests of the future inhabitants of Cornwall. It is a concern for the future inhabitants of the globe as a whole.

Identifying with the globe as a whole is an area where relevant ideas have been put forward on the evolution of human consciousness and culture.

There is not space to go into these ideas in detail here so we have summarised them in Box 2 and included references for those interested in finding out more about them.

Box 2 The next phase of human evolution?

A number of philosophers and developmental scientists interested in the evolution of human consciousness and human culture see the awakening of a concern for the global population as the next phase of human evolution. This is a vast topic that cannot be adequately introduced here, but the argument can be outlined. (Further references on this topic include Wilber, 1996; Lazlo, 1991)

Human cultures seem to evolve through a series of stages, each of which is characterised by a dominant form of 'identification' in the people comprising that culture. As individuals within the culture increase their own awareness, which usually means rising above a particular level of a hierarchy they identify with, the culture is challenged and itself undergoes change.

A human infant, when first born, is completely identified with its primary carer, usually its mother – it cannot distinguish itself from its mother. When it learns to do so it becomes identified with itself as a physical entity. This identification means that its consciousness does not consider itself to be anything other than an entity with physical needs that are met or unmet. Later it will become identified with its emotional needs – at this stage it may even forego physical needs in order to satisfy its own emotional needs. As the child develops cognitive abilities it will learn to be able to put itself in the place of another person and will identify itself as a member of a family unit. Still later it may identify with a tribe, or a peer group or a nation or a race. Each of these identifications serves to provide the person with an identity – I am a member of this group, not that. In this sequence the next level of identification, at least for some, is with all of humanity. Many historical individuals have reached this level of identification and have often been regarded as very spiritual or religious individuals – they behave in ways that put others first and do not discriminate one person or group in preference to another. So this view of the evolution of individual consciousness, the emergence of a global level of concern, is possibly the next phase of human consciousness.

A similar conclusion arises from evolutionary studies of human culture. Identification with a tribe provides a survival advantage to its members – but leads to conflicts between tribes. Identification with groups of tribes, which combine into states or nations avoids the conflicts and provides a greater survival advantage. Within the modern world federations of states and nations have come to dominate global politics and confer even greater survival advantages. The natural next step is a global culture in which all differences of race, language and history are subsumed into a system that serves the interests of all. Clearly for this 'globalisation' to occur there needs to be a large number of individuals who clearly perceive the advantages of such arrangements – individuals who have evolved their identification to all humanity rather than any subset.

The last two paragraphs are a very crude summary of extremely complex and well-researched ideas. They have been introduced because many of the individuals who are adherents of 'sustainable development' will, to some degree have adopted a global perspective or values, which reflect this level of consciousness. This perspective and set of values are profoundly held, even when not clearly articulated, and explains the deep commitment and emotions that are engaged in this domain.

Several critical readers of Box 2 reacted to the mention of avoiding conflict. For instance Roger Packham of University of Western Sydney, Hawkesbury suggested that embracing conflict can sometimes be a creative process so avoidance is not always the best strategy:

> While I cannot disagree about major conflict (Bosnia, Northern Ireland etc.) surely it is a systemic property that sub-systems will exhibit differences, and that it is the tensions of difference that lead to emergence? It is the edge of chaos phenomenon; too much and the system falls apart, too little and the system stops, but while hovering at the edge, creativity emerges (see Brian Goodwin's book *How the leopard changed its spots* (1994).

Human values will be discussed in more detail later but the point made above is one to take forward for further consideration in the context of values – the apparent need to value difference as well as similarity.

Before going on to the next set of activities, in Box 3 I have drawn out from what has been described so far, some general aspects of sustainable development that many people experience as complex.

Box 3 Some aspects of sustainable development that many people experience as complex

1. Events may occur over large timescales e.g. the effects of CFCs (chlorofluorocarbons) on the ozone layer.
2. Some of the systems of interest in this domain are very big so individuals may lose sight of the effects of their actions. (This is in contrast to the scale of many other systems of interest identified in other parts of T306.)
3. Things are always in a state of change and sustainable development is generally not trying to keep things the same, but to co-evolve systems with their environments.
4. There are many, many people involved and it is often not clear who the main stakeholders are in any attempts at purposeful activity.
5. The consequences of actions may be found a long way in time and place from their multiple 'causes' (e.g. with issues of production and consumption between industrialised and developing countries, or acid rain or pollutants that accumulate in the world's oceans).

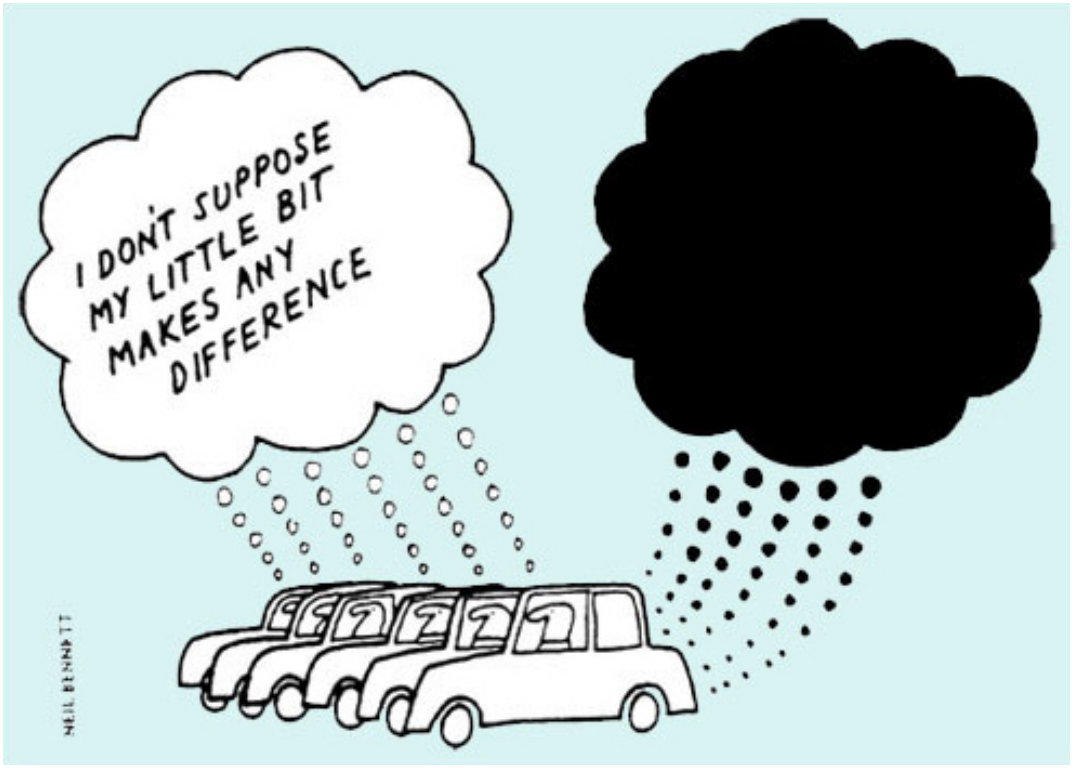

Figure 7 Individual actions, collective effects (Source: Bennett/ECOS)

I now want you to answer the following activities, which relate to the historical account you have just read in this section.

Activity 7 Optimist or pessimist?

Do you regard yourself as an optimist or a pessimist in the debates regarding the future welfare of humankind (or neither, or both)? Do you think that concerns about the future are over emphasised? Or do you think that much more needs to be done now to ensure development into the future?

Figure 8 Optimist or pessimist?

Activity 8 Making sense of predictions with hindsight

Do you remember reading or making predictions about the future that later turned out to be true or false? If so, write down how this affected how you received further predictions about the future.

Discussion

As a research student I remember reading warnings that freon, the gas used in refrigeration equipment, could cause serious depletion of the protective ozone layer. These warnings were published in 1969. Twenty years later there were serious holes in the ozone layer contributing to a worldwide increase in skin cancer. The ozone depletion problem was serious enough to cause all the industrial nations to agree to phase out the use of freon and to find and use substitutes. The increase in carbon dioxide due to the use of fossil fuels is causing global warming – as predicted in *Limits to Growth* in 1972. But the evidence only became overwhelming in 1992 when an international convention on Climate Change was agreed at the Rio Earth Summit. It will take another twenty years to simply slow the growth in carbon dioxide release. So I now read similar warnings with an awareness that some of the recent predictions in this area have come about and are causing serious problems

Activity 9 Analysing Brundtland's definition of sustainable development

Consider Brundtland's definition of sustainable development. Write down what concepts and assumptions you find within it. Do you agree, disagree (or neither or both) with the general idea of sustainable development as you understand it from this definition?

Discussion

I find three concepts in the Brundtland definition:

- development
- needs
- intergenerational equity.

If stated as a definition rather than a starting point for discussion I find several assumptions. A first is in the use of the term 'development' without expansion of what is meant. Does it assume readers will have a single understanding of this term or several? The same could be said of 'needs'. I assume it is needs as opposed to 'wants' but out of context it is difficult to tell. There also seems to be an assumption that the needs of the future are knowable, so that we can meet them when arguably (in my view) it is only people of the future who will know what they need. There's also an assumption or inference that the future is as important as the present. It is part of an ethical position about what ought to happen rather than what is.

Despite all these assumptions I agree with the general overall idea expressed, if I think of sustainable development as a process with lots of caveats about who is sustaining what, how and for whom.

Activity 10 Understanding development

Explain what you understand by development in the context of the Brundtland definition? What perspectives do you think need to be taken into account in development?

Discussion

I understand development in this context to be a qualitative rather than quantitative concept i.e. more than just economic growth. I understand development to be a process and am aware that it can be understood both as an historical process of social change and as efforts to make deliberate improvement and progress. The Brundtland definition seems to me to imply development as a process going forward into the future that takes environmental, economic and social dimensions into account.

Activity 11 Where were you in relation to the events described in section 3?

Write down answers to the following questions:

- Where were you while the events and activities mentioned in the account in section 3 were going on?
- Were you aware of any of these events and activities and this use of language? If so, how? (Through the media, direct or indirect involvement, education, travel, through friends and colleagues?)
- Are you aware of any of these ideas having a direct influence or effect on you?

- Which of the issues mentioned did you or do you identify with?

Activity 12 Identifying a system of interest

1. Draw a systems diagram to represent your understanding of the UN Commission for Sustainable Development situation in section 3.4. Write a few sentences about the process of developing your diagram – what you found easy, what questions you wanted to ask etc.
2. Try to locate yourself on the diagram, perhaps as part of one of the stakeholder groups or if you don't identify with the situation then indicate where you see yourself as an observer in relation to the system or sub-system boundaries.
3. Either write down a few sentences to explain why you see yourself as a stakeholder in this situation or if you don't then try to indicate what it would take for you to feel you were such a stakeholder? (If you located yourself on your system diagram as an observer rather than stakeholder you could start this activity by thinking about why you placed yourself where you did on the diagram.)

Discussion

1. The first thing I want to say is that my choice of diagram, a systems map, made this quite a difficult activity to do because of the amount and type of data available in the account. But I found drawing it quite a revealing process as I participate directly in various Agenda 21 processes. I think a different sort of diagram such as a rich picture may be more suitable for showing some aspects of the situation.

   My initial dilemma was that I had originally wanted to show all nine major groups. I know they are overlapping but from the data available I don't know which groups overlap and to what degree. I could make a few guesses but the end result would not have been meaningful so in the end I just grouped them together. Another query arose for me when considering the function of the UNCSD to promote the process of Agenda 21. I know they do this primarily through Agenda 21 but I found I didn't know whether they had any activity aside from that. In the end I guessed that they have staff whose job it is to promote the process so I decided that sub-system may overlap but I am still uncertain. I went through a similar process in including the administrative subsystem and decided that if it was a UNCSD system I was drawing rather than an Agenda 21 system I would expect a separate sub-system of some sort for administration. One aspect I could not represent because I did not have enough data was the local and global levels of activity. Hence I was left with a first step towards representing the UNCSD system rather than a near-complete version.
2. X on this diagram represents me (as demonstrated in Figure 9).
3. I see myself as a stakeholder in the 'other issues-based groups' sub-system because I am involved in the Agenda 21 group processes around Education for sustainable development, which is not one of the major groups but still an active stakeholder group. As local, national and international levels are not distinguished on this diagram I think this representation makes the suggestion made in Agenda 21 that everyone is a stakeholder in sustainable development seem rather hollow. For that I would need to draw a different sort of diagram, one that showed where everyone could be accommodated within the stakeholder system. I think it would have to be a diagram that represented Agenda 21 rather than the UNCSD system

as I doubt 'everyone' would feel included within that system unless it was described or represented diagrammatically a little differently.

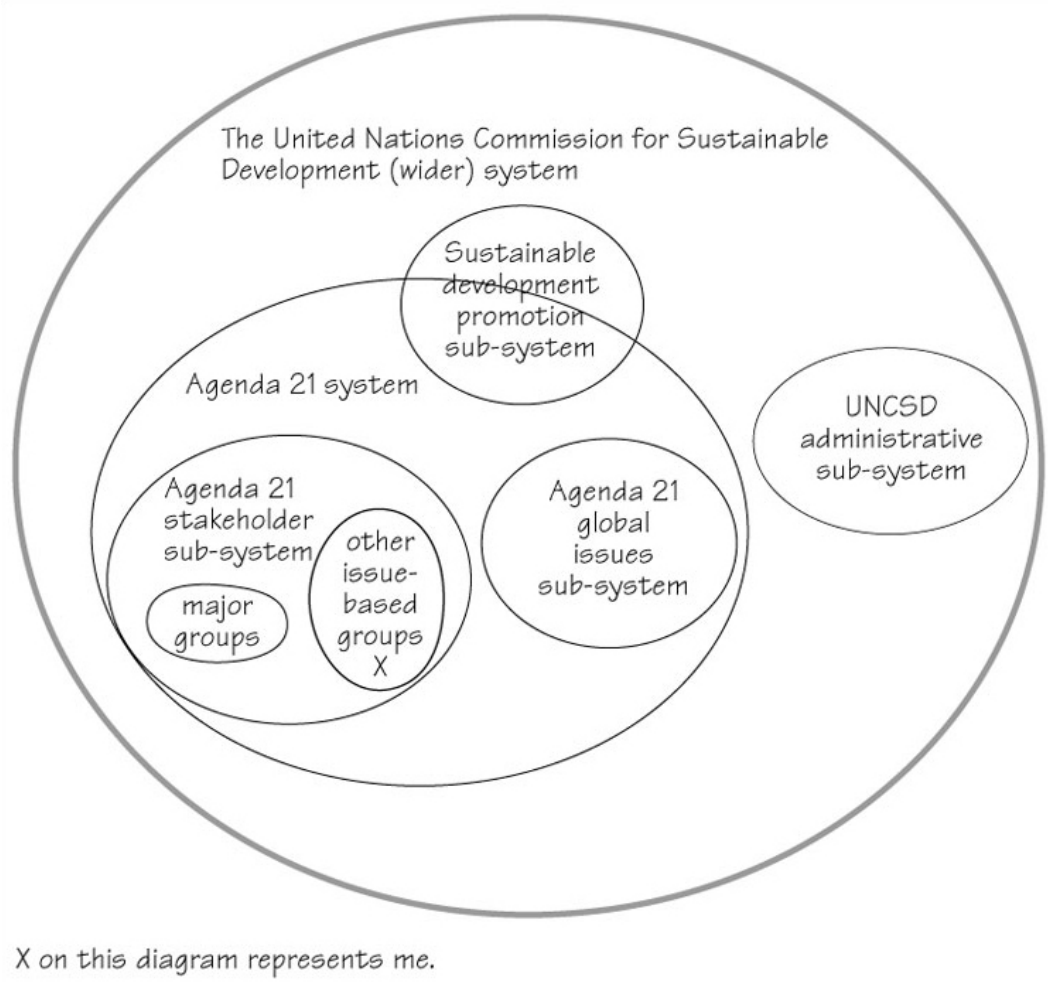

Figure 9 A systems map to show the UN Commission for Sustainable Development situation.

Activity 13 What would you add to the account from your perspective?

Imagine you have been asked to contribute to the historical account of events and activities of relevance to sustainable development in this section. Write down which events and activities you would add to the above account and explain why.

Activity 14 Developing your own timeline of sustainable development events

Using the authors' historical account and your answer to Activity 13, develop your own timeline of sustainable development events so that you can easily keep track of what events occurred when as they are referred to elsewhere in this course or in other contexts.

4 Sustainable development and sustainability

Before moving on to look at some different beliefs about sustainable development, which take account of perspectives that reflect a broader range of ethical positions than ours as authors, I want to briefly address a question of language that will come up in this course. You may already have thought about this use of language in some of the earlier activities.

Practitioners working to address environmental and development issues often use the terms sustainable development and 'sustainability' almost interchangeably. Both terms have at their roots the word 'sustain', which is used in everyday language. It is a word derived from Latin – *sub* + *tenere* where *sub* meant under or towards and *tenere* – to hold or keep. There are several detailed meanings defined in most dictionaries, depending on context. Most of them imply supporting or keeping going. 'Keeping going' does not of course mean the same as 'keeping' though some notions of sustainability appear to confuse the two. My understanding is that sustaining implies something that persists but it does *not* imply something that is static or unchanging. It implies something dynamic and can also imply a radical change in people's practices rather than continuing with 'business as usual'. Systems dynamics is particularly relevant in this domain (this will be discussed in a subsequent course). These ideas of sustainability and sustainable development are very much in keeping with the idea of systems co-evolving with their environments, discussed earlier in the course.

There are many types of sustainability – ecological, economic, financial, social, political, institutional, depending on what is being sustained. As Clayton and Radcliffe (1996) point out, some definitions of sustainability are incompatible. The process of sustainable development has a historical tradition which has tried to increase the compatibility of ecological, economic and social sustainability, making each of equal importance in decision making. It is for this reason that sustainable development rather than sustainability was selected as the focus for the domain considered in this course in order to explore these inter-relationships and different perspectives. The situations described here in which a systems practitioner is managing all have some ecological, economic and social dimensions. But as various past students of this course have pointed out most examples tend to emphasise or value one dimension or another rather than consider all three equally – and what each person means by ecological, economic or social varies a lot too.

Sustainable development can be represented diagrammatically in many ways. Figure 10 is one I find meaningful. Other dimensions besides environmental, economic and social could be represented. For instance, in a more developed form of Figure 10 'technical feasibility', 'political legitimacy' and 'institutional capacity' were also included as influences in guiding study of the sustainable development of the paper industry (IIED, 1996).

To summarise, in this course we will primarily use the language of sustainable development but where we use the term sustainability it will be in its senses that are to do with both environment and development not just one or other. We will *not* be discussing ideas of sustainability that have little or nothing to do with environment and development. However, in systems literature outside this course you are likely to come across the wider use of the term. It is also important to be aware that in much literature the meaning of the terms sustainability and sustainable development is left to readers to at least partially

deduce from the context in which the term is used. Where you are uncertain of what is meant by the term sustainable development or sustainability in a particular context you may find it useful to experiment with drawing diagrams like that in Figure 10 to clarify what is meant.

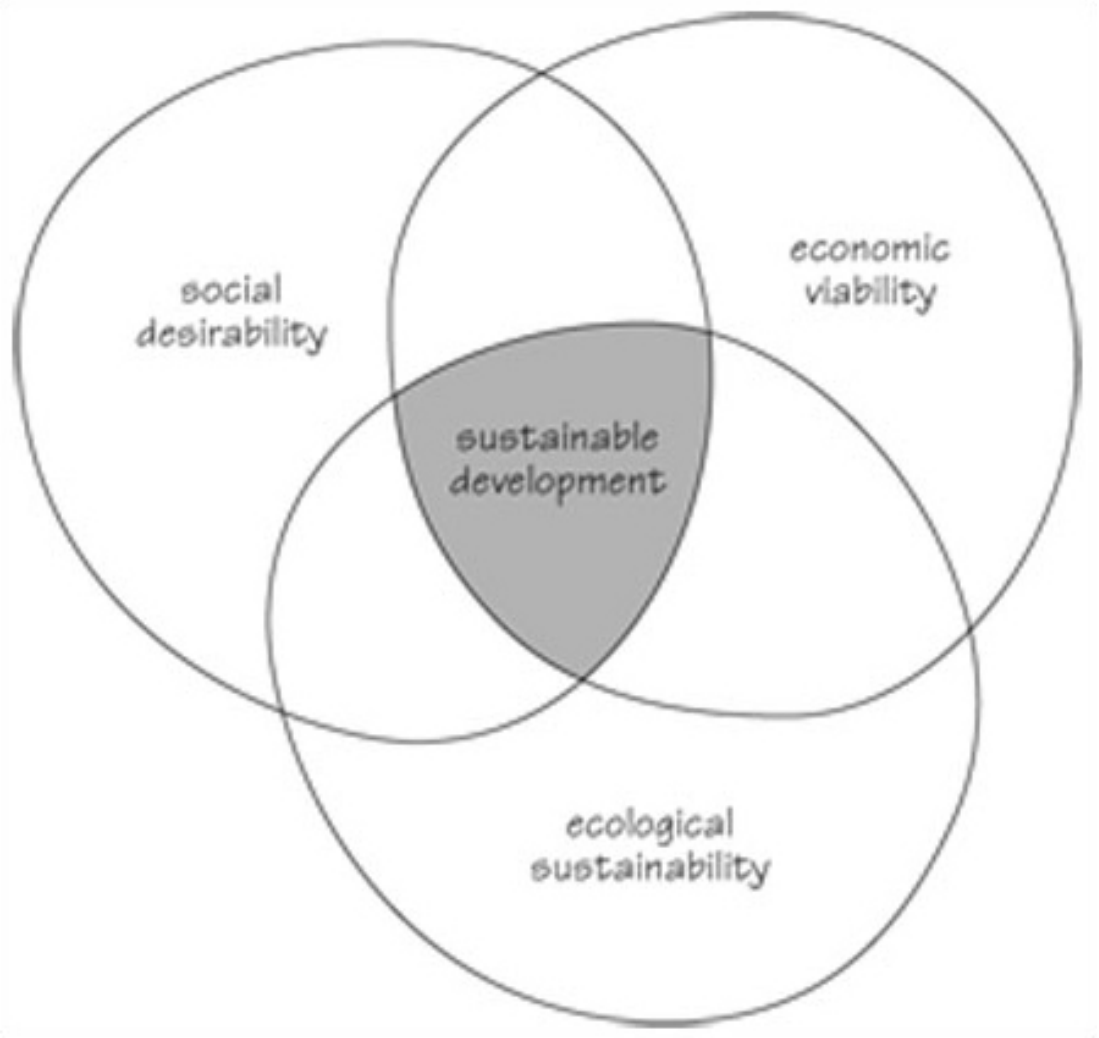

Figure 10 Sustainable development: where ecological, economic and social aspects overlap

5 Values, beliefs and circumstances

We have highlighted the need for systems practitioners to make their perspectives apparent. The rest of this course aims to help meet this need by drawing out some different dimensions of perspective – values, beliefs and circumstances. This technique can be used to consider different perspectives in many domains of practice, not just sustainable development.

Consider the following two statements:

> We, in the business community, must protect the environment for the benefit of future generations.
>
> There are high costs attached to building new supermarkets on out-of-town sites.

Is it clear to you what they mean? How would you interpret them? To me they both indicate perspectives on sustainable development situations. I can imagine that there are other perspectives on the situations being considered, depending on values, beliefs and circumstances. For instance the first statement gives an indication of the personal circumstances of the speaker – a member of the business community. It appears to be a statement of belief – a starting point for a chain of reasoning. But what has led to the statement, what is behind it – whether opinion, attitude or value – is not clear to me, as justification for the belief is not given in the statement. The second statement also appears to be a belief; there is no indication of the speaker's personal circumstances in this case but there is a reference to 'costs' that leads me to think that values may be considered in a conversation that included this statement.

Without further details of the contexts within which the statements were made and what has led to them I have very little to go on so would find it hard to appreciate the speakers' perspectives. However if in both cases the speakers made their individual or group values, beliefs and circumstances clear, I could then start to understand and contextualise their perspectives, both in relation to my own and to others. In other words, I could start to think systemically about the situation, recognising what is being described in the context of a wider system of interest.

Appreciating different perspectives, and accordingly recognising the values, beliefs and circumstances that determine them, is an essential skill for a systems practitioner. In the domain of sustainable development it is, in my view, particularly important for the practical purposes of working out shared agenda and planning group activities as the term 'sustainable development' means many different things to different people.

In the rest of this course I will be concentrating on individual and group values, beliefs and circumstances, how they contribute to different perspectives and how they affect people's thinking and behaviour in the domain of sustainable development. The terms values, beliefs and circumstances are used in a range of different ways, both in academic texts and in more general usage. I will try and make clear in what sense I use these terms and some of the meanings you may come across in other literature as I expand later sections.

In general terms I will refer to a *value* as meaning something that an individual or group regards as something good or that gives meaning to life. A *belief* I will consider to be an intellectual starting point for a sequence of reasoning. *Circumstances* I will use to refer to personal factors, such as experience and role, which affect how a situation is perceived.

Hence, my expansion of the second of the initial statements above could be:

> As a local resident who currently makes purchases in small shops in the town, I think there are environmental, economic and social costs attached to building a new supermarket on an out-of-town site. I am concerned that such a development would reduce the quality of life in the town and put other members of my community out of business.

This statement is still open to different interpretations but I think it is easier to appreciate where it is coming from compared with the original statement as it gives some elements of what may have determined my perspective. The local resident with experience of shopping in small shops in the town gives an indication of personal circumstances. The belief statement is still there as before but expanded to give some dimensions of the costs perceived. The values that underpin this statement are hinted at in the last sentence, though still partly hidden and would need to be checked to appreciate the perspective more fully. For instance 'quality of life' will mean different things to different people depending on what they regard as good. I would include my love of 'nature' here but what I mean by that may still be different from what others would mean by the same phrase. It's also not immediately apparent from the statement why I value other members of my community, whether it is because I think they have value in their own right or because they have some value to me (I would actually claim both). I suggest that in descriptions of sustainable development situations details of values, beliefs and circumstances, which contribute very significantly to an individual or group perspective, are often omitted. But even when accounts are expanded, it is common to find that values still remain at least partially hidden. Why this may be the case will be discussed later, in Section 9, but for now it is something to watch out for when trying to appreciate different perspectives on situations in this domain.

Now try the following activity in which you will be asked to explore and make apparent your own perspective on an issue. I have not included my own answer in this case as I have already been through a similar process with the supermarket example.

Activity 15 Exploring your own perspective on an issue

1. Write a single sentence expressing your own views about one of three things – nuclear power, genetically-modified crops and food, or road building.
2. Expand the sentence (in the way that I did above with the supermarket statement) to offer your own perspective on the situation.
3. Analyse your expanded statement and note elements of personal circumstances, beliefs and values.

You may have found in doing the above activity that there were elements that you could not categorise as values, beliefs or circumstances, perhaps because you thought they described some different dimensions or because you were uncertain which category they fell within. There is no need to be concerned if this was the case. The aim of this activity was to help you to (a) distinguish between values, beliefs and circumstances and (b) be able to consider them in their context – not to break down a whole into its constituent parts and take them out of context.

There are also other possible categories, for instance, you may have noticed that I have already mentioned some other terms – opinions and attitudes. They are related but I will

not be considering them in depth. This is partly because of space and the practicalities of drawing out their many dimensions, but also because in some respects they are less relevant in the context of this particular course.

The following quote from Robert Worcester, Chairman of MORI (who produce opinion polls), made at the 1994 World Environment Day Symposium on Values for a Sustainable Future may help to set some of these terms in context.

> Survey research measures five things: knowledge, what we know; behaviour, what we do; and then opinions, attitudes and values. I have defined these latter terms, rather too poetically I fear for scholarly adoption, as 'opinions: the ripples on the surface of the public's consciousness, shallow and easily changed; attitudes: the currents below the surface, deeper and stronger; and values: the deep tides of public mood, slow to change, but powerful.'

Robert Worcester was commenting on the public rather than individuals but in my view his descriptions could just as easily be applied to individuals.

5.1 Connections between values, beliefs and circumstances

Values, beliefs and circumstances all determine our perspectives that in turn affect the way that we conceptualise the world – our worldviews. There are connections between these values, beliefs and circumstances. But as values in particular (in the sense that I refer to them here) are often hidden and seem to be more to do with our emotional than intellectual ways of knowing, these connections are, in my view, not easy to rationalise. Beliefs, on the other hand, as intellectual starting points seem to me to be more subject to reason. These terms are not used in a standard way in all the literature you are likely to come across and connections individuals see between them in different situations do vary. So rather than attempt to 'define' the nature of these connections I want you to explore them in the context of your last activity answer.

Activity 16 Considering connections between values, beliefs and circumstances

Consider the way in which values, beliefs and circumstances have been defined and used in this part so far. Now look at Figure 11. Assume all the arrows mean 'contributes to'.

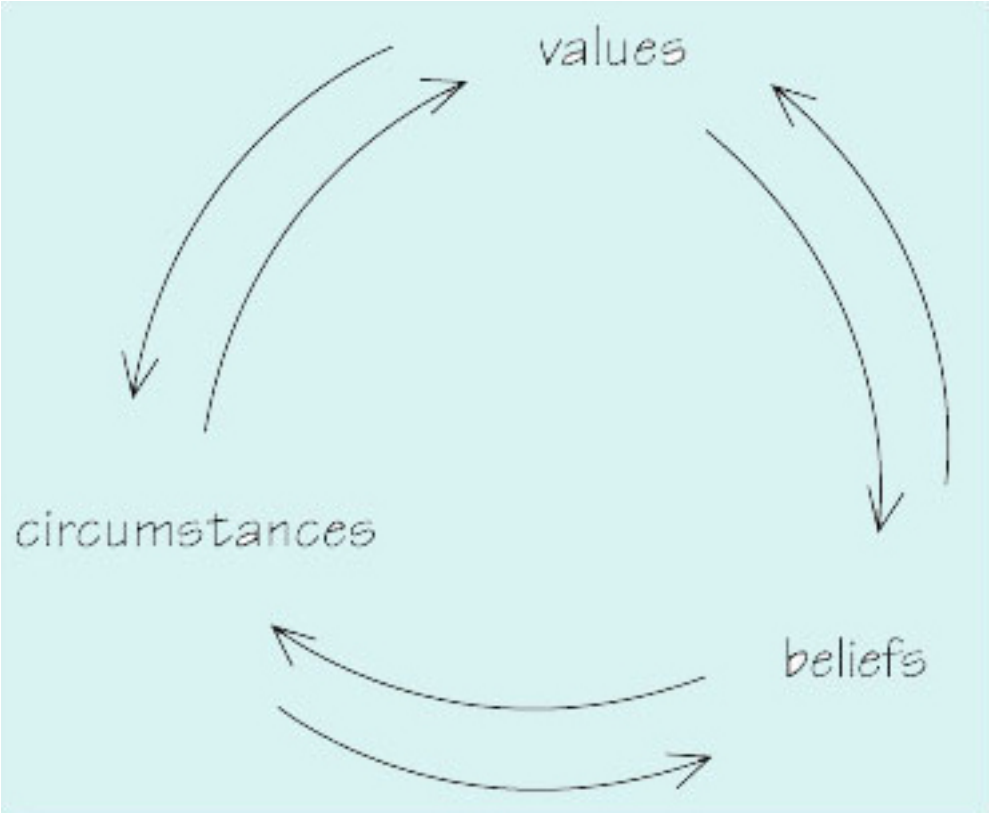

Figure 11 Connections between values, beliefs and circumstances

You will need to return to this activity later on in this part so record your answer.

1. Think about each of the six arrows in turn.
2. Use your answer to Activity 15 as a starting point for considering the nature of the relationships between values, beliefs and circumstances in the domain of sustainable development. In each case, write down whether or not you think there is a connection and what it means.
3. Redraw Figure 11 so that it shows the connections you found, omitting arrows where you did not find connections and representing strong connections with thick lines, weaker connections with thin lines and questionable connections with dotted lines.

Discussion

(My answer is based on the supermarket building example I used earlier.)

1. –
2. **Values contribute to beliefs?**

   Yes I think there is a clear connection. If I did not place value on 'quality of life' and 'members of my community', I don't think I would necessarily hold the belief that there are costs involved even though I may accept that it applies for others.

   Values contributing to circumstances?

   I think I also see a connection here in that my values affect where I currently shop. There are other factors that contribute to my circumstances though and it doesn't appear to me to be a strong link.

   Beliefs contributing to values?

I think holding this belief does reinforce my values, which in turn reinforces the belief but I don't think it contributes to me holding the values I do in the first place. Hanging onto the belief may mean I also have difficulty in changing my values but which would change first I'm not sure. Hence, for me this is a questionable connection.

Beliefs contributing to circumstances?

I think there is a connection here. For me, it appears to be the same kind of connection as between values and circumstances, i.e. beliefs are another factor that contribute to my circumstances but because there are many factors it does not seem to be a strong link.

Circumstances contributing to beliefs?

Yes, I think there is a clear connection in this example between my circumstances, which includes my experience, and my beliefs.

Circumstances contributing to values?

I think there is a connection but I am less certain of the nature of it because I find it more difficult to understand why I hold the values I do. I think a whole range of past circumstances over many years have probably help form my values not just the circumstances related to this example.

3. Compare your diagram with mine (see Figure 12). For me, some of the connections turned out to be much clearer than others. In particular, I found it questionable whether my beliefs and circumstances contributed to my values (rather than the other way round). I think this was partly because I found my values in this example less easy to articulate than beliefs and circumstances, possibly because I experienced them emotionally rather than intellectually. You may have found some quite different connections. One critical reader for instance when exploring a different example noted 'I was struck by my reaction to beliefs and values. I know in my own experience that my beliefs (e.g. my profound belief that there is a God) format, structure and drive my values.' As mentioned before, I am merely attempting – and want to encourage you – to *describe* these connections in the context of specific situations not to *prescribe* them.

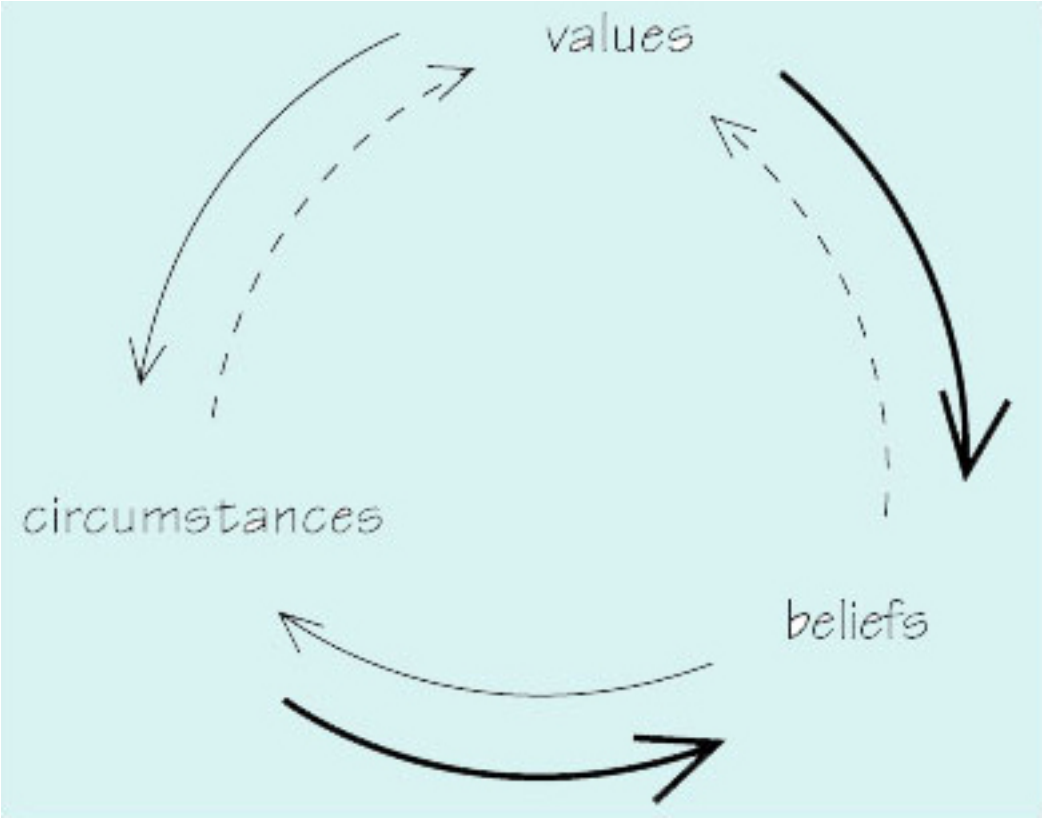

Figure 12 Connections between my values, beliefs and circumstances in relation to building supermarkets on out-of-town sites.

I have already mentioned that the way in which the terms values, beliefs and circumstances are used is not standard in all literature. I recognise that there are other contexts and disciplines where the terms are used differently. I have for instance come across reference to values as beliefs and values used to describe a very broad range of phenomena, some more tangible than others (as for instance when describing the energy value of food). How the terms can be and are used in different contexts will be discussed a little further in Section 9. My primary purpose in making the distinctions I do is to help you to recognise what contributes to different perspectives on sustainable development.

6 Exploring values, beliefs and circumstances in relation to a sustainable development situation

In what follows there are two people's interpretations of a situation from their different perspectives. One of my co-authors, Ray, introduces and analyses the situation from his point of view and he includes, in Vignette 1, a detailed description of the situation written by Alan Durning of Seattle. Read both Ray's and Alan's accounts first of all just as they appear. You will then go on to answer Activity 17 in which I will ask you to consider the values, beliefs and circumstances dimensions of Alan's perspective on the situation. The purpose of Activity 17 is not to judge the author but simply to use this account to try to recognise what contributes to his perspective so that you can understand it better.

Ray's introduction and analysis highlights the perspective of a systems thinker and systems practitioner on this situation. In SAQ 3 you will be asked to look more closely at the values, beliefs and circumstances that contribute to his perspective too.

I like to start each day with a cup of strong Italian style coffee. It is one of the modest passions that I have in my life – at least that is what I tell myself. I also tend to navigate my way around parts of London and Sydney, two cities I know reasonably well, by the quality of the coffee shops. So what have my coffee drinking habits to do with managing complexity, or more particularly managing sustainable development? The connection was brought home to me in a very challenging way in a short story from Alan Durning of Seattle (Vignette 1) which I read as part of my preparations for writing this course. Take a few minutes now to read Alan's story in Vignette 1 and see what you make of his metaphor about there being 'a world in my cup'.

Vignette 1 Ecological backpacking in Seattle – the ghost of coffee's past

by Alan Durning

My name is Alan and I am a compulsive drinker. Coffee is my brew. I used to drink it daily, sometimes hourly. I drank it by the pot ... cappuccinos, frappacinos, even Folger's drip. Now I'm on the wagon, drinking locally grown herbal tea. You see, this terrible thing happened. A dream straight out of Scrooge. I saw where my coffee comes from.

It started one morning in the kitchen. As I poured the beans into the grinder, I suddenly found myself in a clouded forest on a mountain above the Cauca River in Colombia. The lush vegetation was disappearing all around me as a coffee plantation grew. Farm workers were spraying the trees with pesticides made in the valley of the River Rhine in Europe. I began to choke on the poisonous fumes when I was transported ... to New Orleans. Burlap sacks of coffee beans were being unloaded from a freighter burning oil from the Orinoco River Valley of Venezuela. It was like a spin on the house that Jack built: the freighter was made in Japan out of steel forged in Korea from iron mined in the lands of Australian aborigines. Workers were pouring the beans into a roaster, which was fuelled with natural gas piped in from Oklahoma. Out the other end, my

beans poured into bags of nylon, polyester, and polyethylene – plastics from New Jersey – and aluminium foil from a smelter in Oregon. That smelter was powered by electricity from dams that have nearly wiped out wild salmon in the Columbia River.

Suddenly, I was in my kitchen again, but hovering by the ceiling, looking down. My beans, now disintegrating in the grinder, had come to my home inside a brown paper bag made from pines in the northern Rockies. On the trip from the supermarket, my car had burned a sixth of a gallon of gasoline, spewing carbon monoxide, carbon dioxide, nitrogen oxides, and volatile organics into the air. The gas had come from Alaska's North Slope by way of Prince William Sound and a refinery in northern Washington.

Hovering above myself in the kitchen, I watched as I took that first sip of the day. But from my cup came pesticides, oil, molten steel. My ecological wake. And it wasn't just the coffee. My T-shirt. My newspaper. My radio. The wake of it all washed over me. I buckled under its weight. Then my bathroom scale appeared, flashing 115 pounds. My daily consumption of natural resources. I fell to the floor, crushed and bloated. I can't shake this dream. I've gotta find a way of using less. Can we make things better? Figure out better ways of getting around? Get stuff from closer to home? I don't know, but I do know this, my name is Alan, I'm a compulsive coffee drinker, and there's a world in my cup.

Alan Durning is Executive Director of Northwest Environment Watch in Seattle. This commentary was first heard on the radio show 'Living on Earth' on KPLU, adapted from Alan's 'This Place on Earth' (Sasquatch Books).

(Carley and Spapens, 1998)

If you are not a coffee drinker like me then Alan's story may not be as personally challenging as it was for me. To me the story lays bare the systemic connections between my behaviours and the implications of that behaviour when it is aggregated. If I imagine his story as being about a 'system to satisfy my passion for drinking coffee each morning' then I have to conclude that it is an effective system, most of the time, in achieving the transformation 'passion unmet to passion met' for me. But, his story also reveals the extent to which resources have to be used to achieve the transformation as well as the number of activities undertaken. His story makes transparent what I intrinsically know but choose to ignore in my passion for drinking my daily cup of coffee. Despite the unanticipated and undesirable outcomes of this set of activities and my heightened awareness of the emergent properties from these activities, which have long-term undesirable effects, at heart I do not want to change my behaviour! So what are the implications of my position? Well, I console myself by believing that my coffee drinking habits are not at the top of the list of sustainable development issues of which I am aware. Alan generalises in his story about getting off this 'consumption kick', and that, for me, is part of it. But is it enough?

The more I engage with sustainable development issues the more complex I perceive them to be. Drinking coffee is not an isolated and individual act; it is also a social act. This is why we have coffee shops and can talk of a 'cafe´ society'. Another way of saying this is that there are many stakeholders with an interest in maintaining an interconnected set of activities, which I might recognise as the system I have described above. Many of these stakeholders will have a passion for coffee as I do but others will have different interests and will probably look at the same set of interconnected activities and recognise it as a different system. From the perspective of a peasant in Colombia it may be 'a system to

eke out a livelihood', or from the perspective of a concerned natural resource manager or environmentalist, 'a system to increase the rate of rainforest destruction'.

Activity 17 Exploring someone else's values, beliefs and circumstances

Start by focusing on Alan's account (Vignette 1) and complete the following.

1. Identify three or four sentences that apply to Alan's personal circumstances.
2. Identify three or four statements that indicate Alan's beliefs. If they are not straightforward statements of beliefs say why you think they indicate beliefs.
3. Write a paragraph about what you can deduce from the vignette about Alan's values. (This may be that you have clues as to what values he holds or may be just to note that there is not much evidence to go on.)

Discussion

1. Sentences that refer to personal circumstances include:

   My name is Alan and I am a compulsive drinker. Coffee is my brew. I used to drink it daily, sometimes hourly. I drank it by the pot ... cappuccinos, frappacinos, even Folger's drip. Now I'm on the wagon, drinking locally grown herbal tea. You see, this terrible thing happened. A dream straight out of Scrooge. I saw where my coffee comes from.

   Alan Durning is Executive Director of Northwest Environment Watch in Seattle.

2. The following statements seem to apply to beliefs:

   The lush vegetation was disappearing all around me as a coffee plantation grew. Farm workers were spraying the trees with pesticides made in the valley of the River Rhine in Europe. I began to choke on the poisonous fumes ... (As the account supposedly describes a dream rather than actual events Alan has experienced then this statement seems to give an indication of Alan's beliefs about how coffee is produced – displacing lush vegetation and sprayed with potentially toxic pesticides. This description seems to indicate more than just Alan's beliefs – more an interpretation of events heard of indirectly. It could also be that some of the dream events are related to personal experience, not just beliefs.)

   That smelter was powered by electricity from dams that have nearly wiped out wild salmon in the Columbia River. (This seems to be a statement about what Alan believes about the knock-on effects building dams for hydro-electric power has on wild salmon populations. Again the statement may be more than just Alan's belief. It comes across to me as a statement of 'fact' but without evidence to back it up.)

   But from my cup came pesticides, oil, molten steel. My ecological wake. And it wasn't just the coffee. My T-shirt. My newspaper. My radio. The wake of it all washed over me. I buckled under its weight. Then my bathroom scale appeared, flashing 115 pounds. My daily consumption of natural resources. (Alan's beliefs about his ecological wake seem to come through here.)

   I've gotta find a way of using less. (This appears as a straightforward belief statement.)

3. The clues about Alan's values are in his reaction to the dream (or the situation as he perceives it) – what he considers to be good and bad. He describes seeing where his coffee came from as a terrible thing. He appears shocked by his

'ecological wake' suggesting environmental rather than necessarily sustainable development values. His switch to locally produced herbal tea and suggestion that getting stuff closer to home may help, seem to back this up. He doesn't for instance mention what may happen to Colombian coffee producers if everyone changed to alternatives.

However the account seems to me to be written for a particular purpose – to make connections between local and global levels and individual actions and their ecological effects. So it is difficult to tell whether these are clues about Alan's values or just connected with his purpose in writing, i.e. to do with his personal circumstances, particularly his role.

SAQ 3

1. Why did Ray appear to find Alan's story personally challenging?
2. Identify two statements, one each relating to Ray's circumstances and beliefs.
3. What does the account tell you (if anything) about Ray's values?
4. What and whose different systems of interest does Ray refer to in this account?

Answer

1. As a fellow coffee drinker Ray seems to identify that some aspects of Alan's perspective are similar to his own. He appears to find Alan's story personally challenging because it indicates to him the systemic connections between his behaviours and the implications of that behaviour when it is aggregated.
2. Circumstances: 'I like to start each day with a cup of strong Italian style coffee.' Beliefs: 'Well, I console myself by believing that my coffee drinking habits are not at the top of the list of sustainable development issues of which I am aware.'
3. Values: I find no single statement in this account that indicates to me Ray's values, except perhaps that there is a values as well as behavioural dimension to the experience of coffee drinking and values held relating to sustainable development. Ray also notes a lack of congruence between his values and behaviour in the statement:

   'Despite the unanticipated and undesirable outputs of this set of activities and my heightened awareness of the emergent properties from these activities, which have long-term undesirable effects, at heart I do not want to change my behaviour!'

   (Congruence between values and behaviour is a theme we will return to at the end of this part.)
4. 4 'A system to satisfy my passion for drinking coffee each morning.' One of his own systems of interest.

   'A system to eke out a livelihood.' Possible system of interest of a peasant in Colombia.

   'A system to increase the rate of rainforest destruction.' Possible system of interest of a concerned natural resource manager or environmentalist.

In carrying out the above activity and SAQ you should by now have been through the process of exploring just two people's values, beliefs and circumstances in relation to a specific sustainable development situation. The perspectives of others involved in these situations are not apparent here though it may be important to understand them if trying to identify systems of interest. The next section introduces some of the issues of recognising who is involved in a situation.

7 Issues of stakeholding

In the last section Ray mentioned ‘stakeholders’ in the situation implying they were people who had a stake or an interest in the systems he started to identify. The word stakeholder has been used in several places in this course so far. There is a range of interpretations of meaning. A stakeholder differs from a shareholder in that the key factor that identifies a stakeholder is *inclusion* rather than ownership. As a shareholder of say a company I in effect own a small part of the company. Whereas I consider myself a stakeholder in many things that I do not own but am affected by or care about. Stakeholders may be individuals or groups of people. The meaning can vary depending on what the stakeholding refers to – i.e. inclusion in what? A stakeholding in a project or proposal may differ from something with a broader boundary such as a situation or an issue. Most categorisations of stakeholders distinguish between primary, direct or active stakeholding and secondary, indirect or passive stakeholding. In the context of this course where our focus is on systems it may be convenient to use these categories for instance to distinguish between those within and outside a system boundary. But most systems methods involve iteration and negotiation and renegotiation of system boundaries. Hence, while stakeholders need to be identified, care is needed in not categorising, and potentially excluding some of them, too soon. Otherwise it may close down an analysis too early in the process when divergence is essential to its richness.

Categorisation of stakeholders by those facilitating a decision-making or sustainable development management process may determine who participates directly and who does not. Issues arise however in these processes when those most affected are not actively involved though arguably they should be. Their interests or stakes (which will be much broader than economic interests and focusing on inclusion not ownership) may not then be protected. Stakeholder-analysis techniques are used by a range of agencies, for instance by the UK’s Department for International Development. They can be used for different purposes – for exploring a situation to develop better understanding of it before focusing in on problems or as a tool within project management. Grimble *et al*. (1995) make a case for applying stakeholder analysis as a means of addressing conflict and trade-offs. They define conflicts as situations of competition and/or disagreement between stakeholder groups and trade-offs as the process of balancing conflicting objectives. Using this interpretation, issues of stakeholding are clearly very important in the domain of sustainable development where trade-offs frequently need to be made.

Activity 18 Identifying and exploring stakeholding

Identify an issue, situation, process or project in which you are a stakeholder.What is the nature of your stakeholding?

Discussion

I am a stakeholder in the planning process for carparking on The Open University’s campus where demand for and provision of car parking spaces has increased a great deal in recent years raising many issues both for car users and others. The nature of my stakeholding is that I am a car user and need to park my car and also that I care about the campus environment.

Drawing a systems map is one way of representing how you are thinking of stakeholders in a situation. I will be asking you to attempt this in Section 10 once you have had a chance to engage more fully with some sustainable development situations. For now, by way of example, Figure 13 shows one interpretation of the controversial decision-making system for the extension of the M3 motorway through Twyford Down in the UK. It is taken from a case study on Twyford Down and the M3 which is part of the Open University course T860 *Environmental decision making: a systems approach*. In recognising a diversity of stakeholders in a sustainable development situation and as a precursor to identifying or involving stakeholders in purposeful action, there is also a need to recognise the diversity of stakeholders' beliefs about sustainable development.

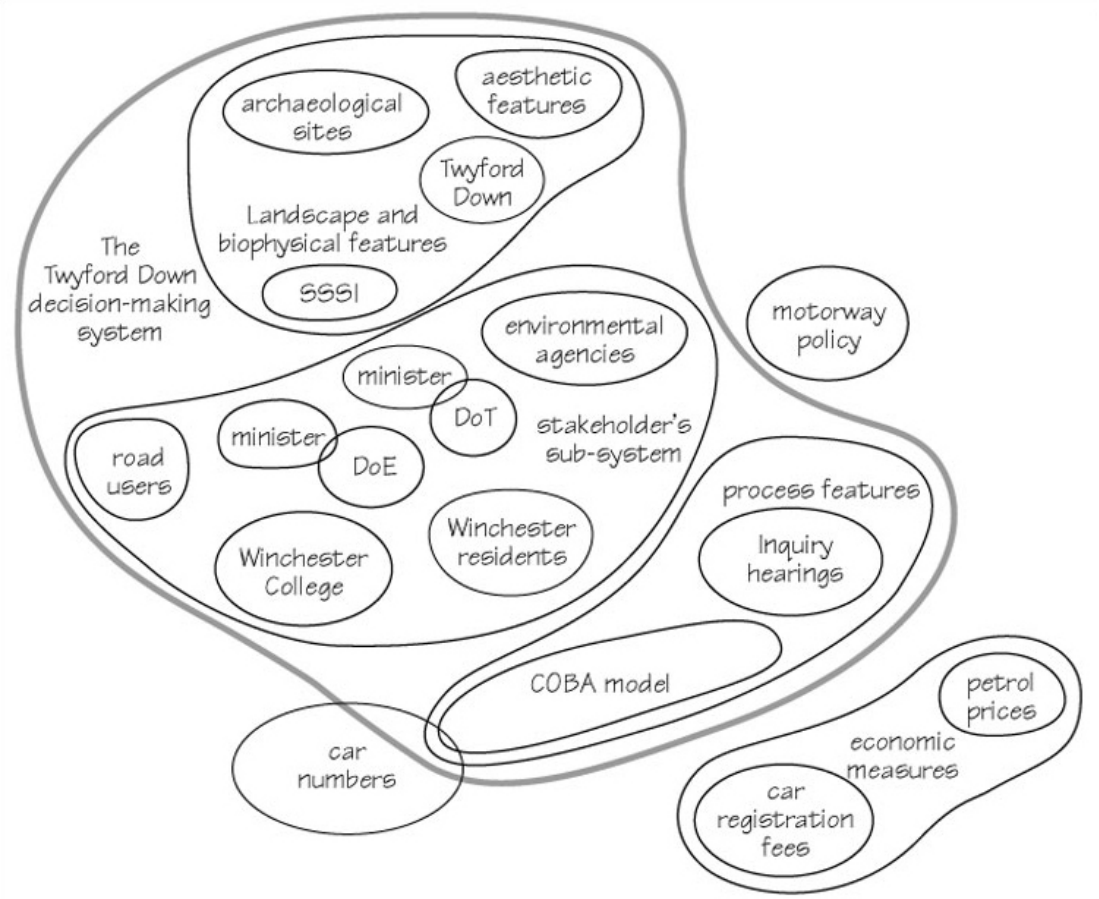

Figure 13 Analysis of the Twyford Down mess using a systems map prepared by the T860 course team to formulate systems of interest (T860, Block 2, p. 11)

8 Some different beliefs about sustainable development

This course has been written by authors who consider themselves to be committed to this domain. However this does not mean that in order to study it you have to adopt or share our values and beliefs. There are strong arguments that have persuaded other people to adopt different values and beliefs and devote their expertise in a different direction. Whilst I cannot present these views with the same passion I want to provide you with a taste of these alternative perspectives so that you can become more aware of the assumptions and prejudices we have as authors.

Some frequently expressed beliefs are discussed below to illustrate the range that contributes to perspectives on sustainable development. They include arguments both for and against.

Belief 1

Sustainable development is such a vague concept. Its vagueness gives opportunities for people with many different agenda to interpret it to suit their own interests. It seems meaningless in practice

There are at least two beliefs that are wrapped up in this overall statement. First that sustainable development is vague and as such is open to different interpretations. Second that it is meaningless in practice. There are few who would dispute that sustainable development is a vague concept. That sustainable development is meaningless in practice is a statement that some would agree with and others disagree. Issues of sustaining what and for whom are central to this line of reasoning. Dame Rachel Waterhouse, a former Chair of the UK Consumers' Association, pointed out when addressing a conference on Engineering for Sustainable Development in 1995: 'Sustainable Development can mean pretty much what the speaker wants it to mean.'

Fortune and Hughes (1997, pp. 128–129) nominated the statement that 'sustainable development is the only way forward' as an academic myth. They state that the concept of sustainable development begs many important questions and without answers to these questions its use in policy and as a basis for action is hampered. They went on to say:

> The concept of sustainability ... is however, an empty concept, lacking firm substance and containing embedded ideological positions that are, under the best interpretation, condescending and paternalistic. Fundamentally, it embodies the idea that although the developed nations systematically plundered and destroyed natural resources and ecosystems to achieve fast economic growth and to ameliorate poor social conditions, they now realise it was wrong and intend to prevent currently developing nations from doing the same. Certainly the developing nations are to be allowed to achieve progress, but only at a rate the developed nations will find acceptable.

People focusing on sustainable development undeniably have different agenda that sometimes conflict. But there are others who have found that they do share agenda at least up to a point. For instance Dunlap *et al*. (1992) observed:

> Perhaps nothing dramatises concerns over the environment so much as survey results showing that people in both poor and rich nations give priority to environmental protection over economic growth.

In terms of whether it is meaningless in practice, some people who identify with the concept of sustainable development have found that they can cooperate with each other, for example in:

- bringing environmental and development issues together rather than trying to address them separately with unintended effects;
- challenging stereotypes; and
- acknowledging shared concerns and working out what to do about them.

Wendy Harcourt in her book *Feminist perspectives on sustainable development* (1994, p. 11–12) provides an example of those who have found the focus on sustainable development useful.

> Development = economic growth is at the centre of the development discourse. Even though many commentators point out that development is far more than economic growth but extends to social, political, cultural, environmental and gender concerns, economic growth remains firmly entrenched as the stated goal of development from which modern critiques of development begin...
>
> (These) thinkers and activists have found their voices in the recent policy debates on environment and development labelled 'sustainable development'. They have used the political platform created by the United Nations Conference on Environment and Development (UNCED) ... to bring their particular concerns about the thesis that development = economic growth to the public arena.

There are also many examples of individual and group actions taken with sustainable development in mind. While these actions may well suit different interests they have still proved meaningful in practice to those people. These include new governmental and international policies for sustainable development and a wide range of programmes and projects at international, national and local levels.

Belief 2

There's so much we don't know and are uncertain about anyway in this world, what difference does it make to subscribe to sustainable development?

Ignorance and uncertainty are often given as reasons for not taking action. Often combined with an attitude that nothing that individuals will do will really make a difference in the long run, as the Earth will sort itself out one way or another. In support of this point, many examples can be given of those who have intended their actions to be supportive of environmental protection and sustainable development, but have turned out to do the

opposite. For instance buying local produce alone can put people on the other side of the world out of business; using the car to take materials for recycling can have more negative than positive environmental effects if fuel consumption and energy costs are taken into account. Scientists debated points in this area long and hard before the majority agreed it best to adopt 'the precautionary principle'. This means erring on the side of caution in decision making and action where there is scientific uncertainty as to whether or not a course of action may turn out to be harmful to people and their environment. Recognition of environmental surprises (similar to the systems notion of 'emergent properties') and acknowledgement of the interconnectedness of human society and welfare and people's physical and biological environment led to the precautionary principle being adopted. One example of an environmental surprise could be ozone depletion, considered to be a surprise at a system level that allows CFCs to be released and break down in the upper atmosphere rather than be kept inert within the workings of a refrigerator. (Though ozone depletion could also be thought of quite differently, depending on what systems are being considered, by whom and for what purpose.)

Belief 3

Human ingenuity and technology is the key to successful development

An alternative view of successful development is one that emphasises the role of technology and human ingenuity rather than sustainability. It is an extrapolation of the historical past in which all the problems that have emerged have been resolved by one or more technological developments. For example the argument could run along the following lines:

> Yes it is true that freon [a proprietary brand of CFCs, formerly used in refrigeration] caused a global effect on the ozone layer, and the solution was to find a substitute chemical that did not have that property – and such a substitute has been found and is now used. If global warming is a serious problem, and this is not universally accepted, then carbon dioxide release could be avoided by increasing our use of nuclear and so called 'renewable' energy sources. Indeed if the environmentalists had not made such a fuss about nuclear power in the 1970s there would be less of a problem with carbon dioxide emissions now. Yes there are problems associated with the disposal of nuclear waste, but these will be solved by technical developments – just as we have solved the problems of freon.

Interestingly some of the people who promote the belief that it is human ingenuity and technology that is the key to successful development also subscribe to the globalisation of awareness and culture. Indeed they see technology as one of the main driving forces in this development. Air travel, satellite television and the Internet have done more to break down national and racial barriers than anything else in the last century. It is astounding to realise that billions of people all over the world can now watch the same images of wars, political demonstrations, sporting events and events such as the downfall of the Berlin Wall or humans landing on the moon. In this view the hope for humankind is in the further and faster development of technology. Technology that reduces poverty, overcomes illnesses, enhances people's comprehension of the world in which they live and encourages them to increase their own skills and awareness.

To people who hold this belief a serious issue is the pessimists who fail to have faith in human technology and want to inhibit rather than promote and foster technical developments:

> If people in the Middle Ages had adopted a 'sustainable development' perspective we would have been stuck at that level of development. Whilst romantics have glamorised it as preferable to modern life, in practice it was extremely unpleasant for the vast bulk of humanity with little or no freedom, no public health systems, short life expectancy and gross inequalities. Attempts to curtail present day technical developments are equally misguided – they seem to be based on fear and pessimism which do not serve human kinds best interests.

Belief 4

The issues are too big. Local level action is much more important than all this global stuff. It's not my problem, nothing I do will make a difference. Governments and international agencies will sort it out

There are several points here and at first sight it may appear that they are not related. However they are all to do with the levels of decision making and action where people may feel they are or are not interested, motivated or empowered to participate. Arguments of individual and collective responsibility are central to this area of belief. If action is not taken by individuals at all levels – from a policy maker or practitioner at national or international level to somebody deciding how to dispose of household waste – many of the issues of sustainable development such as ozone depletion or poverty cannot be addressed.

Uphoff (1992) considered the types of local institution involved in development activity. The shaded area in Figure 14 shows what he means by local institutions. He has drawn conceptual boundaries around ten different levels where he feels decision making and action can occur, ranging from individual to international. The diagram is not necessarily appropriate for all organisations and situations but it can be used to investigate and to challenge the belief that all actions for sustainable development take place at one level or another rather than at many levels.

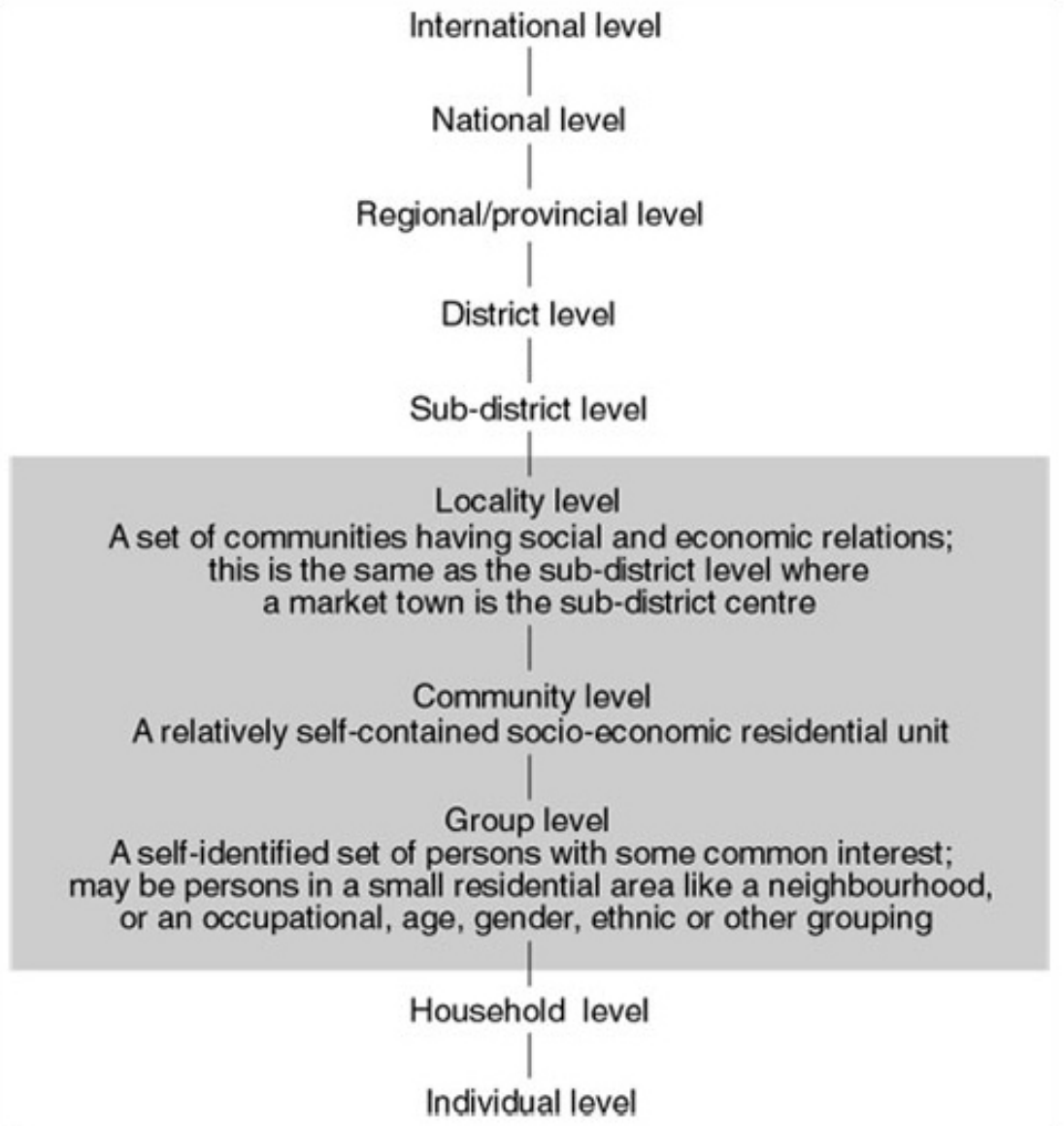

Figure 14 Ten levels of decision making and activity (Uphoff, 1992)

Belief 5

Sustainable development's inherent ethical position is anthropocentric. Humans can't control everything. I can defend a different ethical position

Smyth (1995) observes that there has been a tendency among people who focus on global issues to polarise between human and non-human dimensions, often with little recognition and understanding that the two ends of the spectrum are interdependent. This focus on humans and nonhumans has also been picked up by environmental ethicists. They recognise that the range of values and attitudes we hold about the nonhuman natural world (which can arguably be quite easily linked to the spectrum that Smyth refers to) can be seen as falling into human-centred (anthropocentric) and life-centred (biocentric) groupings. Sustainable development tends to be consistent with weak anthropocentrism, which promotes human self-interest with an eye to the welfare of future

humans. Anthropocentric values and attitudes tend to view the natural world as being a means to achieve our ends (instrumental value) rather than having value in its own right independent of humans (intrinsic value). Life-centred or biocentric values and attitudes are consistent with a belief that the nonhuman natural world has intrinsic value. While most people would tend to hold beliefs consistent with weak anthropocentrism or weak biocentrism there is a full range of ethical positions which people can hold. The more radical departures – strong anthropocentrism or biocentrism – are more difficult to explain and justify within most human societies' norms.

Activity 19 Identifying potentially useful systems concepts and ideas

Go through each of the above statements of belief and the reasoning that follows them and identify and list systems concepts and ideas that may be useful in interpreting them.

Discussion

Belief 1. Braiding systems theory with sustainable development practice may be useful here to clarify different meanings and purposes that different groups do and do not find in situations in this domain. For instance: identifying different systems of interest, boundaries, environments, stakeholders and perspectives that are relevant in different sustainable development situations.

Belief 2. Exploring ideas of multiple cause and positive and negative feedback in relation to specific occurrences or events may be useful to explore the connections and effects of different actions and where useful interventions may be made. Use of systems maps to identify levels in systems of interest may also give indications of where or in what circumstances to look for emergent properties of systems or environmental surprises. Clarifying what is and is not known and by whom and identifying what needs to be found out may reduce some aspects of uncertainty.

Belief 3. Unpacking different perspectives on sustainable development and what values, beliefs and circumstances are behind them seems particularly relevant here.

Belief 4. Systems, boundaries and environments of relevance to this belief could be identified by specification of systems levels. For instance the recursive and hierarchical nature of the diagram by Uphoff could alternatively be represented as a systems map.

Belief 5. Although the discussion on polarising between human and non-human dimensions initially suggests a linear rather than non-linear representation, it may be useful to explore boundaries between the two and find ways of representing interconnections to understand them more fully.

Activity 20 Locating your own beliefs

Explore each of the belief statements and try to locate your own beliefs in relation to each of them.

(There are a number of ways in which you could do Activity 20 depending on your familiarity with sustainable development situations. For instance, you could use the systems concepts and ideas you identified in Activity 19. However, you might find you don't have enough examples of sustainable development situations to hand at this stage in the course unless you can draw quite extensively on your own experience.

Alternatively you could try to modify or replace the statements with your own statements of belief. Or select those statements, or points for or against in the text that follows them, with which you agree or disagree (or neither or both). It may be useful to note these down so that you can refer back to them and/or try the activity again later on.)

Other beliefs about sustainable development

There are many more beliefs about sustainable development than we can represent here, for instance from the perspectives of different roles or disciplines, where personal circumstances are a significant factor in determining beliefs. One example was provided by Peter Roberts, one of our critical readers for this course, who noted the omission of what he saw as the usual economist's perspective:

> Life has always been tough and people have always suffered. We do the best we can and there is no reason to pay attention to a lot of non-economists who have just discovered these truths and are proposing ill thought-out 'remedies' to our current crop of problems. There is nothing new about which to get excited (and if there were we would still have to just do the best we can and not plunge into drastic and painful strategies). The sooner we can dismiss the current crop of doomsayers the better – and then we (economists) – can get on with our task of advising on how to manage it all.

Can you think of other examples? You might like to note them down.

9 Values and sustainable development

Why and in what ways are values important to a systems practitioner in the domain of sustainable development?

In order to answer this question I first want to reiterate and bring together a few points from Section 5.

In this course I am using 'value' to mean something that an individual or group regards as good and something that gives meaning to life. In Section 5 I also suggested that if speakers in the situations described made their values, beliefs and circumstances clear I could start to understand and contextualise their perspectives in relation to my own and others. For a systems practitioner in the domain of sustainable development recognising one's own values, those of others and the relationship between them, all seem important.

In the examples considered earlier in this part it became evident that values (in the sense they are used here) often remain at least partly hidden. One suggestion I made as to why this occurred was that values seem to me to be more to do with our emotional rather than our intellectual ways of knowing and as such are not easy to rationalise. But just because they are not easy to rationalise does not mean that they have to remain hidden.

Understanding emotional as well as intellectual ways of knowing seems to me very relevant to systems practice in this domain as related decision making and behaviour are only partly rational. Even at a rational level there is a case for systems practitioners in this domain discovering and contextualising their values and hence their perspectives, and so gaining systemic insights into sustainable development situations. The case is very similar to that made in the context of environmental values by Alan Holland (1995). He argues that values do not just contribute to beliefs but also to *judgements*, which unlike beliefs, are formed with reference to certain criteria. He suggests that we can be called to account for our judgements, that they are open to being contested. He goes on to say a judgement is something for which we must be prepared to take responsibility, and which we must stand ready to defend and therefore a means by which we create our own identities. Holland goes on to make a case that values are most appropriately construed as 'objects of judgement' and hence that the discussion of values belongs properly within rather than outside the arena of rational debate. There are many judgements that a systems practitioner may make in the domain of sustainable development – for instance, which projects to get involved in, to initiate or to facilitate and which stakeholders to involve in decision making and how.

Behind this line of reasoning is that the values of an individual are not held in isolation but in a social or organisational context and the values of the individual may differ from the social or organisational norms.

A systems practitioner will nearly always be operating within a social and/or organisational context. In the domain of sustainable development, where there are many multiple stakeholder situations, a systems practitioner is in my view also likely to need to rationalise and defend the values on which their judgements are made and to work out what and whose values are relevant in a situation. There are two reasons why I hold this view, the first concerns action and the second ethics.

Consider the following example from Mary Lean writing in the United Nations Environment Programme's magazine *Our Planet* in 1996.

> The Indian organisation 'Trees for Life' got off to a slow start. When businessman Balbit Mathur first tried, in 1980, to persuade villagers to plant

> trees to protect the environment, no one would accept a sapling from him. Attitudes quickly changed when he asked a local Hindu holy man to bless the saplings: by 1989 the organisation was planting 700,000 trees a year. 'Wherever possible, we distribute trees as prasadam (spiritual blessing), whether from temples, gurdwaras or mosques' he says 'Westerners don't understand this. The spiritual centring of the tree is very important.' His experience points to a potent resource, often overlooked in the North. The spiritual dimension of sustainable development has only recently begun to gain recognition within the international development community. Last October, the World Bank held its first conference on the theme and concluded that a major failing of externally driven development efforts has been that they are not in tune with the beliefs and values of local people. World Bank President, James D. Wolfensohn, described 'melding economic assistance with spiritual, ethical and moral considerations' as a key challenge confronting the World Bank and development community.

This example seems to imply a particular mode of practice where the individual making the intervention is persuading villagers to plant trees. . It is not clear from the description who made the decision that the trees should be planted in the first place. In the next course the issues around different modes of practice will be discussed further. For now however what interests me in this example is the lack of recognition of stakeholders' values by the practitioner making the intervention. This lack of recognition initially stopped an action being taken which would – at least from some perspectives – improve a situation. (It could be argued that at first the intervention wasn't seen as an improvement by most local people, hence the lack of interest in accepting the saplings. However, once the scheme took account of the local value system and the trees were blessed the intervention was perceived as an improvement by many more of the stakeholders.)

Sustainable development is an ethical concept (ethical meaning here what ought to be rather than what is) and particular values and beliefs underpin it. In most situations though there will be a range of values and beliefs as suggested in the following quote which also comes from Mary Lean's article (1996).

> Listening to the poor – a keystone of the new development paradigm sought at last year's Social Summit in Copenhagen – requires being open to their values. As Professor Robert Chambers of the Institute of Development Studies at Sussex University says: 'What [the poor] value and choose often differs from what outside professionals expect.'

I will not be attempting here to list values that I consider to be consistent with sustainable development because in different situations I believe different values may be relevant. I also find it more meaningful to consider them in particular contexts of decision making and action, which I will do in Section 10. For now, just to give an idea of the sorts of values that others have found to be relevant in this domain, an example is provided by Oxfam in their suggested curriculum for global citizenship that was developed in the context of sustainable development. (Note that elements of knowledge, understanding and skills were also listed.)

The key elements for responsible Global Citizenship

Values and attitudes:

- Sense of identity and self-esteem
- Empathy

- Commitment to social justice and equity
- Value and respect for diversity
- Concern for the environment and commitment to sustainable development
- Belief that people can make a difference.

(Adapted from Oxfam, 1998, p. 3)

Activity 21 Relevant values for sustainable development?

1. Think about the above list of values and attitudes suggested by Oxfam. It appears to be a list of values and attitudes, although the last item is a belief (as mentioned in Section 1 the definition of these terms is not standard in all literature). Write down which if any of the above you would identify as values in the way they have been defined in this course so far. Explain why you would categorise them as values rather than as other elements.
2. Write down any of the values and attitudes listed above that you would identify with in relation to the issue you explored in Activity 15.
3. Choose one of the above list and explain how you do or do not consider it to be relevant to decision making and action for sustainable development (in the way that you understand sustainable development at this stage in the course).

For a systems practitioner, discovering one's own values in the domain of sustainable development can, in my view, give insights into what is important in a situation and what is shared and not shared with other individuals and groups. Values can be attributed to groups as well as individuals but, according to Hebel (1999), while organisational or societal values originate from individuals they can overshadow as well as reflect the values of those who are part of them. This is significant when trying to bring about organisational change:

> ... it might also be argued that espoused theory is an emergent property of an organisation's norms or socially acceptable values. Values combine to present formal world-views such as mission statements, strategy, or HR [human resources] policy. Alternatively, theory in action could be the emergent property of personal values resulting in attitudes and the feelings that define morale, the resulting world-views possibly conveying different things to different people depending from which side – sender, receiver or observer – it is viewed.
>
> Problems seem to occur because human values are conceptual and often hidden or disguised by social norms. They are difficult to determine because they are established very early in life and can be unclear even to individuals themselves. It seems that unearthing individual values can therefore have little impact on effecting change within an organisation. Nonetheless value systems have been shown to have emergent properties that are world-views. It is suggested here that these world-views about organisational life may be more important in the change process than separating our specific values.
>
> ... It is only by confronting one set of values with another that change seems to occur. A clash will result in a thunderstorm which will either herald a longer period of bad weather or sunshine and clearer air. For the storm to abate some

> shared values seem to be required or else deeper entrenchment is a likely outcome. Either way a reinforced or altered world-view is the outcome.
>
> (Hebel, 1999, p. 259–260)

Many would argue that sustainable development requires extensive changes in thinking, action and in values. For instance Geoffrey Steeley, speaking as Director of Planning and Environment for Hertfordshire County Council at the World Environment Day Symposium on Values for a Sustainable Future in 1994 stated:

> Companies and Town Halls – and to a complementary degree voluntary organisations – are the mechanisms that translate values into action. They are also themselves machines designed around the values of societies and by that token are inherently out of date, especially when significant shifts in values are occurring – for whatever reason.

Hebel (1999) made a case for considering groups of values as systems which will have some sort of outcome that is greater than the sum of its parts.

SAQ 4

What are the key points given in this section so far both for and against discovering and articulating one's own values?

Answer

The views that support discovering and articulating one's own values:

- Individuals' perspectives can as a result be better understood and contextualised.
- Systemic insights can be gained into what is important to whom in sustainable development situations and what is shared and not shared with others.
- It allows individuals to defend and take responsibility for their value judgements

The views against discovering and articulating one's own values:

- Human values are conceptual, often hidden and disguised by social norms.
- Unearthing individual rather than organisational values can have little impact on effecting change within an organisation.

SAQ 5

Why are group values as well as individual values considered to be so important for sustainable development?

Answer

The main reasons why group values seem to be important to sustainable development is that all individuals operate within social or organisational contexts and group as well as individual values affect peoples' actions in relation to sustainable development. Groups of values can be thought of as value systems, which will have some sort of outcome that is greater than the sum of its parts. Group values change – albeit slowly according to Steeley and to Worcester – presumably with sustainable development in mind – but these changes only seem to occur (according to Hebel) when one set of values is confronted with another.

Geoffrey Vickers is among those who has written extensively about value systems particularly in his books *Value Systems and Social Process* (1966) and *The Art of Judgement* (1965). He makes many references to values and value judgements, some of it relevant to sustainable development. For instance in a paper written in 1963 on ecology, planning and the American dream he suggests:

> Yet the human ecologist must take account, among the facts of his field, that men themselves are valuers. They seek and shun; and their seekings and shunnings are to be understood not in terms of the outer world, which the ecologist can observe, but in terms of the inner world which his subjects inhabit and which he may or may not share. In any field in which men function, the relevant facts and forces include not what is happening but also what men think is going to happen; not only what they are doing to each other but also what they expect, hope, fear, from each other and from themselves. The inner world is fundamentally structured by human values.
>
> (Vickers, 1963, p. 37)

Geoffrey Vickers focused on values and judgement in developing the concept of 'the appreciative system'. This work is very highly regarded by many Systems practitioners and writers, as is evident in a special edition of the journal *American Behavioural Scientist* that focused on Vickers' work some twelve years after his death (Blunden and Dando, 1994).

Vickers idea of appreciation is summed up in the following quote:

> Facts are relevant only by reference to some judgement of value and judgements of value are meaningful only in regard to some configuration of fact. Hence the need for a word to embrace the two, for which I propose 'appreciation', a word, not yet appropriated by science, which in its ordinary use (as in 'appreciation of a situation') implies a combined judgement of value and fact.
>
> (Vickers, 1966, p. 191)

Peter Checkland and Alejandro Casar (1986) went on to develop a model of the appreciative system which they used in an organisational context. The model in effect braided their practice with Vickers theory of appreciative systems, which was originally developed through Vickers' own reflections on practice. Focusing on values as a part of practice in this way seems to me to be highly relevant to this course and this domain. Appreciation reappears in the context of Checkland's work in the next course but Checkland and Casar's actual model is outside the scope of these courses.

I now want you to do one final activity before I move on to the last section in this part that will consider the relationship between values and behaviour in relation to some sustainable development situations.

Activity 22 Identifying different kinds of values

Record the results of this activity as it is intended that you accumulate your answer over a few days rather than complete it straight away.

1. Write down a list of adjectives that appear to describe the word value or values (e.g. family values, economic values). Also write down who or what appears to be valuing and valued. Start by noting down examples from this course so far and then collect other examples from the media – radio, television, newspapers, Internet etc.
2. Categorise your list. For instance do some terms apply to groups and others to individuals? Do some imply valuing artefacts or tangible things and others imply valuing qualities or more abstract things?
3. What, if anything, did your investigation reveal to you (a) about value systems? (b) about the way the term 'value' is used.
4. Which of the values you identified seem to you to be relevant to sustainable development?
5. Try to represent your findings on a systems diagram.

Discussion

I will not provide my full answer to this activity as I have already indicated some of the adjectives and categories I found when I tried it (mentioned in the activity and in the text that follows.) Besides the intrinsic and instrumental distinctions I also found that one useful categorisation of values that relates to sustainable development (those I'd listed under Question 5) was to consider environmental, economic and social values. (This could have formed the basis of my systems map.) I mention it here because I also found it useful to consider in context where boundaries lay. For instance where the term 'economic value' was used it led me to check what sort of economic value was meant and whether environmental and social factors seemed to have been taken into account in that type of economic value.

There are potentially many things to be found out from the above activity but there are just two findings from trying it out for myself that I want to bring to your attention before moving on. First, there is indeed a range of ways in which the term value is used that go well beyond the way in which it is used in this course. Secondly, one distinction that became clear to me was that of valuing things for the use I make of them (for their instrumental value) or valuing things in their own right (for their intrinsic value). I mentioned this briefly in Section 5 in the context of the supermarket development example. It is a distinction often made in the discipline of environmental ethics. There is not the space to expand on this here but if you are interested in exploring this further the Open University course T861 *Environmental ethics* is one place where you could find out more. One category of valuing that may also have become apparent in doing Activity 22 is where (non-human) objects are valued for their sentimental value, something about the relationship with the object that is valued rather than the object. Jane Howarth (1999) describes this type of valuing as 'cherishing' and draws an analogy between cherishing and philosopher Martin

Heidegger's concept of 'care'. Heidegger's area of philosophy is phenomenology which is a philosophical method of investigation that acknowledges the inter-relationship of subjects and objects. I mention this category of valuing because focusing on the relationship rather than subject or object is one indicator of systems thinking. The line of reasoning Howarth follows in her paper 'Neither use nor ornament: a consumers' guide to care' (1999), also draws out some distinctions that I feel are highly relevant to sustainable development because to me they offer some insights into our behaviour as consumers. There are many factors besides values that affect our behaviour but why we take the actions we take in this domain does seem to be partly to do with why we value what we do.

10 Congruence between your sustainable development values and your behaviour?

The need for congruence between what Argyris and Schon (1978) identified as theory espoused and theory in action has already been raised elsewhere in these courses in the context of systems practice. To say one thing and act in a way that contradicts it can be confusing to other people. For the systems practitioner who is trying not only to contextualise their own actions but also possibly to facilitate the systemic thinking and actions of others it seems to me to be particularly important. For the systems practitioner in the domain of sustainable development I find the idea of congruence particularly useful. It allows me to recognise the degree of congruence between my personal values and behaviour.

The role of a systems practitioner in a sustainable development situation will vary depending on mode of systems practice adopted, which will be discussed in the next course. Whether needing to think and act systemically as an individual or to facilitate others I have found it useful to recognise what is driving my behaviour and the degree of congruence between my values and behaviour to guide my actions. For instance, next week I will facilitate a workshop among educationalists about learning systems for sustainable development. Sixteen people will attend, they will all have to travel to the venue, some from considerable distance away. Papers have been circulated in advance. Food and drink, produced in many different parts of the world, will be consumed, probably from disposable plates. I could probably go on to describe this event in a similar way to the coffee example in Section 6 in terms of its 'ecological wake'. However a colleague and I have also judged (a value judgement) that there is a need for the individuals involved to discuss our systems of interest in this area face-to-face with a view to developing a new project. We believe that the project will have many positive outcomes for sustainable development in terms of supporting and increasing the effectiveness of a range of practitioners in this area. Hence there is a trade-off to be made which we have thought through and have agreed but we will also take what actions we can to minimise what we perceive as our rather negative effects as consumers. In working this out I felt I needed to be clear in my own mind about why I was taking the actions I am when I hold some commitment to what I think of as sustainable development. I find I need to be able to answer questions such as: How is this event evaluated? Do you practice what you teach? Why did you judge it necessary to host this event rather than an e-mail conference? What is your own perspective on your systems of interest? In part, being able to answer these questions is for my own peace of mind and to carry out my role effectively. It is also so I can account to others for my value judgements.

Activity 23 Considering congruence between your values and behaviour

Think about the apparent contradiction between sustainable development values and behaviour in the example I have just given, of facilitating the workshop.

Can you think of an example from your own experience where your values and behaviour didn't seem very congruent? Write down any questions or dilemmas this apparent lack of congruence raised for you and how you felt about it. For instance – perhaps you found the lack of congruence a creative tension (which on the whole I did in the example above) or were not conscious of having any feeling about it, or

dismissed it as insignificant or unimportant. Or perhaps you felt uncomfortable about it and wished you could find a way of working it out so there was more congruence.

(I am not assuming here that your values will be similar to mine. For this activity there is no need to select your own example from a sustainable development situation if you cannot think of one that is relevant to you and would prefer to select an example from another context.)

Discovering one's own values is not necessarily an easy or comfortable task. I remember as an environmental sciences undergraduate finding myself in a social setting where some environmental values seemed to me to be acceptable and some not. I could list the main points for and against nuclear energy for instance and repeat all the arguments but at that time I was rarely asked what I really believed, which had little scientific basis. I was actually pretty confused about why decisions about nuclear energy had been made in the way they had. I was a part of two communities around nuclear power stations as a child and what I was being told as an undergraduate didn't quite seem to fit with the caring attitudes towards the future of the people in those communities I had encountered. Later, when I learnt more about decision making, I came to understand it better and what it was that I really believed to be good and not so good about nuclear power stations and more importantly, why. My difficulties in discovering my values in this area had been twofold:

1. *my circumstances*, in this case my social setting, which was the whole setting as I saw it at the time rather than just a part of a larger system. There was a sense in which my lecturers and my peers revered science over and above other ways of knowing – and I had learnt to revere it too. Scientific explanations seemed worthy – others less so. Scientific values were a big part of my social context at the time, though as my course advanced it became more multi-disciplinary so I was able to understand better some of the strengths and limitations of the purely scientific arguments and that there are other factors that influence decision making.
2. *changes over time*, in that I was trying to view the past with the benefit of hindsight so decisions and actions in the 1950s didn't make sense to me in the light of what I was learning (or perhaps not learning!) as an undergraduate in the 1970s. It is important to remember that values held in one time were held in the context of organisations and society *at that time* not of the later time in which they are being considered. One way I came to understand this aspect better was to ask a couple of people who were making decisions and taking actions about nuclear power stations at that time about what they believed then rather than now and why, and to hear what they felt about it with hindsight. It became clear to me that the prevailing attitude and social norm at the time was that there were felt to be some potential problems but by the time they became problems technology would have advanced sufficiently to deal with them (in line with Belief 3 in Section 8). That had been the experience of these people up to that time and it was on the basis of that experience that they held those values. With hindsight, in one case at least, values had been modified in the light of more recent experiences.

Change generally is an important factor to recognise when considering congruence between values and behaviour. (Remember back to one of the points made earlier, that 'things are always in a state of change and sustainable development is generally not trying to keep things the same, but to co-evolve systems with their environments'.) Individuals' values and beliefs may change as a result of learning through their experiences but changes in an individual's circumstances or environment may also affect

congruence between values and behaviour. I'm conscious for instance that I don't always behave the same way at home as at work and in different group settings or in different roles I find different beliefs and values seem to come to the fore, some contradictory! There are many factors that influence behaviour not just our values.

The following series of activities is intended to start you off in exploring both your behaviour and your values in relation to sustainable development. You are likely to encounter some contradictions in the way that Alan Durning related in the coffee example in Section 6. While values underpin our decision making and action, the relationship between them is not always straightforward. You may find that your behaviour in relation to sustainable development seems to contradict what you most value. Try just to accept this rather than to judge yourself. Remember that factors such as social or organisational contexts, other things going on at the time, personal circumstances and viewing with the benefit of hindsight (rather than recognising how it was at the time) can all sometimes cloud an issue.

Activity 24 Identifying your systems of interest, exploring relevant values and behaviour: transport

1. Describe a specific journey in which you were a user of fossil fuel. This may be a car or bus journey to your place of work, for shopping or for other activity. Make a short list of (a) the factors you took into account before deciding to make the journey and while making it; (b) your reasons for taking those factors into account; and (c) any other factors that with hindsight you think you may have liked to take into account.

   (For instance, did you consider different means of transport? If so, why? If not, why not? Who were the people you considered? Why? Why did you have to make the journey at all? Why then rather than at another time? etc.)
2. Draw a systems map of the system of interest you have started to identify in 1 above.
3. Draw a multiple cause diagram to show what led to your decision to carry out your journey in the way that you did.
4. Identify something about your values, beliefs and personal circumstances either from your answer to 1 and 2 or from thinking about the situation. (Don't worry if the statements are rather vague at first, just try to be sure that you have identified each of these different elements and distinguished between them.)
5. What factors did you feel were affecting your behaviour besides your values, beliefs and circumstances?
6. How congruent are your values and behaviour in the context of this example? List any apparent contradictions. If there are any, how if at all, did you or would you like to reconcile them?

Discussion

1. I got the car out and drove to work this morning, a journey of 22 miles. I was the only person in the car; the traffic was quite heavy so the journey was slow. I drove through country lanes and then into the city. I have about three regular routes to work, one which avoids much of the traffic but the lanes are narrow and I need to go slowly, another by the main roads which is usually faster but less pleasant and one that's a mix of the two. I chose the last of these routes this morning.

a. Factors I took into account in making the journey: whether I really needed to go into work today or could work from home; time of leaving; availability of car; route.

b. I took these factors into account because I had an early meeting that I felt I could not miss. This affected my decision both to go in to work at all and the timing of my departure – even though it was at a peak time for traffic.

c. Distance, speed and time considerations also seemed relevant.

d. I would have liked not to have had to make the journey or to go on public transport but there isn't any from the village in which I live. I didn't consider alternative means of transport today though I have in the past and have then judged that taking the car is my only feasible option. I feel a bit guilty about not sharing the journey with others going on a similar route – I do occasionally and in my last job used to car-share all the time – but I find it's rarely possible to synchronise what I perceive as my needs and wants with those of others.

2.

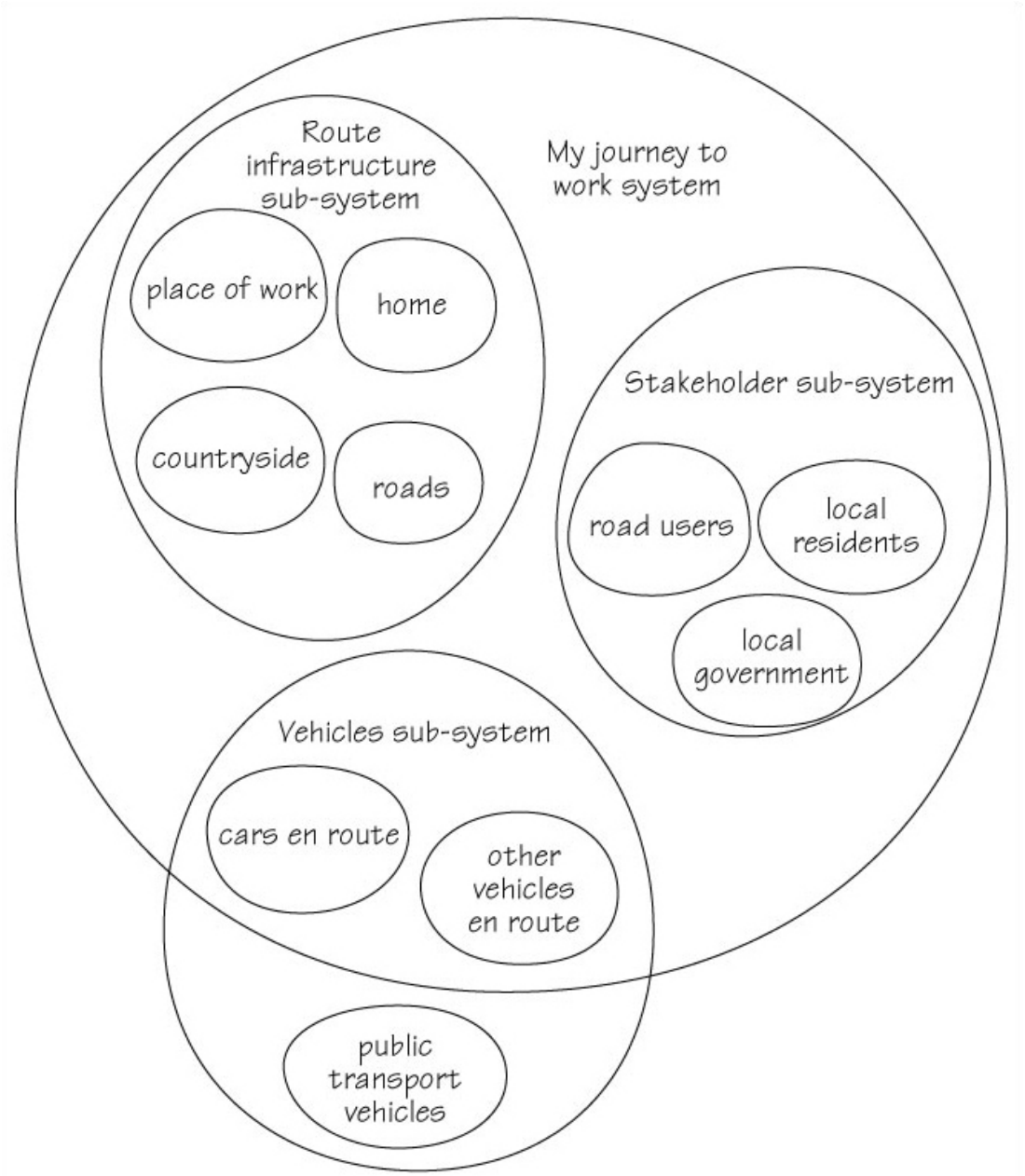

Figure 15 A systems map of my 'journey to work' system of interest

3.

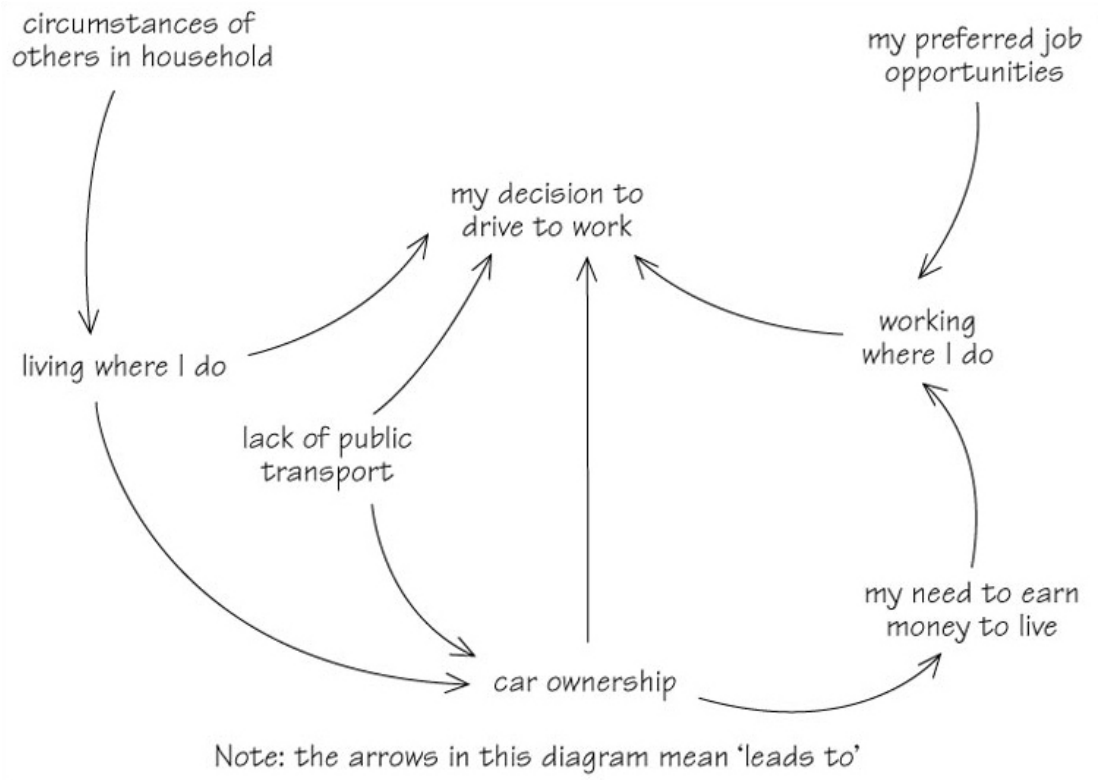

Figure 16 A multiple cause diagram showing what led to my journey.

4. *Values*. In this situation I value something about the freedom to leave for work when it suits me, the uninterrupted thinking time the journey gives me and the views of the countryside as I drive through. But, also relevant to this situation is that as a local resident I also value peace and quiet, without sound of cars.

   Beliefs. I believe that my car is polluting the atmosphere.

   Circumstances. I live some distance from my work but near the workplace of another in my household, if we moved and still kept our jobs a similar journey would still need to be made.

5. While I can identify many factors besides values, beliefs and circumstances in this situation that I felt were affecting my behaviour, many of them could be considered to include an element of personal circumstances. My response to other factors and how I was thinking about them for instance is to do with my past experiences, which I would include in personal circumstances. However these factors do extend further and include:

   a. other people in the decision situation, for instance those affected by and those who have influenced my decision;

   b. time available (with my perception and response to it as the personal circumstance aspect here);

   c. public transport policy and practice in the UK, which meant I could not carry out this journey by public transport.

6. I'm aware that there's a contradiction between my values of peace and quiet, clean air and love of the countryside as a local resident and my behaviour as a car owner and driver. I reconcile this to some degree in recognising that my actions are affected both by my context and personal circumstances, as well as my values. I try not to make unnecessary journeys but I haven't fully reconciled

my values and behaviour. I feel a bit guilty about it and would like to be able to walk to work. Reducing the need to travel to work by car would be a factor for me in deciding where I live and work in the future.

Activity 25 Contextualising your systems of interest: transport

Try to identify some elements of a larger system in which the system of interest you identified in Activity 24 forms a sub-system. (It may perhaps be to do with fuel-supply, community, pollution, or employment.) Identify other subsystems and extend or redraw the systems map you started in the last activity. Consider the relationships between these elements. Be sure to locate yourself on the diagram.

Discussion

Three wider systems of interest my journey to work system could be a part of are

1. **My 'all journeys I take' system of interest**. Elements within this wider system that would affect my 'journey to work system of interest' include:
   - *public transport vehicles* which indirectly affect my journey to work system of interest in terms of traffic congestion. (For instance a rail strike in the area I travel through results in a lot more traffic generally even though there is no train going in my direction) and
   - *homes of other members of my family* which affects my journey to work system of interest indirectly because it was one factor affecting where I chose to locate my own home, with its associated journey to work. Two other subsystems in my 'all journeys subsystem' would be 'journeys to visit other members of my family' and 'journey to evening classes' sub-systems.
2. **My local community system of interest**. Elements within this wider system that would affect my 'journey to work system of interest' include:
   - *development plans* which would affect the infrastructure subsystem in my journey to work system and
   - *services* which would include support services for my car and other vehicles such as fuel supply, car servicing and repairs. If there was no fuel available locally for instance it may affect my route to work or whether it would be feasible to live where I do.

   Two other sub-systems in my local community system of interest could be my 'evening classes' and 'shopping' sub-systems. (I am conscious as I do this activity though that there would be many different ways of structuring my community system of interest.)
3. **UK transport system of interest**. Elements within this wider system that would affect my 'journey to work system of interest' include:
   - *national and local government transport policies* which affect my journey to work system on many different ways for instance state of roads, availability of public transport, taxation etc and
   - *UK transport infrastructure*, such as motorways or railways, which affect the traffic in my own locality. Two other sub-systems in my UK transport systems of interest could be 'air' and 'rail' sub-systems. If this were the case my original journey to work system would probably be a sub-system or element within a road-based transport system of interest.

Activity 26 Summarising your perspective: transport

Look at Figure 17 which shows the perspectives of different individuals on a situation. It shows what it is different individuals pick out from a situation as their system of interest from their different points of view, given their experience, role, values, beliefs etc. In Figure 13 each perspective is given a label, for instance ‘an ecologist’s system of interest’, though different ecologists may identify different systems of interest and the role and discipline of ecologist is just a part of that individual’s overall perspective.

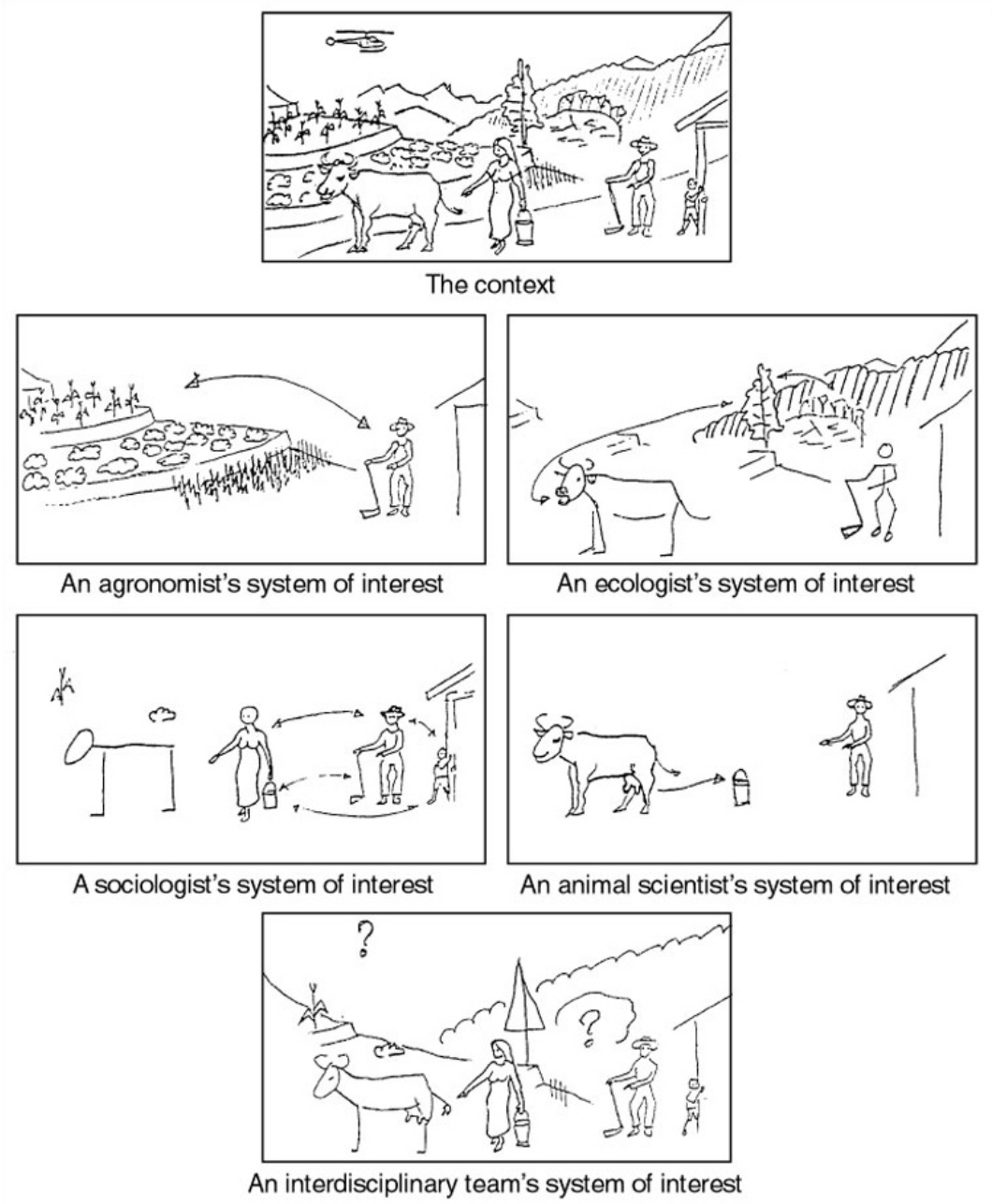

Figure 17 Perspectives taken by different individuals on a situation (T860, Block 2, p. 24)

Summarise your own perspective(s) on the systems of interest you have identified in the past two activities. Label your perspective(s) and either draw a representation as in Figure 17 or describe each perspective you have in a couple of sentences noting the highlights you would pick out from your point of view.

Discussion

Two of the perspectives I hold arise from recognising two roles that I have in the situation: local resident and worker/commuter.

- *local resident*, picking out the location of home and the effects of roads and cars on the quality of life in the area in my system of interest; and
- *worker*, selecting the location of my workplace with distance of journey to work and the time taken as inconvenient.

Activity 27 Summarising other perspectives: transport

Consider a range of stakeholders in the system you described in the previous activity. Briefly describe and/or draw what you imagine their perspectives on your system of interest would be in the same way you did with your own perspective(s) in the last activity.

Discussion

I identified other road users, local residents and local government employees as other potential stakeholders in my 'journey to work system of interest'. I imagine at least some other local residents would have a similar perspective to my own as described above if they had formulated similar systems of interest to my own, for instance in terms of journeying to work by car. If on the other hand they were local residents who were say more home-bound and not car users they may think of quality of life quite differently from the way I do and pick out quite different elements, such as facilities for pedestrians. I think other road users would have a variety of perspectives depending on factors such as purpose and length of journeys and how costs were perceived. Whereas I would probably represent my car as having the function of enabling me to work, others may represent it as a nuisance or a cost. When including local government in my system of interest I was thinking of the perspectives of for instance road workers whose perspective on the situation described may be primarily to do with managing traffic flows or repairing roads.

Activity 28 Considering congruence between sustainable development values and behaviour: transport

Are there any group (organisational or societal) values that you can identify that are relevant to the system and subsystems you have drawn on your system maps for Activity 24? If so, describe them. How congruent are your own values with any group values you have identified? What effects, if any, do you think this degree of congruence has on your own behaviour?

Discussion

I would identify societal values associated with car ownership in that my valuing of my freedom to travel in the way that I do has probably arisen in a social context where cars are freely available and marketed to the UK public as something 'good' (albeit against

different detailed criteria). I am aware that I behave differently when I am in different contexts where cars are not considered good, for instance when travelling to some parts of the Netherlands where other forms of transport such as bicycles are more socially acceptable and better catered for.

In asking the question in Activity 28 I have moved away a little from looking at congruence between your own values and behaviour. As part of understanding multiple perspectives on sustainable development systems of interest I have found it useful to recognise where my values are similar to or different from those of groups I am part of, particularly in group decision making or where there is apparent conflict. This relates back for example both to the point Robert Chambers made about listening and being open to other people's values in Section 9 and the point made previously about the need to value difference as well as similarity. In my experience it has also influenced which groups I decide to join or work with.

Activity 29 Identifying your systems of interest, exploring relevant values and behaviour: purchasing or consuming

1. Describe an action you took recently in your everyday life as a purchaser or consumer. You may decide on something that is a part of your home life such as shopping, your community life in organising events or services or a part of your office or other site based working life. Make a short list of (a) the factors you took into account before deciding on your action; (b) your reasons for taking those factors into account; and (c) any other factors that with hindsight you think you may have liked to take into account. (For instance, did you consider alternative products or course of action or doing without? If so, why? If not, why not?)
2. Draw a systems map of the system of interest you have started to identify in Question 1 above.
3. Draw a multiple cause diagram to show what led to your decision to purchase or consume in the way that you did.
4. Identify something about your values, beliefs and circumstances that you consider relevant to this situation, either from your answer to Questions 1 and 2 or from thinking about the situation.
5. What factors did you feel were affecting your behaviour besides your values, beliefs and circumstances?
6. How congruent are your values and behaviour in the context of this example? List any apparent contradictions. If there are any, how if at all, did you or would you like to reconcile them?

Discussion

1. The action I have selected is my purchase of vegetables. I bought carrots, mushrooms, onions and potatoes the other day.
   a. Factors I took into account in purchase of these vegetables: whether organically produced, where produced, appearance (whether they looked appetising), cost and amount of packaging. I also took some other factors into account in deciding to buy these particular vegetables rather than others (such as peas or corn) – my preference concerning taste, my belief about what was seasonal or stored for long time etc.

b. Many of my reasons for taking these factors into account seem to be based on my beliefs, for instance about how the vegetables have been produced, whether they have been transported a long way, how they are likely to taste and what nutrients they may provide. I think of these factors as based to at least some extent on my beliefs because there was little data available to me in the shop except country of origin, sell-by dates, appearance etc. Although I would like to have bought vegetables that had least harmful environmental and social effects I couldn't really tell except from what I have read elsewhere.

c. With hindsight I would have liked to buy the vegetables from their producers if possible rather than from the shop. I think I would also liked to have paused long enough to think whether I really needed the quantities of vegetables I bought or could have done just as well with less. I didn't consider these factors because I was in a hurry en route from work to home. I may have considered them more fully if I'd thought more about them beforehand or taken more time over my purchasing.

2.

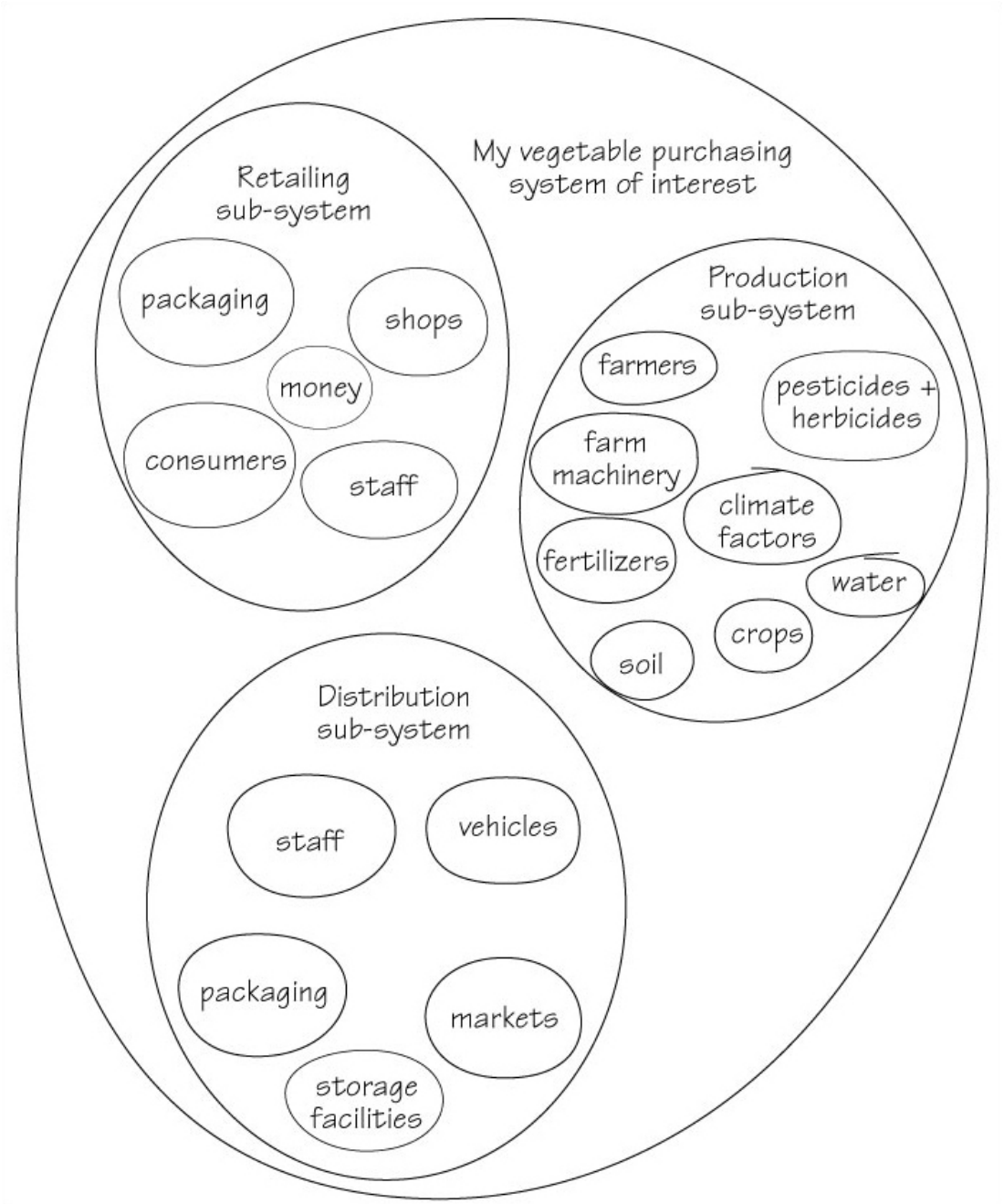

Figure 18 A systems map of my vegetable purchasing system of interest

3.

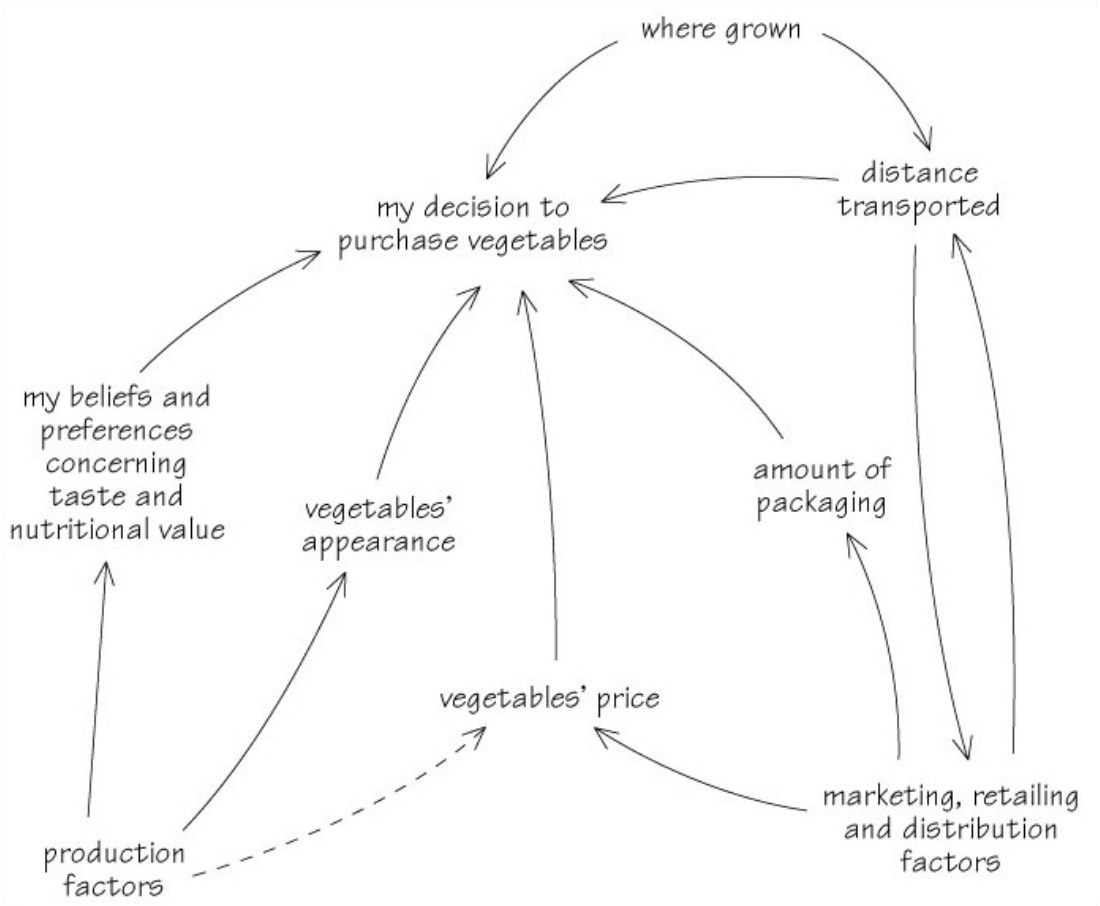

Figure 19 A multiple cause diagram showing what led to my food purchasing

4. For me this example brings my values relating to sustainable development to the fore because I am aware of subconsciously trying to trade off environmental, economic and social considerations. I value most highly vegetables produced with (what I perceive to be) the least damaging environmental and social effects but I still keep cost considerations in mind. (By environmental effects in this context I would for instance include pollution from chemicals and transport or unnecessary use of natural resources in production, distribution and retailing. As social effects I would include farmers' livelihoods.)

   I have already discussed beliefs to some extent in Question 1. Some specific examples of my beliefs in this context would be that I believe that organically produced vegetables are less likely to have harmful effects to my health and that much packaging of vegetables for individual consumers is unnecessary.

   Personal circumstances I consider relevant here include my previous attempts to find out about how vegetables have been produced to help me in my decision making and the time and opportunity I had available to make this particular purchase.

5. I would answer this part of the activity in a very similar way to Question 5 of Activity 24.

6. In the context of this example my values and behaviour are partly congruent. Two areas where there is some lack of congruence are those identified in Question 1 (c) above when considering what I would have liked to have taken into account but didn't:

   - making the purchase from a shop rather than from a producer and

- not giving much though to whether I really needed what I bought.

I reconcile these contradictions through recognising the context in which I am making my purchases. There are also contradictions for me in purchasing vegetables from overseas. There are issues of trade and environment I find difficult to reconcile and I do occasionally purchase some vegetables produced overseas where packaging does not seem excessive and where there are (what I perceive to be) livelihood considerations.

Activity 30 Contextualising your systems of interest: purchasing or consuming

Suggest three wider systems of interest within which the system of interest you identified in the last activity could form a sub-system. Try to identify some elements of each of the wider systems of interest that fall outside of your original system of interest but affect it in some way and explain the effects. Name at least two other sub-systems in each wider system of interest. (You may find it useful to draw some systems maps of your wider systems of interest though I have not included examples of these with my own answer.)

Discussion

Three wider systems of interest that my vegetable purchasing system of interest could be thought of as a part of are:

1. My food purchasing system of interest. Elements and sub-systems relating to retailing, production and distribution of other foodstuffs besides vegetables fall outside my vegetable purchasing system of interest but may affect it. For instance shops, packaging or vehicles for other products may be shared so decisions made about them within the boundaries of different systems of interest may have knock-on effects.
2. My vegetable-consuming system of interest. Elements relating to food preparation and cooking would fall outside my vegetable purchasing system of interest but may affect it in that the way in which I intend to prepare the food may influence my choice of product.
3. My household managing system of interest which could include, as subsystems, all my purchasing and consuming systems of interest concerned with my household. Elements such as ‘composting bin’, ‘pet rabbit’ (if we had one!) and ‘recycling facilities’ in my other systems of interest could affect my vegetable purchasing system of interest in that they may influence whether I buy vegetables pre-prepared or packaged.

Activity 31 Considering congruence between sustainable development values and behaviour: purchasing or consuming

Are there any group (organisational or societal) values that you can identify that are relevant to the system and subsystems you have drawn in your system maps for Activity 10.7? If so, describe them. How congruent are your own values with any group values you have identified? What effects, if any do you think this degree of congruence has on your own behaviour?

Discussion

I think there may be group values associated with some of the potential stakeholder groups indicated in my vegetable purchasing system of interest e.g. farmers or staff involved in retailing and distribution. I am aware for instance of some of the apparent values of the supermarket in which I sometimes shop, which is part of a large supermarket chain. They appear to hold some 'business' values relating to their corporate image and expansion that I do not share i.e. some of what they identify in this area as good or bringing meaning to life does not resonate with me as a consumer. I am thinking of similar looking supermarkets in many parts of the UK on out-of-town sites. For me this seems at odds with my valuing of locally distinctive and more traditional buildings and services and my valuing of diversity of communities in this context. This lack of congruence does affect my behaviour to some degree in that I often choose to avoid supermarkets in favour of small local shops when travelling to different parts of the UK. I realise that this example illustrates only some aspects of what could be thought of as my 'sustainable development values'. I have nearly reached the end of this process of considering congruence between my sustainable development values and behaviour in this course, and considering my own and some other perspectives on some specific sustainable development issues. I recognise that going through this process has made me question some of my assumptions about my values and behaviour in relation to managing sustainable development and I find I am starting to focus on what I may want to change.

I have included my own answers to these activities. They are likely to be different from your answers.

Activity 32 Reflection

Look back in your notes at your activity answers for Sections 5–10. Re-read the learning outcomes at the start of this course. To what degree do you think you have achieved them? Make some notes about any areas you would like to consolidate further (for instance you may want to explore some further examples of different sustainable development situations or look in more detail at the effects of organisational values on your own behaviour). Also write down any outstanding questions that you have at this stage. There will be opportunity to consolidate some aspects of these learning outcomes later on in this course.

There is not the space in this course to draw out all values that may be relevant to sustainable development nor to explore more than one or two examples of sustainable development situations. But I hope that by now you will at least have experienced a process for discovering and contextualising some of your values and beliefs in this domain. I said at the start of this part that I would refer to a value as meaning something that an individual or group regards as good or something that gives meaning to life. In the domain of sustainable development I could summarise what this means to me as an individual quite simply. For me it means what I have learnt to love about both people and place, through my experiences. But out of context I cannot meaningfully summarise my values at a more detailed level nor my beliefs about the contexts in which I live and work. For that I have found that I need to consider my values in the way I have started to do in the above activities – in specific sustainable development situations and relating them to my systems of interest.

Conclusion

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