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How might environmental education be introduced into a programme of management education? Exploring the use of adaptive concepts

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HOW MIGHT ENVIRONMENTAL EDUCATION BE INTRODUCED INTO A PROGRAMME OF MANAGEMENT EDUCATION? EXPLORING THE USE OF ADAPTIVE CONCEPTS

Submitted by Stephen Gough for the degree of PhD
of the University of Bath
1999

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SUMMARY

There is widespread support for the infusion of environmental education into all aspects of school curricula. Any such infusion seems likely to be particularly significant for business management education, which tends to promote processes of economic development and environmental management. These processes bear significantly both on the nature of the environment, and on the ways in which individuals think about it. This influence may often be of a form not favoured by many environmental educators.

This research seeks to explore a methodology for introducing environmental education into an established programme of management education while meeting, at the very least, the minimum requirements of all stakeholders, including any which may at first appear mutually contradictory. An innovative theoretical tool, the adaptive concept, is proposed as a means to achieve this.

Using a case study approach, three interventions in a specific business management education programme in a developing country, using two different adaptive concepts, are described. These interventions are evaluated in terms of the effectiveness of teaching and learning, and in terms of their success in engaging with the legitimate concerns of different social groups.

Possible approaches to identifying adaptive concepts are considered in the light of the study, and a preliminary evaluation of the usefulness of adaptive concepts is made.

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CHAPTER ONE

ENVIRONMENTAL EDUCATION, ECONOMIC DEVELOPMENT AND ENVIRONMENTAL MANAGEMENT

Background

An important part of the context of this research is a wider, continuing, multi-faceted debate about sustainable development among academics and policy-makers. A feature of this debate has been calls made by some participants for more research of an interdisciplinary nature. At the most general level the present research hypothesises that such interdisciplinary efforts may present opportunities both to promote and refine environmental education teaching, learning and research.

Environmental education has existed as a recognised curriculum theme since 1970 (Greenall Gough, 1993a, p.3), but has made, at best, patchy progress (Fien, 1993; Whitty et al., 1995; Walker, 1997; Gough S., 1997). In part this is because of disagreements over the nature and significance of the underlying inter-relationships between education, society and the environment (Fien, 1993, p.40; Walker, 1997, pp.159-161). It is true that a broad consensus has been reached on the desirability of certain characteristics for environmental education, for example holism (Sterling, 1993), a life-long educational approach (UNESCO-UNEP, 1977), a consideration of values as central to any programme (Caduto, 1985), and a focus on the future (Hicks, 1996). Nevertheless, there is substantial disagreement about what exactly the goals of environmental education should be (e.g. Hungerford and Volk, 1990; Fien, 1993), and how they might relate to sustainable development (Huckle and Sterling, 1996; Jickling, 1997).

The term "sustainable development" was first used by the World Commission on Environment and Development (1987). It has provided an enduring focus for research and debate among educators, environmental managers, the development community and others, in spite of continuing uncertainties about its precise meaning (Turner II, 1997, pp.133-134).

Among environmental scientists, managers, and economists there is widespread agreement that if sustainable development, however defined, is to be pursued an interdisciplinary effort is required (Carley and Christie, 1992, pp. 40-41; Munasinghe and McNeely, 1995, p.25; Holdren, Daily and Ehrlich, 1995, pp.11-12). Associated with this view is a growing awareness of strong institutional pressures which may, in practice, stand in the way of such an effort (Holling, 1995, p.65). A sense that it is important to transcend traditional subject and specialism boundaries is also evident in a substantial and articulate body of work which questions the appropriateness, or even the possibility, of sustainable development as a meaningful goal, and seeks to propose alternatives (e.g. Redclift, 1987; Sachs, 1991; Thompson, 1997). However, regardless of whether sustainable development is seen as a worthwhile goal or a misleading distraction, the inter-related issues of just how much disciplinary skill should be prerequisite for those participating in interdisciplinary work, how this degree of skill may properly be evaluated by co-workers from other disciplines, and what institutional arrangements best foster interdisciplinarity, remain unresolved.

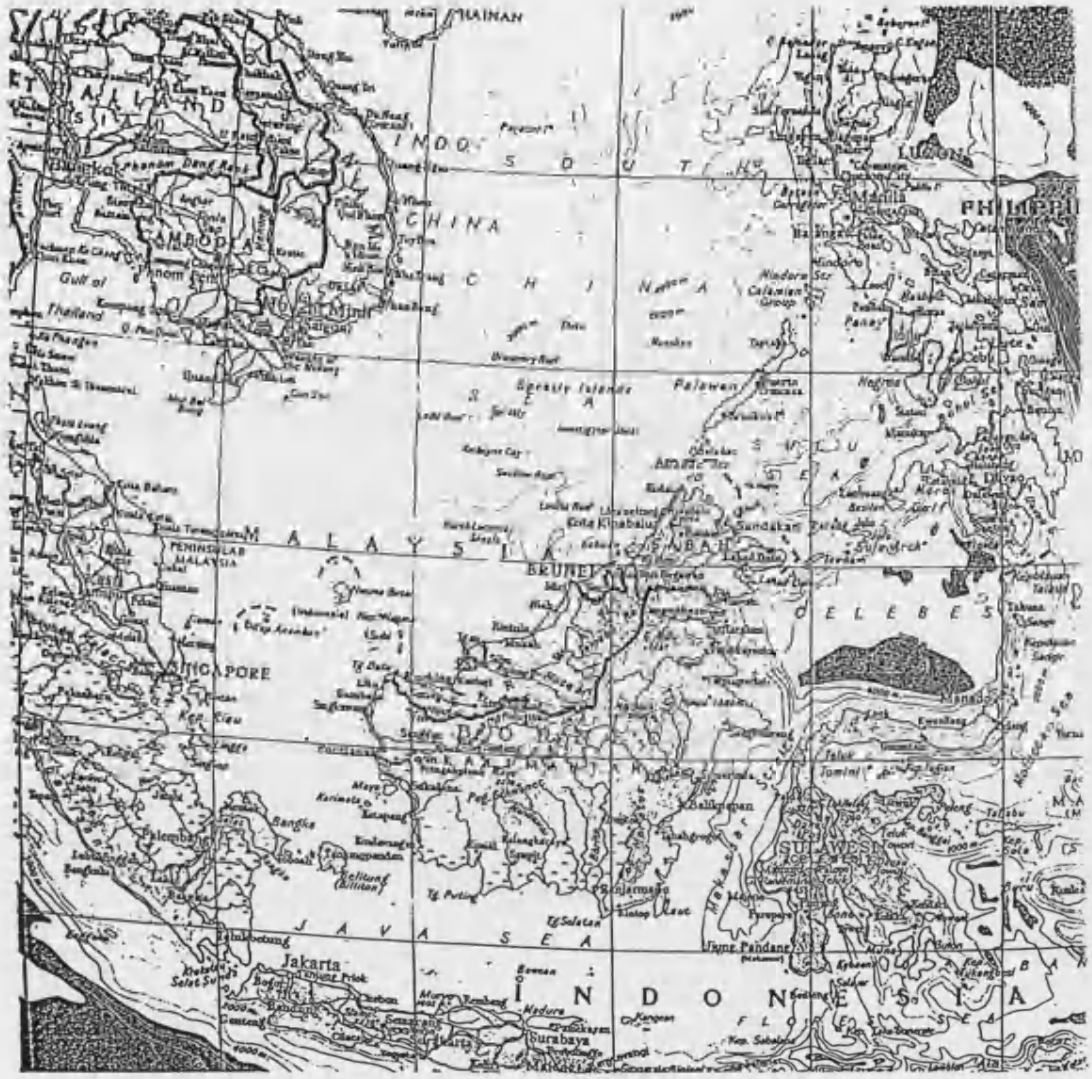
Among environmental educators this state of affairs is, for the most part, closely mirrored. The notion of sustainable development has attracted a great deal of interest (e.g. Huckle and Sterling, 1996; Leal Filho, 1996, pp.183-185), and been sharply questioned from a variety of perspectives (e.g. Jickling, 1992, 1997; Jickling and Spork, 1998; Orr, 1992). Interdisciplinarity is a long-established idea in the environmental education literature in two different, though related, senses: first, that ideally teachers and learners in all disciplines and at all levels should be reached by,

and in their turn have a part to play in, environmental education (UNESCO-UNEP, 1977); second, that environmental education should be holistic education and so avoid the reductionism inherent in the division of knowledge into discreet disciplines (Sterling, 1993). Interdisciplinarity in both these senses has been linked, in principle, to the pursuit of sustainability (Tilbury, 1995, p.200).

In spite of this however there is also evidence of continuing widespread "disciplinary chauvinism" (Lucas, 1980, *title*) in the practice of environmental education. A tendency to locate solutions to environmental problems almost entirely within their own particular sphere of expertise, and to set educational priorities accordingly, may be identified among some disciplinary specialists (Lucas, 1980), including some environmental educators (e.g. Trainer, 1990; Fien and Trainer, 1993a). Further, some environmental education writers, while not specifically asserting the primacy of educational knowledge, seek to dismiss other knowledge of certain kinds. For example, Huckle (1993, p.63) attacks "education for environmental management" on the grounds that it subverts sustainability, as he himself defines the term, by promoting the hegemony of the dominant social class; Greenall Gough (1993a, pp.38-44) sees modern science, and so by implication science education, as a major cause of environmental problems rather than as part of any credible solution.

Academic disciplines function both as ways of partitioning knowledge and as organisational categories for educational institutions and systems. In both these senses they are part of the wider curriculum problem of the existence of a 'gap' between the designs of education theorists and actual educational outcomes (Stenhouse, 1975; Kemmis, 1990), which is itself, as one might therefore expect, a recurring theme in the environmental education literature (Stevenson, 1987: Fien, 1993; Walker, 1997).

Searchers after interdisciplinarity from other academic disciplines often specifically include education in their recipes for sustainable development. However, only rarely



Map 1: Brunei and South East Asia

is any attempt made to provide even an outline of what form such education might take, who its recipients should be, how it might be implemented, how evaluated, and what obstacles it might expect to encounter. Even where this is done many questions are left begging.

For example, one view, from environmental engineering, is that:

> Universities must position themselves so that they can both train graduates to meet certain requirements regarding environmental awareness, knowledge and skills and, at the same time, inform public opinion by providing balanced and unbiased information about the environmental and financial costs and benefits of particular schemes.
> (Joseph and Mansell, 1996, p.216)

In contrast to this expert-led, deficiency-remediation approach, Sharp (1992) argues for a key role for education within environmental management as a means to empower ordinary people to challenge existing institutions and power structures. These incompatible positions reflect a more general division between those for whom environmental problems require a business-as-usual response based in technology and the notion of uninterrupted progress, and those for whom environmental degradation is evidence of the need for humans entirely to re-evaluate and change their worldviews. This division, and its more detailed sub-divisions, has been influentially conceptualised by O'Riordan (1989) as a scale of perspectives ranging from technocentrism to ecocentrism.

As will be argued in detail later in this chapter, the adoption by individuals, groups or institutions of particular environmental perspectives and assumptions explains an otherwise curious state of affairs of which the 'disciplinary chauvinism' noted above may be a partial indicator. This is that education is seen by many environmentally-concerned social actors (including some among the subset of such actors who actually

call themselves environmental educators) as a necessary means to propagate their own analyses to others, even though so little (compared to the scale and complexity of the issues) is known with any certainty. Opinions about *what* should be taught frequently amount to views about *who* should be taught, and *by whom*, though the idea that any individual or group possesses anything approaching a complete answer strains credibility. Hence, one reason to attempt the infusion of the insights of environmental education into the spheres of development and environmental management is that there may be much to learn along the way. Some clarification of environmental education goals may result, for example, from the further exploration of the very inter-relationships between education, society and the environment which, as already noted, have been a source of difficulty in the past.

Further, notwithstanding a number of successful interventions on a small, localised scale, it does not seem unreasonable to suggest that, hitherto, environmental education has probably had far less impact on human cognitive and affective perceptions of environmental phenomena than processes of economic development and environmental management. Two examples from Brunei, the small, developing country in North Borneo which was the site of this research, illustrate the point. First, in a period of no more than twenty years the construction of new roads and subsequent ribbon development along them, coupled with the spread of the availablity of commercially retailed substitutes for jungle products, has transformed the cultural function of areas of rainforest. Middle-order administrative units or *mukims* once consisted of villages or *kampongs* linked by well-established jungle trails. Besides purposes of communication these trails were also used for setting animal traps, and for the gathering of bamboo and other materials. At the time of this research many of these same kampongs were *divided* by the jungle. Surviving trails were visited only by a few die-hard locals and expatriate joggers. For some people, what was once a twenty-minute walk to visit relatives had been replaced by a twenty-five or thirty minute drive around blocks of trees. Second, management of water resources through the construction of reservoirs and the provision of piped

supplies appeared to have lessened the importance some Bruneians attached to the cleanliness of the Brunei River. This river, and the settlements it supported, were a powerful cultural symbol for Bruneians. Their pollution was the subject of a simmering national debate. Hence, the interest shown by development and environmental management practitioners in education as a means to make their practice sustainable seemed likely to present opportunities for environmental education to contribute to a more informed and precautionary approach to future developments. This research asked, in a particular context, how environmental education might positively respond to those opportunities.

The research problem

This research sought to explore how a form of environmental education might be introduced into a programme of management education in Brunei, both:

- by consent, and
- in such a way as to permit prudent generalisation from this individual case to theory (Yin, 1994, p.37), including the body of theory outlined above

Early conceptualisations of the need for, and nature of, this undertaking were influenced by this researcher's preparation of a dissertation (for the degree of M.Ed.) which examined relationships between environmental education and management education in North Borneo (Gough, S. 1995), and by subsequent work as an educational consultant for a private firm of environmental engineers based in Brunei. These activities also gave impetus to processes of reflection upon both the nature of appropriate research problems in environmental education research in general and, subsequently, upon the appropriate formulation of the research problem of this research in particular.

While the present and future course of human relations with the rest of nature clearly constitute an important and complex social problem at a range of overlapping spatial and temporal scales (Blaikie and Brookfield, 1987, pp.66-68; Holling, 1995), this research has no pretensions to solving it. This limited scope is at odds with with an influential strand of thought in environmental education which argues that solving social and environmental problems is a legitimate, and indeed essential goal of both environmental education and environmental education research. For example, Fien and Trainer (1993b) see transition to a sustainable society as:

> Primarily an educational problem...Much of Western culture has to be totally reversed in a few decades. We have to replace a long list of cultural traits by their opposites, particularly obsessions with material affluence, getting richer, competing, winning, exercising power and controlling nature.
> (Fien and Trainer, 1993b, pp.39-40)

Similarly, Robottom and Hart (1993) argue at length for a socially-critical, emancipatory, action research paradigm for environmental education research as a step towards the establishment of a new worldview which, in turn, will make possible the resolution of, "the contemporary social/ecological crisis" (p.45).

However, as Silverman (1993, p.2-3) points out social problems are not the same thing as social research problems. The need for social change to achieve sustainability may be urgent, but it is not a manageable research project. Further, a focus on the over-arching social problem may be an obstacle to understanding the specific context of the research. This point is made by Walker (1997, p.158), following Robinson (1993a, p.268). Walker argues that emancipatory action research in environmental education of the kind advocated by Robottom and Hart and others:

> pre-judges the analysis of the problem situation. It fails to provide a theory of the problem or the mechanisms to judge the most appropriate methodology to solve the problem.
> (Walker, 1997. p.158)

The intention of the present research, therefore, is merely to illuminate an aspect of the relationship between environmental education, environmental management and economic development in a specific context. This does not necessarily mean that there will be no implications for social policy. As Richie and Spencer (1994, pp.173-175) point out, qualitative research has an important contribution to make to social policy, and may inform it in a number of different ways. Also, as Robinson (1993a, pp.129-132) notes, careful generalisation may be possible from case-specific qualitative research. However, the focus of the research remains a particular educational problem, not wider policy issues. This is further consistent with the view of environmental education itself taken by Jensen and Schnack (1997), who argue:

> it is not, and cannot be the task of the school to solve the political problems of society. Its task is not to improve the world with the help of the pupils' activities. These activities must be evaluated on the basis of their educational value.
> (Jensen and Schnack, 1997, p.165)

A similar point is made by Martin (1996, p.42-43) in his discussion of the proper relationship between education and environmental NGOs.

Silverman (1993, pp.4-8) identifies an important trap for the unwary in conceptualising a research problem. He calls this "The Trap of Absolutism" and identifies it with the uncritical acceptance of four possible kinds of conventional wisdom of which two, termed respectively, "scientism" and "progress" (p.4) seem

of particular significance in the present case. Silverman also proposes four kinds of "sensitivity" (p.6-8) which may assist such a conceptualisation, these being, "historical sensitivity", "cultural sensitivity", "political sensitivity", and "contextual sensitivity".

The scientism trap, according to Silverman, is to accept without question that 'science' is necessarily both separate from and superior to, 'common sense'. As already noted, the dominance of the scientific worldview and its compatibility with notions of sustainability have been questioned from within environmental education, particularly by ecofeminist writers (e.g. Harding, 1986, p.9; Shiva, 1989, pp.26-37), on the grounds (among others) that science is intrinsically reductionist rather than holistic, and inappropriately takes a machine rather than an organism as its metaphor for nature. This analysis usefully informed social research in Brunei simply because the scientific worldview is not everywhere or always dominant, as the following examples illustrate. Of the three main ethnic groups Brunei Malays are numerically the largest, and politically dominant. They are adherents of the Shafi'ite school of the Sunni faith, a subset of the Islamic religion which is rigorously applied in daily life. This has consequences for perceptions of the purpose of education, and also for development issues. As the Minister of Education has observed:

> One of our dilemmas is how to educate people without turning them into materialists. And that's where Islam comes in. Unlike Christianity, Islam spells out a complete way of life...We will have an Islamic Bank and perhaps an Islamic banking system. And if Sharia Law will bring peace and harmony I do not see why it should not be introduced.
> (Pehin Dato Haji Abdul Aziz, 1991, pp.82-83)

Indigenous peoples known collectively as Dayaks are the smallest in number of Brunei's main ethnic groups. However, Dayaks form the majority in the larger, and in many ways culturally coherent region of North Borneo which includes, in addition

BRUNEI
SABAH
KALIMANTAN
TIMUR
BORNEO
BARAT
TENGAH
SELATAN
Kuala Penyu
Kota Kinabalu
(Jesselton)
Kuala Belait
Seria
Lutong
Miri
Sibuti
Bintulu
Sibu
Kapit
Belaga
Mukah
Balingian
Kanowit
Sarikei
Sematan
Kuching
Simanggang
Sri Aman
Lubok Antu
Serian
Sambas
Pontianak
Ketapang
Tanjungpandan
Sintang
Putussibau
Nanga Pinoh
Sanggau
Tayan
Sekadau
Meliau
Ngabang
Mempawah
Singkawang
Pemangkat
Tebas
Bengkayang
Samarinda
Balikpapan
Bontang
Tarakan
Tanjungredeb
Tanjungselor
Nunukan
Tawau
Sandakan
Lahad Datu
Kudat
Kota Belud
Tuaran
Papar
Kimanis
Beaufort
Sipitang
Labuan
Limbang
Lawas
Mulu
Marudi
Bintulu
Kapit
Sibu
Sarikei
Kuala Kapuas
Banjarmasin
Pagatan
Batulicin
Kotabaru
Amuntai
Barabai
Kandangan
Rantau
Martapura
Kuala Pembuang
Tel. Sampit

to Brunei, the East Malaysian States of Sarawak and Sabah. Though the term 'Dayak' masks a very wide range of ethnic diversity, all Dayaks share a moral and religious worldview known as *adat*, or *adet*, which defines an individual's rights, sets out his or her social duties, and establishes the basis of human relations with the natural environment and the supernatural (Hong, 1987).

The third main group is of ethnic Chinese origin. Though it is the commercial, market-based activity of this group which most strikes outsiders, ready generalisation about their view of the world is confounded by the presence of speakers of different Chinese dialects, the assimilation of some sub-groups into the Malay establishment through religious conversion, the possession or otherwise of Bruneian citizenship, and the probability that life *within* the overseas Chinese family is to a large degree controlled by a unique and little-researched set of social parameters (Greenhalgh, 1988).

Quite clearly fidelity to, or admiration of, a Western scientific view of environmental cause, effect and value cannot be assumed for any of these groups.

Silverman's (1993,p.5) concern with progress is supported by an extensive, postmodern critique of this notion from within curriculum theory in general and environmental education in particular (e.g. Giroux, 1990, pp.7-31; Greenall Gough, 1993a, pp.34-44). This critique has been extended to problematise environmental education theories themselves. Payne (1997, p.134, 1998) refers to a "triple-bind of post-modernity" in a paper centrally concerned with a consideration of critical curriculum theorising in the field. It seems likely that, in fact, this triple-bind may have implications for any project of environmental education, environmental management or economic development. Its three elements are:

(i) the weakening and infiltration of traditional institutions and understanding by globally-disseminated experiences which range from fast food restaurants to electronic virtual knowledge. Payne writes:

> Whether we like it or not, agents, as moral, social, political and ecological actors, in the post-modern world are 'contingent' beings. They are less 'fixed' by tradition, circumstance or place. Once-secure institutions, like the family, school and religion and the local community and its setting, exert less influence on the formation of agency and identity. Even very young agents now have to contend with a 'texturing' of social life by a range of abstracted and mediating forces that effectively 'disembed' once locally embedded life chances and 'lifestyles'
> (Payne, 1997, p.135)

(ii) the existence of a "virtual social form of technologically-mediated and abstracted information exchange' (Payne, 1997, p.136), in which environmental education, environmental management and economic development academics are participants. This means that even if environmental educators are able to demonstrate superior intentions, they are still capable of being the vector of weakening influence on traditional institutions and understanding.

(iii) following from this, it needs to be asked how different social constructions of the environment represent, perpetuate or promote different ideological, political and moral interests.

This triple-bind is useful in illuminating the difficulties of educational intervention in the culturally-complex setting of Brunei. For example, it so happens that traditional Dayak lifestyles share many features with the ideal of egalitarian sustainability often

favoured, either explicitly or by implication, by environmental education academics (e.g. Trainer, 1990; Fien and Trainer, 1993a, p.18-19; Sterling, 1993). Malay society is no less an integral part of the ancient human/environmental symbiosis of North Borneo (Colchester, 1992, pp.10-12). Malay social and political arrangements are characterised by strictly formal and hierarchical social stratification (*adat istiadat*) of a kind not comfortably accommodated by much contemporary Western environmental thought. This means that an environmental education intervention for which the theoretical justification seemed entirely sound from the point of view of the academy might, from the Malay point of view, seem no better than unwarranted, foreign, pro-Dayak interference in existing social and political arrangements.

The importance to the research of historical sensitivity (Silverman,1993, pp.6-7) would be hard to overstate. The danger is that of assuming the history of the East to be no more than simply a consequence of the history of the West, a fallacy which Said (1985, p.101) terms, "historicism". He writes:

> historicism...has expanded and developed enough to include antithetical attitudes such as ideologies of Western imperialism and critiques of imperialism, on the one hand, and, on the other, the actual practise of imperialism by which the accumulation of territories and population, the control of economies, and the incorporation and homogenization of histories are maintained.
> (Said, 1985,p.101)

A particular example of such historicism is of concern here. In developing her ecofeminist theory of environmental education Greenall Gough (1993a, p.46) quotes Jansen's (1990) view that Western scientific thought, as developed notably in the work of the Enlightenment philosopher, Francis Bacon (1561-1626), was designed to:

> denude the mystique of mother earth in order to open up her orifices to exploitation by commerce.
> (Jansen, 1990, p.238)

In this view, 'commerce' is the root cause of environmental degradation, and Western science is the pre-requisite of commerce. However, commerce has been important in South East Asia since perhaps the second century BC (Colchester, 1992, p.11, Harrisson, 1959/1986 pp.24-42) and was without doubt an important constituent part of traditional human relationships with the natural world affecting, for example, the ways in which rivers and rains were perceived and understood. It follows that not only environmental education, but also management education, needs to be sensitive on this point.

Cultural sensitivity (Silverman, 1993, p.7) was required in the research setting by virtue of its complex cultural mix. A particular aspect of this relates to the College in which the research intervention was located. Duli Pengiran Muda Al-Muhtadee Billah College (hereafter 'Maktab Duli' [1]), in Bandar Seri Begawan, the capital of Brunei, was a large sixth form institution serving the whole country. Academic staff were almost entirely expatriate, drawn from New Zealand, Pakistan, India, Australia, Canada, UK, Ireland, Nepal and Sri Lanka. However, a number of local staff taught Islamic subjects. Administration above Head of Department level was entirely in the hands of local Malays and those Chinese who were legally Brunei citizens [2]. Many administrative functions were carried out directly from the Ministry of Education, which was a ten minute drive away. Students had an influential, formal structure for self-administration. The strong Islamic culture of the College was compulsorily extended to all students, including those who were non-Muslims. The result of all this was an extraordinarily complex cultural micro-climate.

Political sensitivity (Silverman, 1993, p.7-8) is necessary to come to terms with special features of the research setting which sit uncomfortably with Western

conceptions of social justice. Brunei is an absolute Malay Islamic Monarchy (*Melayu Islam Beraja*). All power resides with the Sultan and those Malay males he chooses to be his senior advisors. Other ethnic groups and women are specifically excluded from the most senior positions of power (Pehin Dato Haji Abdul Aziz, 1991, p.82). This arrangement is certainly ancient, and may date from as early as the thirteenth century (Borneo Bulletin Brunei Yearbook, 1997, p.81). It appears, at least, to enjoy widespread legitimacy throughout the community. Following from this, it needs to be recognised that a political decision has been made in Brunei to pursue a path of economic development in part through education. The terms of this commitment, stated in the following "paramount aim" of the State education system involve, to Western ears, a surprising inversion:

> To provide all Brunei children with every possible opportunity to make themselves useful in the development of the country in order to meet the needs of the country.
> (Brunei Education Commission, 1972)

It is a case of 'people-for-development' not 'development-for-people'. While outside assistance in establishing the terms of implementation of this decision may be welcomed, attempts by foreigners to reverse or subvert it (in line, for example, with theories of environmental education which reject development, or alternative theories of development) seem likely to be regarded as colonialism-by-stealth.

Hence the expressions, 'context of development' and 'context of education' have locally-specific meanings. This point, therefore, further highlights the need for contextual sensitivity (Silverman, 1993, p.8) in the sense of:

> the understanding that participants in social life actively produce a context for what they do and that social researchers should not simply import their own assumptions about what context is relevant.
> (Silverman, 1993, p.8)

A second aspect of the need for contextual sensitivity arises in respect of action by students. During the course of the research students were encouraged to present their environmental investigations, findings and recommendations to decision-makers, particularly senior officials in the Ministry of Development and the Ministry of Industry and Primary Resources. This aspect of the research was inspired in part by examples of successful action research interventions in other countries (e.g. Greenall Gough and Robottom, 1993; Stapp and Wals, 1993). However, the research context differed from these interventions in two important respects; first that, in an absolutist State, no direct or implied criticism of Government agencies would be tolerated; and second, that Malay students in particular, when visiting an important Government office, are operating not only, or even principally, in an educational context, but also in the context of the formal hierarchy of Malay society which defines their place in relation to others and the behaviours appropriate to that place.

Key terms

Key terms in the research are:

- environmental education
- management education
- environmental management
- economic development
- sustainable development.

These terms are of significance to a number of different disciplines. Their precise meanings may differ between disciplines, and be a matter of debate both within and between disciplines. The following is an outline of how they are used in this research.

Environmental education is the central concern of the research. Clearly, it would be helpful if a succinct definition of the term could be provided. Unfortunately this is not possible. Instead, the present situation is that:

> schools and teachers struggle to find their own path through a bewildering mixture of often contradictory advice and guidance, and amid doubts about their effectiveness and progress.
> (Scott and Oulton, 1999, pp.117-118)

Brunei is no exception to this, though environmental education is part of the official education agenda (Brunei Darussalam Newsletter, June 1997, pp. 5, 7 and 20). This being so, questions of the meaning and methodology of environmental education and environmental education research, and the way these bear on the present case, are discussed in detail in Chapter Three.

Management education is very prevelant in many parts of the world, particularly South East Asia. It exists at both academic and popular levels. The former is evidenced by the large number of MBA and other programmes advertised, the latter by the abundance of management titles available in airport book shops and other outlets. The divide between these market segments is not clearly demarcated. Writers such as Tom Peters and Peter Drucker thrive in both.

Sadler (1993, pp.9-12) enumerates ten principles of modern management which convey well the knowledge and skills at the heart of management education, and so

give a measure of the 'target' of environmental education intervention in this research. The principles are:

- human organisations are complex systems
- organisations consist of both technical and social sub-systems
- organisations are open systems
- the key resource of the modern business organisation is knowledge
- management's key task is to secure the future survival of the organisation by means of appropriate and timely innovation
- management is the process of getting things done by other people
- management is a universal activity, but does not take the same form in all situations
- there is no one best way to organise a business
- small is beautiful
- management is a process involving a mix of rational, logical decision-making and problem-solving activities and intuitive, judgemental activities.

Great importance is attached to management education by the Brunei Government as a means of promoting development, encouraging entrepreneurialism and achieving economic diversification (Ali Hashim, 1994).

At Maktab Duli, Management was introduced as an A-level option for the first time in 1994. By 1997, numbers of student enrolments had grown beyond the maximum that could physically be accommodated, necessitating the opening and overseeing of two other centres. More than one third of A-level candidates in Brunei now (end of 1998) study Management. The most successful of these proceed to Business Schools in UK or Australia. The Management Faculty of the local university receives over 80 per cent of its admissions from Maktab Duli (Murshed, 1995). Employment opportunities for those with management skills are good.

Environmental management includes the following:

- the management of specific natural resources
- the management of human activities within environmentally tolerable limits
- the management of human activities to minimise risks
- management of human activities to minimise direct and indirect environmental consequences
- resolving competition over how to use resources
- environmental housekeeping to maintain the stock of resources
- management to halt and reverse processes of degradation.

Environmental management has as its principal goal the maintenance of healthy environmental processes either by preventative, mitigative or remedial action. Examples of typical environmental management activities include catchment basin management, groundwater management, community management of grazing lands, land use planning, pollution control, hazard avoidance and environmental assessment and audit (Wood and Pithketly, 1994, pp.4-5). In Brunei those responsible for environmental management of one sort or another include the Ministry of Development, the Ministry of Industry and Primary Resources, the Forestry Department, the Prime Minister's Office, the Ministry of Public Works (JKR), Brunei Shell Petroleum, construction contractors and consultants, Royal Brunei Airlines, architects and landscape architects. Particular features of environmental management in Brunei are the very rapid clearance of jungle for construction purposes, and the almost exclusive reliance by contractors on imported contract manual labour from Thailand, the Philippines and Bangladesh.

Economic development has traditionally been measured in terms of industrialisation, though economists of development have acknowledged the limitations of this approach (Bell, 1989, p.1), and a wider range of indicators now tend to be considered

in reporting development (e.g. World Bank, 1999). More recently, the idea has gained ground that economic development may be sometimes be achieved through agricultural intensification rather than industrial expansion (*The Economist*, 4 October 1997, p.94). There is some research evidence to suggest that, at least at a small scale and given appropriate conditions, development of this kind may be sustainable (Bebbington, 1997). The term 'development' has also been increasingly de-coupled from the qualifier 'economic', by those who wish to emphasise, for example, the health, educational, environmental and social justice aspects of change. This has led to new thinking about the role of education in processes of development (Fountain, 1994; World Bank, 1995). Brunei is committed to economic development and a degree of industrialisation in sectors such as cement, rolling mills, textiles, packaging and industrial chemicals (Borneo Bulletin Brunei Yearbook, 1994). As already noted, however, there seems a degree of tension between the commitment to development and the desire to conserve traditional lifestyles.

Sustainable development is the ground on which these and other disciplines meet, not necessarily harmoniously. Some authors appear to use the terms 'sustainable development' and 'sustainability' synonymously (IUCN/UNEP/WWF, 1991, p.10). Others are careful to distinguish them (Munasinghe and Shearer, 1995, p.xviii). The most commonly used, though still contentious, definition is almost certainly that of the World Commission on Environment and Development (1987):

> development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
> (WCED, 1987, p.87)

The research began with a literature review drawing on environmental education, environmental management and economic development. Inevitably, the literature of sustainable development was central to this review. Its findings are further discussed in Chapter Two.

Cultural Theory: developing a clumsy approach

There is no question, in Brunei at least, of the introduction of a mandatory, radical core course of environmental education of the kind envisaged and advocated, for example, by Trainer (1990, pp.115-116). The extent and form of any environmental education depends upon the theories of teaching, learning and the environment of those teachers and administrators involved (Walker, 1997, pp.158-159), institutional factors such as timetabling or the availability of transport, options taken or declined by students, and input and feedback from Government departments, employers and parents. Further, a special feature of the circumstances of environmental education in Brunei is the extremely active role taken by Brunei Shell Petroleum in providing resources for teachers, including a Field Research Station and Outward Bound School in the remote Temburong District, and video and other materials depicting the country's flora and fauna.

Oil and gas production dominate the Brunei economy. Oil revenues finance teachers' salaries. The Government, which is committed to economic development, is the largest employer. Most non-Shell private sector jobs are in development-dependent and/or environment-impacting sectors such as construction, fisheries and agriculture. Given also the country's well-established political and religious traditions, it does seem unlikely that an environmental education which explicitly insists on prompt strides towards ecosocialism (Fien, 1993, pp.43-49) with its redistributive rhetoric, or deep ecology (Devall and Sessions, 1985, pp.63-77) with its declared admiration for Buddhist spiritualism (p.66) and "biocentric equality" (p.68) will find either willing teachers or receptive students, particularly perhaps, but certainly not exclusively, within the field of management. This is not to say that ecosocialism, deep ecology and other radical ideas are unimportant. It is to say that environmental educators do not start with a blank slate on which to write but, on the contrary, must both compete with and respect other, often well-established and highly regarded,

interests and perspectives if they are to influence the choices which pupils and teachers make.

There seems, therefore, to be a need for a theoretical device which permits environmentally educational processes to continue in the face of contradictory perceptions of their purpose. Such a device is 'cultural theory' (Thompson, Ellis, and Wildavsky, 1990), which has been developed from the work of the cultural anthropologist, Mary Douglas and her co-workers (1982).

An approach to the research problem from cultural theory starts from the observation that human knowledge, both of the natural environment and of human interactions with it, is imperfect and characterised by uncertainty and risk (James and Thompson, 1989; Thompson, 1990). In the face of this uncertainty and risk social actors construct their interpretations of environmental reality. Such interpretations may lie within a range bounded by four archetypes; the fatalistic interpretation, the hierarchical interpretation, the individualistic interpretation and the egalitarian interpretation. These archetypes, in turn, represent possible combinations across two dimensions of social organisation: Equality/inequality and competition/no competition (Figure 1). Hence, the fatalist visualises the social and natural world as competitive and unequal, but for the individualist it is competitive and equal; and while the expectations of the hierarchist are built upon assumptions of inequality and uncompetitiveness, those of the egalitarian assume, rather, uncompetitiveness with equality.

Each archetype is further associated with a particular 'myth of nature'. For the fatalist, nature is capricious; for the individualist, it is benign. Hierarchists suppose nature to be benign within certain limits, but perverse if those limits are exceeded. Finally, egalitarians view nature as ephemeral; a delicate equilibrium which may be easily and irretrievably destroyed.

Though the 'fit' between the four symbiotic interpretations of environmental reality and the main cultural forms present in Brunei is necessarily loose and imperfect, it is, nonetheless, striking. Malay society is fundamentally hierarchical. Dayaks traditionally operate a highly egalitarian form of society based on the longhouse. The interactions of ethnic Chinese with the rest of society are principally through markets. For them, an important element in the achievement of status is commercial success in a world of networking individuals though, as already noted, the situation may be more complex than this would suggest. Finally, the numbers of fatalistic, alienated individuals appears to be increasing as traditional ways of life come under strain from development. This is particularly true, for example, of the Penan tribal peoples of Sukang, in the southern interior of Brunei, whose nomadic, hunter-gatherer lifestyle has been rendered impossible by destruction of rainforest and the more enthusiastic policing of remote border areas.

Which interpretation and myth of nature an individual is likely to favour is a result of social influences or "solidarities" (Thompson, 1997, p.142) and is not immutable (James and Thompson, 1989, p.89). Indeed, solidarities, and therefore interpretations, may shift repeatedly over time and in response to changes of social context such as that from, say, workplace to family home. In Brunei ethnic solidarities may be weakened by, for example, business links, friendship, religious conversion, overseas study or exposure to satellite television. However, each of the

FIGURE 1

FOUR ARCHETYPAL CONSTRUCTIONS OF ENVIRONMENTAL REALITY

(Adapted from James and Thompson, 1989)

four is seen as defining itself in contradistinction to the others and therefore of being incapable of sustaining itself without them, i.e. each view needs a perceived threat from the others if it is to make sense itself. Hence, disagreement, competition and even conflict between rival individuals and groups is not a social aberration but, on the contrary, an essential characteristic of society's uncertain relationship with its environment. Useful interventions are therefore most likely to originate with "clumsy institutions" (Thompson, 1990, p.19), which, rather than being committed to one of the four perspectives, are prepared to entertain all of them. The reward such institutions may reap for tolerating a degree of apparent internal inconsistency is the discovery of synergies between opposed views.

From the points of view of ethnographic educational research, curriculum theory and environmental education, the idea of socially-constructed, context-specific knowledge is not at all new (Wolcott, 1988, p.191; Kemmis, Cole and Suggett, 1983, pp.11-14; Fien, 1993, p.23). Cultural theory argues that the ways in which knowledge may be constructed are not infinitely variable. Rather, they derive from interplay between the four ideal types of social organisation. Schwarz and Thompson (1990) write:

> An act is rational if it supports a person's way of organising.
> (Schwarz and Thompson, 1990, p.61)

This analysis seems likely to be useful in designing and introducing an educational innovation under complex social circumstances if it enables anticipation and prior classification of (at least) most of the range of eventual responses.

A further attraction of a clumsy approach grounded in cultural theory is its ability to accommodate variations in spatial and temporal scale (Thompson, 1997, p146), that is, to recognise that, in the present case, an individual's solidarities may be expected to vary not only with cultural origins, employment and education, for example, but also across his or her relations within, say, the household, extended family, *kampong*

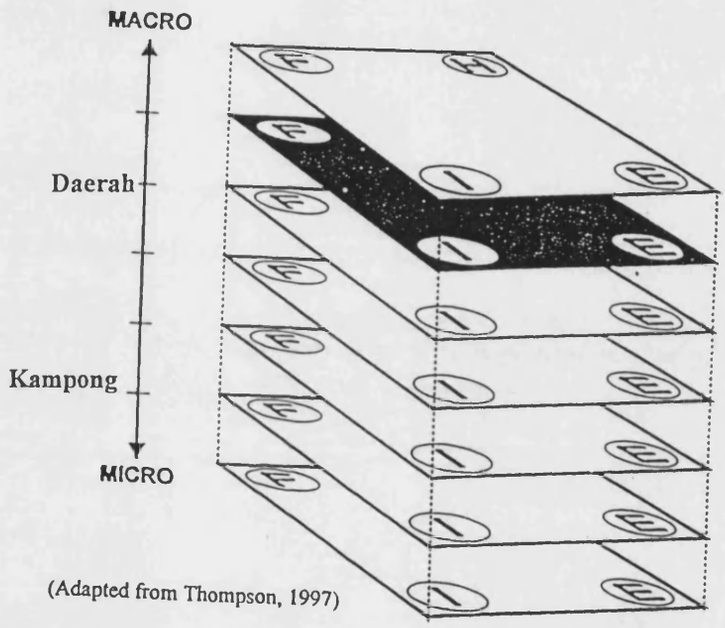
(village), mosque or other religious group, dialect group, *mukim* (locality), *daerah* (region of the country), country, and region within South East Asia (see Figure 2). For example, a Malay man may be head of an hierarchical household, and also a member of an egalitarian village council of Muslim males. Further, solidarities may be expected to change as a person ages, and according to whether the short, long or medium term is being considered. An example of a particular dissonance of this type is between, on the one hand, the long-term hopes and expectations of students, and on the other the inevitably more short-term (and progressively shortening) perspectives of expatriate teachers employed on fixed-term three-year contracts.

Adaptive concepts

To reiterate, this research sought to explore how a form of environmental education might be introduced, by consent, into a programme of management education in Brunei. To this end, a research approach was needed which was capable of:

FIGURE 2

Cultural theory model showing variations in social scale



(Adapted from Thompson, 1997)

(Note: The letters F, H, I, and E have been used to designate fatalistic, hierarchical, individualist and egalitarian rationalities respectively.)

- carrying environmental education into relatively unfamiliar intellectual territory
- encouraging reflexive examination of the researcher's own environmental education goals
- respecting cultural complexity
- accommodating different spatial and temporal scales

This approach involved the use of 'adaptive concepts'. An adaptive concept is an enabling idea which holds the possibility of being able to facilitate discourse between disparate, or possibly hostile individuals and groups. It is an idea, a property or a value which has established importance in environmental education theory and practice, and is also recognisably significant within the literatures of environmental management and economic development. Thus, an adaptive concept should 'resonate' between fields and groups, and across scales, in a way which allows environmental education to 'plug into' areas where environmental education concerns are not normally found. The word which signifies a particular adaptive concept (that is, which signifies a particular idea, property or value used for this purpose) should be recognised by all those individuals and groups who are, or may be, affected by an environmental education innovation as bearing meanings which are of fundamental importance within their own perceptions of their own role. However, meanings attached to that word (and, therefore, that adaptive concept) by different individuals and groups are expected to be to be different. To illustrate, the word 'quality' signifies a property which is of fundamental concern to engineers, environmentalists and educational researchers, but their individual understandings of its meaning may vary widely.

In the context of this research, adaptive concepts were used both as teaching mechanisms in educational situations and as intervention mechanisms within a staff development programme. They were not research mechanisms in themselves, but were the focus of the research. They were generated through the research, used in the

research, and may be validated for use in teaching and other interventions by the research.

The research aims

The research aims were:

- to identify adaptive concepts within the shared context of environmental education, environmental management and economic development
- to evaluate, in terms of the effectiveness of teaching and learning, the use of two such adaptive concepts to develop environmental education interventions in a management education programme in Brunei, a developing country
- to make a preliminary evaluation of the usefulness of adaptive concepts as a way of introducing environmental education into such mangement education programmes

ENDNOTES TO CHAPTER ONE

1. 'Maktab' is the Malay word for 'College'.
2. Many Chinese are 'stateless', though having a right of permanent residence in Brunei.

CHAPTER TWO

THE LITERATURE SEARCH

Purpose

This research began with a literature review in the fields of environmental education, environmental management and economic development. The aims of the review were:

- to establish broad congruencies, contradictions and contradistinctions between these fields, particularly with respect to their views of the inter-relationships between education, environment and society
- to identify potential adaptive concepts for use in the research
- to begin to establish criteria by which adaptive concepts may be identified
- to clarify the disciplinary and inter-disciplinary context of this research

The place of the literature search within the methodology of the research

The decision to conduct a literature search is, of course, a decision about methodology, though from any methodological viewpoint it would be odd *not* to review the existing literature. The intention in the present case was to refine the research methodology and explore issues surrounding it in the light of the findings of the literature review. For this reason the progress of the review is described first. A more detailed discussion of methodology issues follows in Chapter 3.

Nevertheless, this adoption of this sequence of research activity and reporting requires prior methodological justification, as well as some qualification. Coffey and Atkinson (1996, p.146) have written:

> Many methodology texts, and the methodological appendices or autobiographical accounts that relate to specific projects, are retrospective reconstructions. The logic of research design and the strategies of data collection and analysis may well have been defined only after the project was substantially complete.
> (Coffey and Atkinson, 1996, p.146)

This is not so in the present research case. Though the research design was adapted to changing circumstances, to the different perspectives of its subjects, and to the lessons which emerged from its own application, the research methodology, methods and mechanisms employed at any particular time were always the result of prior decisions about methodological appropriateness. The literature search was no exception to this. It began with a provisional plan, with an underlying commitment both to apply and to further investigate the clumsy approach drawn from cultural theory (see Chapter 1), and with a sense of its own overall methodological positioning within the interpretivist paradigm of environmental education research.

Research design within the interpretivist paradigm has been described by Cantrell (1993, p.6) as, "a broad outline of contingency plans open to change throughout the study", and by Lincoln and Guba (1985, p.225) as something which, "cannot be given in advance; it must emerge, develop, unfold". However, a preliminary design is needed in order to provide, "anticipatory data reduction" (Miles and Huberman, 1984, p.28). I would add that, in the present case, the development of a clear, if provisional, research design was instrumental in achieving 'escape velocity' from the researcher's private sphere of research concerns (e.g. relations with supervisors and the University, credentials, publications, the opportunity cost of time spent working on the research in terms of family and other commitments) and into the role of engaged researcher in the particular research setting.

As already noted, a body of anthropological scholarship known as cultural theory was a structuring influence on the initial research design, particularly through its role in the formulation of the notion of adaptive concepts. The anthropologist Okely (1994), writing about methodological differences between anthropology and sociology, has noted:

> Social anthropology was formerly associated with the study of non-western societies, mainly by westerners. Sociology's empirical work was concerned mainly with western societies of which the sociologist was a member. Unlike the sociologist, the anthropologist could not take much as given, he or she could not isolate one theme extracted from a wider context, since the society as a whole was largely unknown to the researcher, and undocumented...The sociologist could be more presumptuous in knowledge of the wider social context.
> (Okely, 1994, p.18)

In the multi-cultural and, also importantly, multi-disciplinary context of the research there seemed every reason to adopt a 'less presumptuous' anthropological stance from the outset.

Ways of seeing the relationship between society and the environment: implications for education

How the relationship between society and the environment is perceived depends on the answers to two inter-related questions. These are:

- How does the environment affect human behaviour?
- How does human behaviour affect the environment?

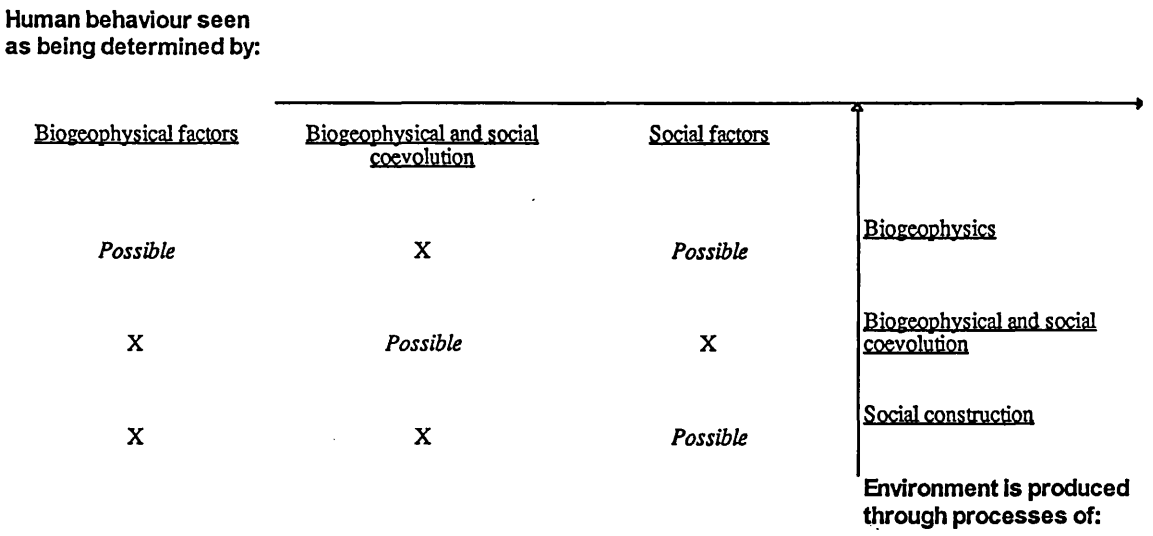
It is possible to offer a variety of pairs of logically consistent answers. Other pairs of answers seem not mutually consistent (Figure 3). Such is the flexibility of the terms 'sustainable development' and 'sustainability' that they can be, and in fact are pressed into service by adherents of all the logically consistent combinations here identified.

Sociobiologists would seem to hold the pair of views: Human behaviour is determined by biogeophysical factors/The environment is produced through biogeophysical processes (Wilson, 1978, p.16). The term 'biogeophysical' is used here in to mean:

> the natural life-support system, the comprehensive study of which relies on the disciplines of biology, geology, chemistry and physics (Munasinghe and Shearer, 1995, xviii)

The sociobiological position is that all social behaviour has a biological basis (Wilson, 1975, p.4). Sociobiology has been critiqued by Redclift (1987, pp.196-198) on the grounds that it is reductionist, commits the naturalistic fallacy of supposing an identity between what is 'natural' and what is 'good', and claims universal characteristics for human behaviour, while at the same time ignoring the diversity of cultures and ideologies. Other possible objections are that sociobiology ignores specific nurture influences on behaviour, tends to assumes that it is specific genes rather than combinations of genes which make a difference, and consider genes to determine specific behaviours rather than creating dispositions towards them. From the sociobiological perspective it is hard to see a role for education at all, beyond the transmission between generations of environmental facts. This view also has implications for theories of development, since it may be the case that sociobiology points to eugenics as a means of progress (Redclift, 1987, p.197).

FIGURE 3: POSSIBLE COMBINATIONS OF VIEWS OF THE RELATIONSHIP BETWEEN SOCIETY AND THE ENVIRONMENT



For deep ecologists (Devall and Sessions, 1985), the view seems to be one of socially-determined human behaviour disrupting or sustaining biogeophysically-determined environmental processes. A key question is: "what kind of a society would be best for maintaining a particular ecosystem?" (Devall and Sessions, 1985, p.74). Much emphasis is placed on achieving spiritual harmony with nature. Tyler Miller Jnr. (1990) writes:

> Somehow we must tune our senses to the beat of existence,
> sensing in nature fundamental rhythms we can trust even
> though we will never fully understand them.
> (Tyler Miller Jnr., 1990, pp.613).

Views of this kind have been attacked by Luke (1988) as a modern myth of humanity's fall. They are also open to criticism on the grounds that they are based in an outdated view of ecological succession (Holling, 1995; Cronon, 1990). Cronon notes:

> We can no longer assume the existence of a static and
> benign climax community in nature that contrasts
> with dynamic, but destructive, human change.
> (Cronon, 1990, p.1128)

This debate is of particular significance for environmental educators such as Orr (1992) who argues that all education is environmental education, and that the achievement of sustainability depends upon the social replication of the structure and function of natural systems.

Since Devall and Sessions (1985, p.70) endorse a range of outdoor personal leisure pursuits as possible paths to ecological awareness, deep ecology would seem to indicate a need for a strong component of outdoor education (see Lucas, 1980).

Finally, it is interesting to note that deep ecology has found theoretical applications in the field of corporate environmental management (Bhargava and Welford, 1996, pp.20-22).

These assumptions of socially-determined human behaviour and a biogeophysically determined environment are shared by positivist (as they are often called; see, for example, Robottom, 1993) theorists of environmental education, whose purpose is to change human behaviour in order to develop an environmentally responsibile citizenry capable of initiating environmental action on the basis of appropriate, scientifically-discovered ecological knowledge (e.g. Hungerford and Volk, 1990; Roth, 1970).

A number of ecofeminist writers have sought to maintain a strong element of deep ecology in their work, while insisting that the environment is a essentially a social, rather than a biogeophysical phenomenon. For them, human behaviour is socially determined and the environment is a social construct. The appeal to deep ecology is made explicit by Greenall Gough (1993b). Elsewhere, the same author (1993a, p.46) identifies with Merchant's (1990) regret at the social reconstruction of the image of the cosmos from an essentially female and organic entity into a male-controlled machine during the sixteenth and seventeenth centuries. The fundamentally social nature of the environment for this approach is further illustrated by Di Chiro (1987) who argues that it:

> exists as the environment at the moment we name it
> and imbue it with meaning.
> (Di Chiro, 1987, p.25)

Finally, in a statement which surely amounts to a flat rejection of the deep ecologist's claimed ecocentrism, Shiva (1989) writes:

> There is nothing like a neutral fact about nature
> independent of the value determined by human
> cognitive and economic activity.
> (Shiva, 1989, p.28)

The implications of this orientation for environmental education (and education in general) are strongly, perhaps inescapably postmodernist, in that it points towards acceptance of social and epistemological fragmentation (Kenway, 1997; Kumar, 1997). A central concern from this perspective is the empowerment of marginalised groups in society (Kemmis, 1992; Greenall Gough, 1993b).

Emphasis on the social origins of human behaviour and the social construction of the environment is also found in ecosocialist, socially-critical theories of environmental education (Fien, 1993), along with a specific claim to ecocentricity (Fien, 1993, p.27). However, it is not easy to see how the environment, rather than society, can be central if it is itself a social construct. That this is a theoretical problem is clear from Huckle's (1983a) revealing concern that liberal and Gaianist ideologies in environmental education can lead to, "a rather naive respect for both children and nature" (Huckle, 1983a, p.104).

To argue both for the biogeophysical determination of human behaviour and the social construction of the environment seems impossibly circular. This leaves only one coherent position remaining on the matrix, since coevolution of human behaviour and the environment would seem to require that both are able to initiate change as well as be changed by the other.

The idea of the coevolution of ecological and social systems has been theorized in the context of agricultural development by Norgaard (1984) for whom human activities:

> modify the ecosystem, while the ecosystem's reponses provide cause for individual action and social organization. (Norgaard, 1984, p.528)

Such coevolution is not necessarily beneficial to humans, and does not necessarily result in 'development' or 'progress'. Humans are able to influence ecosystems through their social institutions (including education), but in a complex, non-linear, feedback-modified fashion which is unlikely to result in precisely the outcomes initially planned, and perfectly capable of inducing catastrophe. Similarly, while ecosystem trends may threaten or promote human life they should be extrapolated with caution, since human institutions may be expected to adapt, and in adapting influence the process of ecosystem change. To accept this is to agree with authors with perspectives as diverse as those of Sterling (1993, p.88) and North (1995, pp.271-273) that the dichotomy between 'economy' and 'environment' is a false one. It is also to accept that linear predictions of environmental catastrophe such as *The Limits to Growth* (Meadows, 1972) need to be treated with suspicion. Finally, a coevolutionary perspective is incompatible with approaches which seek to model the future on the past. Whether associated with the Earth Goddess (Spretnak, 1990, pp.2-5) or "primal peoples" (Devall and Sessions, 1985, pp.20-21), a coevolutionary approach would see these and all other times past as points on a continuum of change, and not as natural equilibria capable of more-or-less simple restoration.

Norgaard (1984, p.535) traces the origins of a strand of coevolutionary thought in development economics to both Alfred Marshall and Karl Marx. However, much of the literature of the wider field derives from the models of Malthus and Ricardo which assume that environmental constraints are given. Norgaard (1984, p536) identifies the work of Boserup (1965), Wilkinson (1973) and Simon (1977) as central to opening up the potential for coevolutionary economics, and argues that further, multi-disciplinary research is needed to explore, "how social systems respond and

are maintained and how coevolutionary options are opened up and foreclosed" (Norgaard, 1984, p.538).

The coevolutionary view is consistent with the clumsy, cultural theory approach to issues of environment and society. Thompson (1997, p.142) notes that, "humans are both a part of nature and apart from nature". Significantly, he continues:

> the different forms of social solidarity of which we are the vital parts result in our knowing in several different ways, and it is this plurality of knowledges - often contradictory knowledges - that has to be addressed if we are to have effective policies.
> (Thompson, 1990, p.142)

People are a constituent part of an environment which they comprehend incompletely but in a finite variety of ways, and which they are able to change in a hit-and-miss, learning-by-doing, clumsy fashion. The existence of multiple ways of knowing indentified by postmodernism is accepted, but the postmodernist tendency to, "democratise the notion of difference in a way that echoes a type of vapid liberal pluralism" (Giroux, 1990, p.21) is avoided. Schwarz and Thompson emphasise that they are, "not saying that we can know nothing; only that we cannot know everything" (Schwarz and Thompson, 1990, p.11). At the same time, the social construction of knowledge is recognised, but so are external limits on the formulation of effective policy:

> Though this approach *is* saying that knowledge is socially constructed, it is *not* saying that the world can be any way we want it to be.
> (Schwarz and Thompson, 1990, p.11, original emphasis)

Although the clumsy, cultural theory approach to society and environment is coevolutionary in outlook, it also recognises the possibility that useful knowledge may be generated from other perspectives.

The incorporation into the ecosocialist theory of environmental education of Giddens' (1979, 1984) theory of structuration (Fien, 1993, pp.87-95) is, in itself, suggestive of a more coevolutionary view. However, the (coevolutionary) literature of environmental management contains examples in which the crucial element of structure, which is seen as both a product of and constraint upon human agency, is clearly environmental in nature (Scoones, 1997, p.163). For Fien, (1993, p.89) this structure is wholly social in origin. A more coevolutionary perspective on environmental education may perhaps be discerned in the work of Jensen and Schnack (1997, p.176), which emphasises a learning cycle of action and experience. Their central concept of 'action competence' is taken up by Hutchinson (1997, p.199-201), who links students' visioning of the future to environmental literacy and action. Environmental education grounded in a coevolutionary understanding of environment/society inter-relationships seemed particularly appropriate in Brunei where certain landscapes, such as that containing the ancient *Kampong Ayer* (water village), are regarded as having great cultural content and significance.

Towards a Coevolutionary Overview of the Literature

New books and papers about sustainability appear with such frequency that the task of compling an up-to-date, transdisciplinary bibliography seems doomed. The attempt has, however, been made (Pezzoli, 1997a). Though an accompanying paper offers a sympathetic account of holism, and links this to coevolutionism (Pezzoli, 1997b, p.558), the approach taken is essentially reductionist. Knowledge about sustainability is divided into ten categories along broad disciplinary lines. All but two of these categories yield further subdivisions. Works which are significant from

more than one disciplinary viewpoint appear more than once. There are 521 entries in total.

The word 'education' does not appear in the title of any category or sub-category. While this does seem extraordinary it might be argued that education has disqualified itself, since the test for inclusion of a field of study as a major category was the prior existence of a specialised literature review. Section 2.2 is entitled, *Human Behaviour and Social Learning*. It has twelve entries of which only two also appear in the bibliography section of Scott and Oulton's (1999) environmental education contribution to the International Encyclopaedic Dictionary of Education. Of these two, one (Orr, 1992) has been criticised from within environmental education as being entirely outside of, and uninformed by, the mainstream of the discipline (Greenall Gough, 1994, p.114).

It may well be that more useful, though still necessarily partial, bibliographies could be produced by focusing on themes within the sustainability literature, rather than on discipines. To an extent the preceding discussion of environment/society/education connections may serve as an example.

Indentifying possible adaptive concepts from the literature search

The research literature review proceeded by seeking to identify as potential adaptive concepts ideas, properties or values which were:

- of shared significance in the fields of environmental education, environmental management, and economic development and,
- relevant to management education in the context of Brunei.

This produced the following list. In each case examples of the uses in the literature of each possible adaptive concept are provided:

Benefit

Among environmental educators, benefits are expected to accrue from, for example, changes in human behaviour (e.g. Hungerford and Volk, 1990), or through 'empowerment' of individuals and groups (e.g. Fien, 1993). There is widespread acceptance that environmental education should be "beneficially subversive" (Hoogendijk, 1991, p.176). Economic approaches to sustainable development rest upon calculations about present and future flows of benefits (Munasinghe and McNeely, 1995, p.24). Cost-benefit analysis is a basic technique of development economics (Chakravarty, 1989) and was included in the Maktab Duli management syllabus.

Planning

Decisions about planning are seen in the development literature as fundamental to processes of economic development. For example, planning might involve strategic decision-making about whether to pursue 'balanced growth' (Rosenstein-Rodan, 1943; Nurkse, 1953) or 'unbalanced growth' (Hirschman, 1958). Planning is an intrinsic aspect of management (Boyle, 1993). Within environmental management are sub-disciplines of, for example, urban planning, agricultural planning, industrial planning, dryland/wetland resource-use planning, energy-use planning and financial planning (Holmberg, 1992). Environmental educators have been concerned with the planning effort necessary to achieve and maintain particular versions of a sustainable future (e.g. Fien and Trainer, 1993a, p.19). At Maktab Duli planning was taught as a key function of management.

Uncertainty

As already noted, uncertainty is a central idea within cultural theory and therefore within this research itself. Debate about the environment is characterised by uncertainty to the extent that it has been possible authoritatively to claim, for example, both that mass global famine is upon us, and that famines are being

progressively and unerringly eradicated (North, 1995, p.15). Uncertainty is increasingly recognised within environmental management as a normal characteristic of the conditions under which management decisions are made (e.g. Kerry Turner *et al*, 1998). It is also recognised as a factor influencing the decision-making of individuals and groups undergoing processes of rural development (e.g. Ellis, 1993). Decision-making was specifically included in the Maktab Duli management course. Perhaps the most interesting manifestation of uncertainty within environmental education is found in the reflection and self-examination of practitioners faced with the failure of their favoured environmental education strategies to achieve either their declared goals, or universal acceptance across the field (e.g. Greenall, 1987; Hungerford, Peyton and Wilke, 1983; Fien, 1993, pp.76-81).

Empowerment

Empowerment is central to all socially-critical conceptions of environmental education (e.g. Fien, 1993, Huckle, 1996, pp.14-15). Positivist approaches tend to assume that individuals are already empowered in principle by virtue of their possession of citizenship, so that the task of environmental education is to promote desirable uses of that power (e.g. Hungerford, Peyton and Wilke, 1980). Citizenship (or the lack of it) was an important issue for young people in Brunei, with powerful implications for property rights and employment prospects. Empowerment is also a central concept for environmental educators who focus particularly on issues of social marginalisation (e.g. Gough, A. 1997), and to some approaches to environmental management (e.g. Sharp, 1992) and rural development (e.g. Vivian, 1992). Finally, from the perspective of development economics, Ellis (1993, pp.101-102) notes that a common, and possibly a defining feature of some traditional lifestyles is their use of non-market approaches to the management of risk. Given this, increased exposure of rural peoples to markets may be seen as either empowering (through higher efficiency and income) or disempowering (through marginalisation) depending on whether these non-market measures are continued or abandoned, and on the social, political and cultural contexts within which changes

occur. Further, women and men within the same community may be differently empowered (or disempowered) by such increased exposure to markets.

Waste

A concern to avoid waste permeates environmental management (e.g. Holmberg, 1992) and amounts to little less than the overall basis of much economic thinking about development (e.g. Colman and Young, 1989). One consequence of this same concern in environmental education has been the attempt to distinguish needs (the pursuit of which is essential) from wants (the pursuit of which may be wasteful) (e.g. Fien and Trainer, 1993a; Sterling, 1993). This researcher had previously worked as an educational consultant to a solid waste management project in Brunei.

System

The notion of 'systemic' thinking has been influential in environmental education (e.g. Sterling 1993)). Economic development modelling is concerned with establishing the parameters of economic systems (e.g. Pearce, 1993). Recent writing within environmental management has also argued that only systemic, as opposed to 'fragmentary' approaches are likely to be adequate for the management of contemporary environmental problems (Carley and Christie, 1992, pp.69-79). Exploration of the idea of organisations as systems was part of the Maktab Duli management curriculum.

Scale

Issues of scale have been touched upon in relation to cultural theory in Chapter One (see especially Figure 2). They are raised in the literature of environmental management in relation to a number of specific issues, for example water-resources management (Newson, 1992), and soil erosion (Blaikie and Brookfield, 1987). They are basic to development economics, in which a fundamental distinction is made between macro-economic and micro-economic analyses (Bell, 1989, p.16). Environmental educators have often tended to emphasise large scale events,

particularly globalisation, when identifying the causes of environmental problems (e.g. Huckle, 1993, pp.52-55), and to seek overall justification for their actions at the international policy level (e.g. Hungerford and Volk, 1990, p.8; Fien, 1993, pp.50-55). On the other hand, they have typically emphasised local-level activity in their educational proposals (e.g. Hungerford and Volk, 1990, Appendix B; Greenall Gough and Robottom, 1993; Stapp and Wals, 1993). It was usual to explore issues of scale with Maktab Duli management students through consideration of economies of scale.

Agenda 21

Agenda 21 is regarded here, for the purpose of its inclusion as a potential adaptive concept, as an idea rather than as a document. It has been incorporated into the frames of thought of environmental educators (e.g. Gough, A., 1997, pp.1-2, 132-133, 144-145; Huckle and Sterling, 1996), environmental managers (e.g. O'Riordan, 1993: Netherwood and Shayler, 1996) and development economists (Kerry Turner, 1993). Agenda 21 was acknowledged by the Environment Unit of the Brunei Ministry of Development as a key influence on its policy and planning (Soraya, 1996).

Knowledge

Whether knowledge should properly be expert-derived or socially constructed has been extensively debated within environmental education (Hungerford, Peyton and Wilke, 1983; Fien, 1993; Mrazek, 1993). Environmental managers have sought to account for the dynamics of local knowledge (Blaikie, 1988), and to incorporate it into the management of projects (Chambers, 1992). The extent of individuals' knowledge is a key issue in development economics, and in economics in general, since it bears upon the nature of market relationships.

Culture

Culture, clearly, is central to the understandings of cultural theory which underpin this research as a whole (see Chapter One). Cultural Theory has been employed in

environmental management projects, for example in the Himalayas (Thompson and Warburton, 1985). Culture has also been invoked in the environmental management literature as an explanatory factor in cases of poor environmental management performance (Adams, 1990, pp.168-172), as a crucial organisational property for companies determined to achieve good environmental management performance (Hedstrom, McLean and Metzger, 1997), and, more broadly, as a key variable to be addressed by any process of environmental management for sustainablity (Carley and Christie, 1992). The notion of cultural capital depletion has been incorporated into work originating within environmental economics (Kerry Turner, 1993, pp.17-18).

Quality

'Quality' was one of two adaptive concepts actually used in this research. A particular focus was taken upon the notion of 'quality management', and its relationship to environmental management system standards, particularly BS7750/ISO 14000 (Rothery 1993; BSI, 1994), which were being promoted by the Brunei Government and therefore of direct interest to Maktab Duli management students. Questions of environmental quality have been raised within development economics with respect to national income accounting procedures (Repetto *et al*, 1990) and population change (Tietenberg, 1992, pp. 111-119). Within environmental education 'quality of life' has typically been held to be in tension with 'material progress' (Robottom and Hart, 1993, p.48; Fien, 1993, p.25).

Cost

Costs are the natural partners of benefits in development economics (Chakravarty, 1989). Environmental economists and managers have developed sophisticated methods for estimating the environmental costs of, for example, resource damage in different contexts and over different periods of time (Pearce and Kerry Turner, 1990). Environmental educators have tended to be influenced by two separate strands of thought about environmental costs. First, it has been argued that economic

approaches to costing the environment fail adequately to capture the full costs of environmental change to present and future human generations. Secondly, it has been proposed that the environment has intrinsic value over and above the interests of human beings, however thoroughly these may be accounted (Dobson, 1990), and that 'cost' is therefore an inherently inadequate concept for thinking about environmental change. The Maktab Duli management syllabus specified coverage of costing methods of various kinds.

Action learning

Action learning is a well-established idea in the general literature of management (e.g. Comfort, 1985; Ramirez, 1983) and appears to be finding increasing acceptance in the environmental management policies of large firms participating in development projects (e.g. Jones, 1997, pp.95-96). More broadly, action learning and action research are advocated as tools of environmental management by Carley and Christie (1992, pp.181-182). Action learning and action research are similarly advocated by a wide range of writers on environmental education (e.g. Robottom, 1987a; Stapp and Wals, 1993; Volk, 1990). This research included some aspects of action research (see Chapter Three).

Globalisation

As noted above, globalisation is strongly identified with the causation of environmental problems by some environmental educators (e.g. Huckle, 1993, pp.52-55). Others (e.g. Hungerford and Volk, 1990; UNESCO-UNEP, 1977) have offered global justifications for environmental education. A third strand is the identification of globalisation as a theoretical problem for discourses of environmental education in themselves (e.g. Payne, 1997). Within environmental management consideration of possible 'global futures' has been proposed as a guiding principle for strategic environmental assessment (Therivel *et al*, 1992). A global approach to economic development has been refined by the World Bank and IMF, including the principles of 'structural adjustment', and the environmental implications of such an approach

have been evaluated at a global scale (Munasinghe and Cruz, 1995). At the time of this research Bruneian young people were being newly exposed to a wide range of global influences, for example satellite television.

Vision

Some environmental educators have offered a clear vision of their social and environmental goals (e.g. Fien and Trainer 1993a, 1993b: Trainer, 1990). Others (Hicks and Holden, 1995; Hicks, 1996; Hutchinson, 1997) have stressed the importance of the visions learners may have of their environmental future. Economists have also proposed 'green' development scenarios (e.g. Barker and Lewney, 1990; Jacobs, 1991) which describe a vision of sound environmental management. There is also an extensive literature of development planning (Bagchi, 1989), a technique to which the visioning of a desired future state is often intrinsic. The Brunei Government practised development planning and frequently referred to a 'vision' of the national future in which enhanced management skills played a key role.

Trade

For environmental educators such as Huckle (1993, 1991) trade is a principal means by which global capitalism achieves its environmentally-damaging hegemony. The environmental advantages and disadvantages of trade are also a major concern within the fields of environmental management and economic development (e.g. Dean 1991; Pearce, 1992; Anderson and Blackhurst, 1992). Brunei was, and is, a trade-dependent country.

Resources

Those environmental educators who have been, to a greater or lesser extent, influenced by writings from the perspective of deep ecology (Devall and Sessions, 1985; Greenall Gough, 1993a, 1993b) or 'ecophilosophy' (Skolimowski, 1981; Robottom and Hart, 1993) have tended to object to the designation of aspects of the

natural world as 'resources' on principle, believing this to be inherently anthropocentric. Others have been influenced by the 'limits to growth' thesis (Meadows *et al*, 1972), and have argued for the ultimate unsustainability of present patterns of resource depletion. Within environmental management and economics attention has focused upon, for example, the nature and consequences (for relative prices, for example) of natural resource depletion (Pearce and Kerry Turner, 1990, pp.288-294), the substitutability (or otherwise) of human-made capital for natural endowments (Kerry Turner, 1993), and the establishment of the 'biogeophysical foundations' of sustainability (Munasinghe and Shearer, 1995) by means of a sophisticated resource audit. The point has also been made that lower, apparently more sustainable levels of resource use *may* simply be associated with poverty (Hardoy, Mitlin and Satterthwaite, 1992) particularly in urban centres in the developing world. Finally, resource use has been identified as a concern within initiatives to promote economic development through education (Bray, 1996). Management of resource inputs was part of the Maktab Duli management syllabus.

Equilibrium

A range of environmental educators envisage a stable-state sustainable future (Fien and Trainer, 1993a; Trainer 1990) or a "dynamic equilibrium between quality of life and quality of the environment" (Hungerford, Peyton and Wilke, 1980. p.44). Much development economics is based upon 'partial equilibrium analysis' (see Colman and Young, 1989, pp.264-297). Similar market-based approaches to environmental management have been cautiously proposed by, for example, Barbier *et al* (1992), who claim only that they contribute to the attainment of "optimal ignorance" (Barbier *et al*, 1992, p.75) which is itself, presumably, a sort of equilibrium condition. Students at Maktab Duli encountered the idea of equilibrium through studies of supply and demand in factor markets.

Value

Writers across the fields of environmental education (e.g. Linke, 1980; Fien, 1993, p.25; Robottom and Hart, 1993, p.48; Sterling 1993, p.95) environmental management (e.g. Bateman and Turner, 1993; Bateman, 1993; Willis and Benson, 1993) and economic development (e.g. Fountain, 1994, pp.14-15; Repetto *et al*, 1990) are centrally concerned with questions of value. A useful summary of different possible conceptions of value, all of which may be found in any of these fields, is provided by Dunkley (1992). Management students would be expected to encounter the term in both its more quantitative and its more qualitative senses at different stages of their studies.

Networks

The construction of networks has taken place as a means of extending and promoting environmental education (e.g. Ponniah, 1996; Fien and Corcoran, 1996, Murphy, 1996). From the perspective of environmental management, Carley and Christie (1992, pp.184-201) have proposed 'action-centred networks' as a central aspect of their proposals for the overall management of sustainable development. Networks are also fundamental to initiatives to achieve development at the local level through local trading systems (Dobson, 1993). Maktab Duli students studied networks as an aspect of both business communications and organisation design.

Response

Environmental education (e.g., Huckle, 1996; UNESCO-UNEP, 1977; Fien, 1993, Hungerford and Volk, 1990), environmental management (e.g. Holmberg, 1992; Helm, 1991) and economic development (e.g. Munasinghe and Cruz, 1995) all raise issues of public policy. The effectiveness of policy in all three fields depends crucially upon the responses to it of those whom it seeks to influence, normally under conditions of complexity and uncertainty (Lindblom, 1979; Thompson, 1990, 1997; Fien, 1993, pp.78-81; Hungerford and Volk, 1990, pp.14-17). Achieving desired

responses through management action was an established aspect of the Maktab Duli management curriculum under a section entitled 'People in Organisations'.

Household

In theories of economic development 'households' may be treated as fundamental units of analysis, or they may be the object of analysis (Folbre, 1988; Ellis, 1993). For the purposes of environmental management (e.g. Brechling, Helm and Smith, 1991), and management theory in general, they may be treated as the basic decision-making unit with regard to consumption, saving and other preferences including those which affect rates of population growth (Rowley and Holmberg, 1992, pp.323-333). It is in this choice-related role that management students would normally be expected to encounter the concept. Relationships within the household are an issue raised within ecofeminist writings on environmental education (Greenall Gough, 1993a, pp.45-50), which seemed likely to be both significant and complex in the cultural context of Brunei. Also, Ballantyne, Connell and Fien (1998) have proposed that the household may, under certain circumstances, serve as a medium for environmental education.

Market segment

Ham, Sutherland and Meganck (1991) identify a number of distinct possible target audiences for environmental *interpretation* in developing countries, in a paper which suggested to this researcher that distinguishing between target audiences or, in effect, market segments for environmental *education* in Brunei was likely to be useful. The notion of markets as having distinct segments in which buyers and sellers behave in distinct ways is of importance in environmental management and economic development studies relating to the tourism industry (e.g. Filion, Foley and Jacquemot1994; Lawrence,1994). Though 'market segment' itself was ultimately not used as an adaptive concept in this research, these ideas were particularly influential (see Chapters 8-11) in the development of Case Study Two (Gough and Scott, 1999).

Centralisation

The desirability or otherwise of centralised management was frequently a focus of examination questions in the Maktab Duli management syllabus. Environmental educators have tended to emphasise decentralised decision making by either groups (Fien and Trainer, 1993a, 1993b) or by individual citizens (Hungerford and Volk, 1990) as a means to the achievement of environmental goals. A number of writings on environmental management and economic development also identify a significant role for decentralised decision-making (e.g. Sharp, 1992; Carley and Christie, 1992; Bray, 1996).

As will be shown (see Chapters 7, 11, and 13), some of these adaptive concepts also suggested themselves independently through the process of the research, and the research process also suggested six additional adaptive concepts within its own specific context. These were:

Cooperation *Competition* *Responsibility* *Self-sufficiency*
Technology *Design*

Conclusions from preparing for and conducting the Literature Search

A number of congruencies, contradictions, and contradistinctions within and between the three fields of study were identified in respect of their underlying assumptions about the relationships between environment, society and education.

Twenty four adaptive concepts were identified from the initial literature search. These are significant in all three fields of study, though the meanings and importance attached to them in each of the three fields may vary widely.

The notion of sustainability has produced a very wide, multi-disciplinary literature. It may be more productive to explore this literature thematically, rather than along traditional, disciplinary lines, particularly if the chosen themes relate to a specific research problem.

Possible adaptive concepts were sought which were relevant not only in the literatures of environmental education, environmental management and economic development, but also within the specific educational context of this research. It was proposed that such adaptive concepts might be validated or rejected through this research, and also that this research might suggest additional adaptive concepts. These may, in turn, be validated through appeals to the literature and by further research.

This research was interpretivist. It derived part of its theoretical basis from cultural theory. This lead to the use of anticipatory social categories in the design of research interventions and the interpretation of research data. These categories should be evaluated by their usefulness in assisting the achievement of the research aims. There was a commitment to the idea that both knowledge and the environment are subject to multiple social constructions over a range of spatial and temporal scales, and that all such constructions may have something to tell the educator and/or researcher.

CHAPTER THREE

METHODOLOGY

What is a methodology in environmental education research? First thoughts.

That it is useful to make a distinction between 'methodology' and 'methods' in educational research has been argued in detail by Cantrell (1993). Such a distinction rests on the belief that the broad approach taken to the research task, for example case study or action research, can be separated from foundational, or paradigmatic, assumptions which prefigure not only the choice of approach but also the choice of research topic, the formulation of research question and the interpretation of research outcomes (Robottom, 1993). The term methodology is reserved for these wider orientations on the part of the researcher. According to Cantrell (1993) debates about research methodology are fundamentally debates about the appropriateness to environmental education of different research paradigms. Of these there are three, or perhaps four. Positivism (Marcinkowski, 1993), interpretivism (Cantrell, 1993), and socially-critical theory (Hart, 1993; Robottom and Hart, 1993) are clearly separate paradigms in their own right. There is a further debate about the extent to which postpositivist methodologies represent a distinct approach, as opposed to a mere modification of traditional positivism (Phillips, 1990; Guba, 1990; Connell, 1997). However, Robottom and Hart (1993, p.7) argue that paradigms may be distinguished from each other according to the views taken of the nature of reality (ontology), the nature of knowledge (epistemology), and the ways in which knowledge is developed (methodology). Usage continues to be confusing, therefore, with the term 'methodology' serving to describe *at least* both the fundamental perspective of the researcher *and* one particular aspect of that perspective. Further confusion arises because it seems perfectly reasonable, in a given context, to talk

about, say, case study methodology or action research methodology, and because some 'methods' (say, action research) have been particularly favoured by proponents of some 'methodologies' (say, socially-critical theory), and are therefore more or less inseparably associated with them.

The term 'mechanisms' (Cohen and Mannion, 1994, p.192) has been employed to refer to specific techniques such as questionnaires, interviews and literature searches. If the distinction between methodology and method outlined above is also accepted, the result is a three-tier distinction between methodology, methods and mechanisms. It will be argued later that this framework has now served its theoretical purpose and is inadequate, both as a basis for conceptualising recent developments in the field and as a basis for this research. Nevertheless, it serves as a starting point, provides a rough template for comprehending some extremely complex arguments, and may well have played a formative role in the development of debates within the research community about the compatibility, or 'commensurability' (Robottom and Hart, 1993) of different research paradigms (see, for example, Howe, 1988; Eisner, 1988; Fetterman, 1988; Guba and Lincoln, 1988; Gage, 1989; Firestone, 1990; Patton, 1990; Skrtic, 1990; Robottom and Hart, 1993). Roughly speaking then, this chapter is about methodology and, with some reservations and exceptions which I hope the developing argument will reveal, not about methods or mechanisms.

Establishing the methodology of this research will, following Robottom and Hart (1993, p.7), involve addressing ontological questions, epistemological questions, and questions about the way knowledge is developed. However, at least four other questions suggest themselves:

1. Are there really only three (or possibly four) ways in which sets of views of ontology, epistemology and the development of knowledge can coherently be combined - that is, a positivist way, an interpretivist way and a socially-critical

theory way? This would certainly seem to be implied by Robottom and Hart's (1993, p.16) view that paradigms are fundamentally incompatible.

2. What factors influence the process by which a particular researcher decides to adopt (or abandon) a particular research paradigm?

3. If as socially-critical theory, at least, would suggest (Robottom and Hart, 1993, p.11; Fien, 1993, pp.16-23) the answer to the second question has much to do with ideology, then is it really the case that the only influences on a researcher's ideology are the results of his or her dispassionate reflection upon matters of ontology, epistemology and knowledge development? If not, then is there not a need to incorporate the person of the researcher more fully into analysis of the fundamentals of the research process? Such a view has been suggested for environmental education by Greenall Gough (1993a, pp.34-44).

4. Does the adoption of a particular set of philosophical underpinnings for research, in environmental education at least, require a commitment to an identical philosophical basis for the professional development of teachers, learning by pupils and the evaluation of both?

These questions are now discussed in reverse order.

With regard to question 4, methodology in environmental education, however defined, is a property not only of research, but also of instruction and evaluation. From the perspective of socially-critical environmental education (Fien, 1993) the case has been strongly argued that methodological consistency across these aspects is desirable (Fien, 1993; Robottom, 1987a; Robottom and Hart, 1993, p.44), so that environmental education research informs, supports, and is in fact united with processes of teaching and learning consistent with a new ecophilosophical worldview (Robottom and Hart, 1993, pp.47-54) or 'New Environmental Paradigm' (Fien,

1993, p.25). However, widespread failure to achieve such 'critical praxis' (Fien, 1993, pp.73-75; Moore and Reid, 1993; Sharp, 1992, pp.43-44) is also admitted (Fien, 1993, pp.76 - 81; Stevenson, 1987; Huckle, 1993, p.65).

On the other hand, socially-critical theorists have identified a different kind of methodological consistency which, they argue, supports the 'Dominant Social Paradigm' (Fien, 1993, p.25) or 'contemporary philosophy' (Robottom and Hart, 1993, p.48), as a central feature of 'positivist' (Robottom and Hart, 1993, pp.20-22) approaches to environmental education research. These approaches separate the teaching of environmental education, in which educational goals and strategies are applied, from research in which such goals and strategies are developed and validated (Volk, Hungerford and Tomera, 1984; Hungerford and Volk, 1984). Consistency is thus achieved between social scientific research and a technology of instruction which it informs. For their part, advocates of positivist or 'quantitative paradigm' (Marcinkowski, 1993) research methodologies in environmental education would largely accept this description of their position, at least if the 'Dominant Social Paradigm' is agreed to be one which is supportive of liberal capitalism.

The argument has also been advanced that interpretive research is consistent with educational liberalism (Kemmis, 1983, pp.1-2; Fien 1993, pp.20-21; Robottom and Hart, 1993,pp.26-27), though there seems no obvious reason why interpretive research findings should not complement work carried out from other paradigmatic perspectives (Firestone, 1987, pp.19-20; Gage, 1989, p.9), or be used by policy makers of any ideological persuasion whatsoever.

Given the above, a curiosity which requires explanation is that the examples of environmental education outcomes which both socially-critical theorists and positivists report favourably seem very similar. They typically involve students in local environmental campaigns which attract local community support, and succeed by employing means of protest and debate which are legal in liberal democracies.

Examples are provided by, from the positivist or quantitative perspective, Hungerford and Volk (1990, Appendix B), and from the socially-critical perspective by Greenall Gough and Robottom (1993). The positivists claim vindication of their faith in the goal of "environmentally-affirmative citizenship" (Hungerford and Volk, 1984, p.5; Hungerford and Volk, 1990). The socially-critical theorists claim evidence of, "interactive involvement in socially significant politically-relevant participant-negotiated tasks focused on student participation" (Hart, 1993, p. 122). It seems appropriate to ask whether, perhaps, these different interpretations tell us at least as much about the academic milieux in which they are expressed as the educational context from which they derive. This is to return to the issue, compounded of questions 2 and 3 above, of the relevance of the origins of a researcher's fidelity to a particular research paradigm.

Methodology in the academic marketplace.

As noted, we may speak of methodologies of research, of instruction, and of evaluation. However, methodology is also a characteristic by which researchers define themselves in relation to other academics and distinguish between research outputs. It is a factor in the pursuit (and defence) of funding, publication, student enrolments, credentials, promotion and academic respectability (Fensham, 1978; Lucas, 1980; Gage, 1989, p.10; Modra, Fitzclarence and Kemmis, 1991; ESRC, 1992, pp.101-102; Robottom, 1993; Cantrell, 1993; Marcinkowski, 1993). Through their influence on the ways in which methodologies are developed and applied these matters bear on educational research, but they are typically part of a structured social setting - the academy - which is in all other respects separate from the research. To give this point due consideration is consistent with the widespread, parallel recognition in environmental education and environmental education research that both teachers and learners are likely to be part of social entities which may significantly affect pedagogic or research outcomes, while being external to the immediate context of teaching, learning or inquiry (Stevenson, 1987, pp.76-77;

Trainer, 1990, p.104; Posch, 1991, pp.17-18; Walker, 1997, pp.158-159). The same is unquestionably also true of researchers, and the academy is such a social entity. It may well be desirable that this is, to some extent, the case. Otherwise, a serious problem would arise for many forms of academic theorising about education which challenge presently accepted conventions. For example, it would be difficult for a researcher to reject vocational preferment absolutely as a legitimate goal of education (Kemmis, 1983, pp.1-2), argue that theory and practice in education are "intrinsic" to each other (Kemmis, 1990, p.133), and in the process advance to the highest ranks of the academy.

Nevertheless, seen in this light, the similar outcomes of environmental education research interventions described above are much less surprising. The positivist works with (perhaps tacit) assumptions that the individual recipients of environmental education are, or will one day be, free, enfranchised citizens of a liberal democracy in which a degree of consensus exists or can be established about what is environmentally desirable. He or she aims to promote responsible citizenship action within existing social and political structures (Hungerford and Volk, 1990; Robottom and Hart, 1993, pp.34-43). The interpretivist is interested in research subjects' own frameworks for understanding social situations and is not committed, as a specific function of *research*, to promoting any particular behaviour on the part of those subjects. For the socially-critical theorist, on the other hand, who regards existing social and political structures as causally central to the environmental problem and is committed to challenging them, things are less simple. His or her own employment, prospects, and social and academic status are likely to depend upon one or more institutions which are part of, and constitutionally uphold, the very structures to be challenged. It is unsurprising, therefore, that at times the debate about research paradigms in environmental education has been partly a debate about academic recognition (Robottom, 1987b, pp.25-26). Further, the researcher is likely to be a citizen of a liberal democracy and subject to its laws. An example of the possible difficulties which may arise from this is provided, in an action research setting, by

Robottom (1993), when he appears both to distance himself from and, at the same time, encourage the notion that a jetty used by students for water sampling purposes has been destroyed for political reasons.

It is argued, therefore, that a comprehensive account of the methodology of a piece of research needs to recognise the influence of the external context in which research outcomes will be evaluated. Such recognition is no more, in fact, than a logical outcome of the researcher's routine commitment to avoid, or at least confess, bias (Cohen and Mannion, 1994, p. 53, p.171, p.228, p.281; Robottom 1993). It may also be seen as consistent with a well-established trend, across paradigms, towards the abandonment of subject-object dualism in environmental education research (Robottom and Hart, 1993, pp.7-17; Connell, 1997, pp.119-122; Sterling, 1993). Not everyone would agree with Wolcott's (1988, p.204) view that all data about a piece of research are relevant and therefore data reduction is a matter, not of excluding that which is irrelevant, but of making things manageable. Nevertheless, it seems fair to say that approaches to educational research in general, and environmental education research in particular, have been characterised by increasing recognition of the importance of context in understanding educational phenomena, and a corresponding widening of definitions of what counts as pertinent data (Marcinkowski, 1993).

In this research, acknowledgement of the researcher's total context may further serve as a safeguard against manifestations of 'orientalism' (Said, 1985), that is, the tendency to force data into preordinate, culturally-inappropriate conceptual frameworks.

What is a methodology in environmental education research? Further thoughts

The first of the four questions raised above concerned the validity of three or four - category taxonomies of possible research paradigms based upon ontology,

epistemology and view of knowledge development. It is suggested now that the components of a methodology may more usefully be conceptualised in terms of a number of related polarities. Some of these polarities are illustrated in Figure 4. It will be argued that the adoption or avoidance by a researcher of a given position with regard to any one of these polarities does not necessarily imply the adoption of any specific position with regard to any other polarity. For example, as will be shown, there is no very precise match between the socially-critical/positivist and qualitative/quantitative dimensions. Such adoption or avoidance *may*, however, dispose the researcher towards particular 'methods' or 'mechanisms', thus rendering the three-tier distinction with which this discussion opened problematic. An example of this is the close association between socially-critical theory and action research (Robottom, 1987a, pp.109-111; Robottom and Hart, 1993 pp.52-54).

In Figure 4, the distribution of polarities into right or left-hand columns is of no intentional significance. It should also be noted that whether consistency can, or should, be expected on the part of a given researcher in respect of any of these polarities, either through time or across different contexts, is regarded as an open question for the time being.

The polar separation between positivism and socially-critical theory is clearly of central importance in the thinking of many writers on environmental education research. A substantial literature of environmental education has been produced by socially-critical theorists (see, for example, Robottom, 1987a, 1987b; Huckle,1986, 1988, 1993, 1996, 1998; Pepper, 1989; Moore and Reid, 1993; Trainer, 1990; Hart, 1993). The arguments are both summarised and significantly refined by Fien (1993) and Robottom and Hart (1993). A feature of this body of work is the consistently held view that classification in terms of positivist, interpretive and socially-critical paradigms provides an accurate summary of the choices facing environmental education researchers. Each paradigm is seen as internally coherent with respect to such matters as cognitive interest (following Habermas: see Huckle, 1993, pp.45-

Figure 4

Some polarities facing researchers in environmental education.

positivism	socially-critical theory
dominant	alternative
qualitative	quantitative
structural	functional
interpretive	purposive
ecocentric	anthropocentric
technocentric	ecocentric
reductionist	holistic
economy	environment
values	facts
post-modern	modern
detached	collaborative
expert-led	participatory

47), epistemology, view of science, learning theory, theories of assessment, prefered classroom organisation, view of the teacher's role, curriculum design (Fien, 1993,pp.14-49), view of research, view of power, and view of the role of texts (Robottom and Hart, 1993, pp.18-27). On the strength of this it is argued that paradigms, and therefore methodologies, cannot be mixed (Kemmis, 1983, p.3; Robottom and Hart, 1993, p.16). What gives each paradigm or methodology its distinctive character is its underlying ideology, and ideologies are regarded as being in competition (Kemmis and Fitzclarence, 1986, pp.108-115; Fien, 1993, pp.14-49; Huckle, 1993, pp.47-48). The neatness of fit claimed between this analysis and the reality of environmental education is illustrated by the further proposed correspondence of positivist, interpretive and socially-critical approaches with the classification of environmental education into three prepositional categories called, respectively, education *about* the environment, education *in* the environment, and education *for* the environment (Robottom and Hart, 1993, p.26; see also Lucas, 1979, pp.50-65).

It is also in this socially-critical literature that a number of labels are originated and applied to previously established research approaches in the the field. In particular, research which seeks to elaborate and operationalise a universal set of environmental education goals (Roth, 1970; Hungerford and Volk, 1984; Hungerford, Volk, Dixon, Marcinkowski and Sia, 1988; Howe and Disinger, 1991; Hungerford and Volk, 1990;) is described as both "dominant" (Robottom and Hart, 1993, pp.31-32), and "positivist" (Robottom and Hart, 1993, pp.20-21). However, very largely because of this determined assault from socially-critical theory, it is difficult to sustain the view that there is, any longer at least, a dominant research methodology for environmental education (Scott and Oulton, 1999). Use of the designation, 'positivist', meanwhile, has met with both resistance (Marcinkowski, 1993) and critique (Connell, 1997).

Marcinkowski (1993) refuses to engage the debate in terms of positivism, interpretivism and socially-critical theory, preferring instead the the terms 'qualitative paradigm' and 'quantitative paradigm'. These two different sets of paradigmatic categories certainly overlap, but are equally certainly not identical. As noted above, for socially-critical theorists the crucial issue is ideology (Robottom and Hart, 1993, pp.18-27). For Marcinkowski (1993, pp.63-64) it is about whether environmental education research problems are analysed in "structural" or "functional" terms. Connell (1997) contributes to this debate strong doubts about the continuing appropriateness of the term 'positivist'. She describes (Connell, 1997, p.122) the evolution of a post-positive paradigm in the social sciences to which many of the complaints of socially-critical theory cannot be applied.

A socially-critical theorist might argue that Marcinkowski's analysis (and, though perhaps to a lesser extent, Connell's too) simply misses the political point. However, it does lead Marcinkowski (1993, p.69) to make the telling observation that, however much one might theorise the incompatibility of paradigms, there seems to be no shortage of instances of inter-paradigmatic collaboration. This point is given emphasis by both Connell (1997, p.129), who cites the example of an international environmental attitudes survey among Asian 16 year-olds which employs the socially-critical/interpretivist/post-positivist set of methodological categories but is eclectic in its use of them, and by Cantrell (1993, p.87) who classifies post-positivist research designs under the heading 'qualitative research'. While Robottom and Hart (1993, pp. 8-9) acknowledge the existence of postpositivism, they choose for the most part to make their own case by contrast to a "traditional positivism" (Connell, 1997, p.119) which Connell (1997) clearly believes to be of no more than lingering significance in social research. From Robottom and Hart's (1993) point of view this fundamentalist, oppositional stance may well be essential if their tidy, ideology-based methodological scheme is to hold together. However, further doubt is cast on the notion that 'socially-critical' approaches are necessarily incompatible with 'quantitative' ones by Elliott (1991, pp.143-144) who considers checklists,

questionnaires and inventories to be legitimate tools within the socially-critical theorists' prefered method, action research.

By focusing on the issue of qualitative versus quantitative research design Marcinkowski's (1993) analysis also serves to highlight the possibility that the socially-critical theorists' ideology-based paradigmatic scheme misplaces interpretivist methodology by representing it as a sort of half-way house between positivism and socially-critical theory (see Robottom and Hart, 1993, pp.26-27). It may alternatively be argued that interpretivism is fundamentally different from both positivist and socially-critical approaches because it privileges the knowledge of those researched over the knowledge of the researcher. Both positivists such as Hungerford and Volk (1990) and socially-critical theorists such as Fien (1993) and Robottom and Hart (1993) have clear, though different ideas about how society should be. Hungerford and Volk seem content with the political status quo, because the democratic structures of contemporary Western society are adequate, in their view, to address environmental problems if only enough citizens are taught to behave knowledgeably and responsibly and exactly *what* and *how* they should be taught are matters for environmental education experts. For socially-critical theorists, the democratic structures of Western society are a fraud, and consistute the major part of the problem (Huckle, 1993). For example, Fien and Trainer (1993b, pp. 39-40) write, "Much of Western culture has to be totally reversed in a few decades". However, though socially-critical environmental education sees knowledge as socially constructed and, through its own pedagogy, democratically emergent (Fien, 1993, pp.22-23), what is expected to be constructed or to democratically emerge has been fairly closely delineated in advance. It is not expected, for example, that there will be any place for the pursuit of profit (Fien and Trainer, 1993a, p.19). The socially-critical researcher reserves the right to construe social constructions of knowledge that are not to his or her taste as 'false consciousness' (Fien, 1993, p.6) and to reject them. Inclination towards economic activity for profit is so construed, notwithstanding the historic and worldwide cultural significance of market place

activity (Hill, 1989). The socially-critical approach then, no less than positivism, is purposive and driven by preordinate ideas of right and good behaviour. It is only the interpretivist researcher who is content to discover, "multiple realities, truths and perspectives" (Guba and Lincoln, 1981, p.157).

According to Robottom and Hart (1993, pp.46-52) paradigms of environmental education research are incompatible not only because they take fundamentally different views of education, but also because they take fundamentally different views of the environment and the relationships humans have with it. Much of the socially-critical theorists' critique centres on the positivist (and, arguably, the post-positive) attempt to predict and control social variables (Robottom and Hart, 1993, pp.7-9; Connell, 1997, pp.124-127). A central plank of their argument is that the behaviourism and reductionism of this educational purpose are sufficient to position positivist approaches to environmental education research, not only in terms of educational paradigms, but also in a scheme of orientations towards the environment (Robottom and Hart, 1993, pp.44-52). They maintain that positivism in environmental education research is technocentric, reductionist, manipulative of the biosphere, anthropocentric, and expert-led. Therefore, it is methodologically inadequate to confront an environmental crisis which demands ecocentrism, holism, nurturing of the biosphere and participation for its solution (Skolimowski, 1982; O'Riordan, 1989, 1990; Greenall Gough, 1993a; Fien, 1993; Sterling, 1993).

It may be argued, however, that the social justice goals of socially-critical environmental education obstruct, rather than assist, the pursuit of both ecocentrism and holism. First, there is an inconsistency between the notion of ecocentricity and the socially-critical theorists' belief - which is central to their socially transformative ambitions - that the environment is a social construct (Fien, 1993, p.28; Robottom and Hart, 1993, p.26). If the environment is most usefully regarded as a social construct then it would seem to be society, not the environment, which is central (Gough, Scott and Stables, 1999). Second, though socially-critical approaches claim

to be holistic (Fien, 1993, p.25-29; Robottom and Hart, 1993, p.47) it may be argued that they are, in some respects, no less partial than the positivism they critique. For example, environmental educators, socially-critical theorists among them, have identified as false the dichotomy between 'economy' and 'environment' (Huckle, 1991; Sterling, 1993,pp.74-78). If this dichotomy is false, then it is equally so in the hands of an economist, an environmentalist or an educational researcher. On the one hand, it is absurd to ignore the environmental consequences of economic activity. On the other, it is equally wrong to suppose that economic constraints and conflicts of interest can be made to disappear simply by means of a suitably theorised environmental education approach (Fien and Trainer, 1993a; Trainer, 1990; Gough, S., 1997, p.6-7). A parallel and closely related point is that environmental educators have also identified as false the dichotomy between facts and values (Fien, 1993, pp.65-68; Robottom and Hart, 1993, pp.46-47; Sterling, 1993, pp.74-78). However, as Tesh (1988, pp.332) writes: "just as values hide within facts, so facts hide within values". One cannot, holistically, take facts for granted just because it has been a fault of previous analysis to ignore values. Writers from a holistic perspective such as Sterling (1993, p.75) make clear the need to retain a place for reductionism within wider understanding. However, the approach of socially-critical environmental education to the creation of a "conserver society" (Trainer, 1990) appears wholly to dismiss the significance of physical or economic constraints upon social change (Fien and Trainer, 1993, pp.18-19 and 39-40), while simultaneously insisting on the universal correctness of a particular set of values (Huckle, 1983b, pp.60-61).

At the same time, it should be noted, positivists find room in their analysis for an emphasis on values (Hungerford, Peyton and Wilke, 1980, pp. 43-45), and for rather holistic-sounding teaching strategies to encourage "environmental sensitivity" (Hungerford et al., 1988, pp.8-10). Once again, there seems to be not a strict methodological dichotomy, but a multitude of variously overlapping methodological layers.

Discussion of the relationship between, and importance of, facts and values leads naturally to examination of the further related methodolgical dimensions of modernity versus post-modernity, structuralism versus post-structuralism, and realism versus relativism. None of these pairs of terms admits any universally-agreed definition, but underlying the oppositions they indicate are questions of the nature and proper status of science.

The precise meaning of 'modernism' is historically complex (Toulmin, 1990). There is no precise meaning of 'post-modernism' (Giroux, 1990, pp.10-12; Kemmis, 1992, p.7). Post-modern thinkers do not agree about the nature of modernity (Kemmis, 1992. p.6), the extent to which post-modernism constitutes a rejection of modernity, whether post-modernity can or should have an educational, political or cultural project, or, if so, what it might be (Giroux, 1990, pp.8-29). They do agree on the importance to social analysis of both language and subjectivity (Giroux, 1990, p.23). They may usefully, if roughly, be divided into two groups. The first rejects entirely all claims to a single, true story of social change. For example, Lyotard (1984) writes:

> I will use the term *modern* to designate any science that legitimates itself with reference to a metadiscourse of this kind making an explicit appeal to some grand narrative, such as the dialectics of the Spirit, the hermeneutics of meaning, the emancipation of a rational or working subject, or the creation of wealth.
> (Lyotard, 1984, p.xxiii, original emphahsis)

The second group regards post-modernism as a historical phase within a specific, preferred 'grand narrative'. An example of this approach is the work of Frederic Jameson (Kellner, 1988, p.262).

Post-structuralism is taken here to mean any approach which specifically rejects the notion that it is possible to identify, "enduring, orderly and patterned relationships between elements of a society" (Abercrombie, Hill and Turner, 1988, p.228) which provide an explanatory framework for the behaviour of individuals (Abercrombie, Hill and Turner, 1988, p.245). Post-structuralism has been a formative influence on post-modernism through its emphasis on language and cultural texts (Giroux, 1990, p.27) rather than social context, physical phenomena, or scientific accounts. The post-structural position is that all explanations are kinds of fiction (Gough, N. 1991a, p.33). Meaning is believed to arise from inter-relationships between texts (Stoicheff, 1991, p.95). Western science is held to be foundationally in error in supposing that, "*things* rather than relations are the ultimate reality" (Merchant, 1990, p.282 original emphasis). However, it should be noted that to regard the environment as text is not itself necessarily an anti-scientific position. As Stables (1996, p.193) notes, it is possible to regard science as contributing to the reading of the environment as text. One might add that if the environment is text then science and technology would seem, in recent times at least, to have made a significant contribution to the writing of it.

From the perspective of environmental education a problem with post-structural analysis is the risk it appears to run of theorising both the environment itself, and concern about it, out of existence. As Tesh (1988, p.331-332) notes, real things do lie behind discourse about their meaning and no one lives, or ever sanely could, as if reality is unknowable. Neither, as Giroux (1990) acknowledges when he argues the need to resist the post-modernist tendency to, "democratise the notion of difference in a way that echoes a type of vapid liberal pluralism" (Giroux, 1990, p.21), is it possible to live as if everything is as good as everything else, even if intellectual argument points in the direction of such a conclusion. The ways in which environmental education researchers address these issues do not reveal any clear paradigmatic dividing lines.

In the literatures of environmental education and environmental education research, post-modernism and post-structuralism have aroused the most interest among, been to some extent re-theorised by, and been sometimes claimed as designations for the work of socially-critical theorists (Giroux, 1990; Kemmis, 1992; Greenall Gough, 1993a, 1993b; Greenall Gough and Robottom, 1993; Huckle, 1996, p.15). Post-modern thought is a declared influence on the mode of presentation of research paradigms chosen by Robottom and Hart (1993, pp.16-17). However, any suggestion that there is a clear correspondence between socially-critical approaches on the one hand and post-modernism or post-structuralism on the other cannot be sustained. Both socially-critical theory and post-positivism claim a critical or modified realist ontology (Robottom and Hart, 1993, p.11; Connell, 1997, p.120). On the other hand, interpretivism's relativist ontology (Robottom and Hart, 1993, p.9) is much closer to post-modernist conceptualisations. Further, and to re-emphasise a point made earlier, it is hard to see how socially-critical theory can square a claim to be post-modernist with a claim to ecocentricity. Post-modern approaches allow the physical environment at best a shadowy role as a backdrop for humanity's discussions with itself. Also, as Giroux (1990, p.26) has observed, the post-modern emphasis on treating social phenomena as texts has in practice often been reductionist, leading to an, "overly exclusive reliance on literature as its object of analysis" (Giroux, 1990, p.26). In opposition to such reductionism, socially-critical environmental education is true to its claim to be holistic to the extent that it views humans within the biosphere as active writers, as well as readers, of environmental text. As Giroux (1990,p.28) puts it, socially-critical pedagogy refuses to "extol the death of the subject". However, non-anthropocentric holism would clearly also extend some right of authorship over both the environment and human society to all other living things, and perhaps also to winds, ocean currents and the like. Such a position is wholly at odds with the socially-critical view, as Huckle (1996, p.12) acknowledges. Evidence of these tensions, and of a certain failure adequately to theorise them, is provided by the post-structuralist ecofeminist approach to environmental education of Greenall Gough (1993a, pp.34-47). This seeks to have

things both ways, first relativising specific accounts of environmental education by designating them as 'stories' (rather than, say, 'histories', 'examples' or 'analyses') through an appeal to post-structuralism, but then subjecting them to critical analysis in terms of historical and structural influences upon their originators, such as the Scientific Revolution, the spread of commercial activity, or the politics of gender.

On the strength of these observations it is argued that the view that environmental education research methodology consists of three discrete, internally-consistent paradigms between which the researcher somehow chooses is not tenable, however useful it may be to scholars in aligning themselves, for purposes of competition or cooperation, in the academic marketplace. This contention is supported by the fact that a number of researchers have avoided methodological alignment at this paradigmatic level altogether. Four such examples are now discussed. It is argued that these also provide evidence for the further suggestion that no very clear distinction between methodology and methods is possible.

A grey area: Method(ologie)s

A number of researchers in environmental education have based their work on foundational propositions which either call into question the methodological status of the paradigmatic divide which has been the central theme of this chapter so far, or else simply ignore it. Research approaches of these types include Problem Based Methodology (PBM) (Robinson, 1993a), certain forms of action research, research which seeks to promote "action competence" (Jensen and Schnack, 1997), and research which employs methodological ideas drawn from disciplines other than education, particularly environmental management (Da Silva, 1996).

The central tenets of PBM are that the purpose of educational research is to solve educational problems, and that research methodology, therefore, needs to be matched to research subjects (Robinson, 1993a, p.255). In the terms employed by Robottom

(1993), whether PBM is a method or, as Robinson herself designates it, a methodology (or, perhaps, both) depends on whether it makes truly foundational assumptions of its own, or merely defaults to positivistic, interpretivistic or socially-critical assumptions. As Smith puts it:

> Taking a problem focus to research is one thing, but containing it (as she persuasively argues) to the personal theories of educators and the situational variables of their particular settings, compared with reframing it in relation to the more macro or structural determinants of practice (which she argues is impractical) is another.
> (Smith, 1995, p.132)

The matter is problematic. In either case PBM in environmental education may be said to be eclectic with respect to the issues illustrated in Figure 2. For example:

- it is interpretive and relativistic. It works from the theories of practitioners themselves, in their specific contexts (Walker, 1997, p.160)
- it is collaborative. The researcher and the researched work together to solve problems (Walker, 1997, p.161)
- it is also expert-led. The researcher aims to produce, "an outsider critique which eventually becomes part of the individual's understanding" (Robinson, 1993a, p.119)
- it takes a functional view of research, but a structural view of the constraints upon practitioners (Walker, 1997, pp.160-161)
- it is anthropocentric with respect to the identification of educational problems (Walker, 1997, p.159).

Finally, because what the researcher actually does in PBM is contingent upon circumstances, any specific example of research might prove to be either holistic or

reductionist, either qualitative or quantitative, and either holistic or dichotomous with respect to facts and values, and economy and environment. A full methodological description of such a piece of research would need to make a judgement on all these aspects.

If research methodologies equate to research paradigms then there can be no doubt at all that action research is a method. 'Emancipatory' or 'participatory' action research has been identified as an appropriate research approach for socially-critical theory (Huckle, 1983a; Robottom, 1987a; Greenall Gough, 1990; Greenall Gough and Robottom, 1993; Robottom and Hart, 1993; Harris and Robottom, 1997). It would not be going too far to say that a commitment to action research is intrinsic to socially-critical research methodology in environmental education. However, action research:

- has also been used in environmental education research which is not explicitly socially-critical (Elliott, 1991; Stapp and Wals, 1993)
- has it origins in approaches to educational research which pre-date socially-critical theory (Stenhouse, 1975, ch.10)
- has been advocated in all but name from the perspective of positivistic environmental education research (Volk, 1990)
- is central to educational research approaches which focus on the individual demonstration and justification of values (Whitehead, 1996) rather than the attempt socially to construct certain preordinate (Fien, 1993, p.66) or innate (Pepper, 1987, pp.12-13) values
- has been employed by non-educational researchers who did not share the social analyses of socially-critical theory in any significant detail (Ramirez, 1983; Comfort, 1985)
- presents difficulties in terms of respecting the subjective views of participants (Muhlebach, 1995, pp.53-58) which, it has been argued, render socially-critical

participatory action research methodology internally problematic (Walker, 1997, p. pp.157-158).

It is suggested, therefore, that the presence or otherwise of an action component in a specific piece of environmental education research is simply one indicator of the extent to which the total methodology of that research is purposive (Figure 4) in the sense of seeking to change, rather than simply understand, either the way things presently are or the way things are presently changing. This being so, the importance of action within a particular research project may be anywhere between fundamental and zero. It seems likely that the greater this importance is perceived to be, the more likely are researchers to theorise action research as 'methodology', rather than as a 'method'.

Action, and specifically the notion of "action competence" (Jensen and Schnack, 1997) are central to a school of thought in environmental education research which has its origins outside the English-speaking educational research community. A consequence is that terminology is used by advocates of the approach in an ingenuous fashion which, while internally perfectly coherent, is indifferent to the coded labelling which has enabled some British, American and Australian researchers to organise themselves into paradigm-related factions. Hence, Jensen and Schnack (1997, p.165-166) are able to assert the significance of both language and action, locate "liberal education" within "critical educational theory", categorise the project of environmental education as emancipatory, but at the same time emphatically reject the notion that this same project is essentially political (for example, in the sense of promoting social justice) or environmental (for example, in the sense of reducing pollution), as opposed to educational in character. Regardless of its own merits as an approach to environmental education research, this work seems to demonstrate, simply by taking its own path, that the debate about paradigms in environmental education research is more a consequence of a shared culture among some researchers

than an unavoidable product of the intrinsic nature of the research task. This is an important possibility in the culturally very varied context of the present research.

Similar considerations apply to environmental education research which has made use of techniques from other disciplines. For example, Da Silva (1996) employed Participatory Rural Appraisal (PRA), which is normally used in environmental management or economic development projects, in a piece of environmental education research in Tanzania. A key paradox confronted by his work was that in Africa:

> Education is alternately criticised and praised, first as the culprit responsible for the irreversible acculturation process that has been forced on Africa, and next as the panacea for ameliorating underdevelopment.
> (Da Silva, 1996, p.122)

It is argued here that this paradox may also be observed in the Bruneian context, and that within it lies another. During the colonial period 'acculturation' was a consequence of the West's preoccupation with 'civilising' the rest of the world. Since the colonial period acculturation has often been a consequence of the West's preoccupation with expiating its colonial past through discourses of development or globalisation (Said, 1985; Inayatullah, 1993). Western interest in the way local people themselves see their circumstances and history has often been as minimal in the latter case as in the former.

Seeking to address these issues, the Tanzanian research investigated the local environmental knowledge of three communities, and student focus-groups in three secondary schools, by means of open-ended interviews, community time-lines and environmental trend graphs. Among the aims were:

- to discover and privilege valuable traditional knowledge
- to make possible the targetting of Western scientific knowledge in appropriate ways.

Once more, it seems difficult (and largely pointless) to attempt to categorise this work under one of the three research paradigms. The research was both qualitative and quantitative. It was socially-critical to the extent that, for example, it was theorised in terms of educational resistance to, "the political economy of modernisation and global capitalism" (Da Silva, 1996, p.113). It was interpretive to the extent that it respected community "values, attitudes and behaviours" (Da Silva, 1996, p.115) without precondition. It was positivistic to the extent that it allowed a role for scientific expertise and understanding (Da Silva, 1996, p.121). If its approach may be described as a methodology, and 'methodology' is synonymous with 'paradigm', then the case for the incommensurability of paradigms in environmental education research (Robottom and Hart, 1993) needs to be, at least, retheorised. If it may not be so described then, since it is clear from the literature of PRA (Chambers, 1992, pp.14-15, 19) that its practitioners necessarily take quite specific positions on foundational questions, including the nature of teaching and learning, the need for validity and reliability, the ownership of research findings and role of the researcher, some other term is needed to describe it. "Methodic' might be one possibility. Thus, community time-lines or other PRA techniques such as participatory mapping, for example, could stil be called methods of research, while the many devices by which such time-lines, maps, and other PRA data are actually produced in the field (see, for example, Subramanian, 1992, pp. 38-39) would be 'mechanisms'. In either case there again seems to be a strong case for reckoning the methodology of research in terms of its multiple foundational components, rather than by means of wholesale, if convenient, sloganising.

The methodological role of Cultural Theory in this research.

It has been argued that research methodologies in environmental education may most usefully be described in terms of the position they take with regard to a number of overlapping categories. Cultural theory, outlined in Chapter One, is now discussed as a framework for the present research which permits an appropriate flexibility with regard to those same categories, in a research context characterised by social, cultural and environmental diversity and uncertainty, by varied and variously-interacting research subjects, and by a number of quite different audiences for research outputs.

It is not in any sense suggested that cultural theory constitutes a new, all-embracing paradigm for environmental education research. A socially-critical theorist, for example, would be equally as capable of critiquing cultural theory in social terms as a cultural theorist might be of critiquing socially-critical theory. The socially-critical theorist would ask whose interests are served by the cultural theory approach. The cultural theorist asks how people come to know that they have particular interests (Thompson, Ellis and Wildavsky, 1990, p.270) and, aside from those interests, what else influences their conceptualisations of problems and risks (Schwarz and Thompson, 1990, pp.31-32).

As will be shown, cultural theory may itself be firmly positioned with respect to the methodological dimensions summarised in Figure 2. However, it is a characteristic of cultural theory to acknowledge the potential usefulness of methodologies based on assumptions which are different from its own (Thompson, 1990, p.179). While cultural theory takes a view on foundational issues it also, in the context of this research, provided a vantage point from which all the methodological dimensions raised in this chapter could be kept in view.

As noted in Chapter Two, this research was itself interpretive, in the sense that it construed knowledge as socially constructed. It accepted, along with interpretivist

educational researchers and post-modern thinkers, that social constructions of knowledge are multiple. However, following the cultural theory approach, this multiplicity was hypothesised to arise from uncertainty regarding extremely complex but nevertheless quite concrete matters, rather than being an inherent and immutable characteristic of all social situations. How an individual constructed reality was taken to depend on the assumptions he or she made in confronting uncertainty, and these in turn were held to depend on the institutional solidarities (Schwarz and Thompson, 1990, p.11; Thompson, 1997, p.142) he or she had. This meant that, first, possible social constructions in relation to any given problem were seen, not as infinite, but as limited by four ideal-typical ways of thinking about social organisation (Figure 1; Schwarz and Thompson, 1990, p.61). Second, reality was not regarded as unknowable, but rather it was accepted that no prospect could be held out of knowing it entirely in any imaginable, let alone useful, time frame (Schwarz and Thompson, 1990, p.11). Third, it was accepted that there are constraints upon human ability to shape the human and physical environment (Schwarz and Thompson, 1990, p.11), and therefore upon the 'reconstructivist' (Robottom and Hart, 1993, p.26) ambitions of socially-critical social science. Fourth, it was assumed that some of these constraints were unknown, and likely to remain unknown for the duration of the research and beyond. Finally, to take a position on a question held open until now, it was accepted that individuals may have conflicting institutional solidarities (James and Thompson, 1989, footnote 2, pp.93-94), and so make apparently inconsistent choices. For example, a researcher might have loyalities both to a (hierarchically-organised) university and an egalitarian political group, and so seek advancement in the dominant culture while promoting an alternative one; or a female Chinese student might look outwards, through management education perhaps, to the world of free-market individualism while still faithful, at home, to the hierarchical constraints and fatalistic cosmology of the traditional Chinese family (Greenhalgh, 1988; Gough, S., 1995). While choices may be inconsistent, however, they are not expected to be random.

Such a position of "constrained relativism" (Schwarz and Thompson, 1990, pp.56-57) was considered appropriate for this research because it made it possible to take an active interest in a social situation in which there were disagreements about the nature (and, sometimes, the existence) of educational, environmental, developmental and managerial problems. A variety of interventions, as classified across the dimensions shown in Figure 2, might therefore be hoped, in principle, to give rise to work valued by one group or another, in one context or another, in terms of enhanced teaching and learning (Gough, S., 1995, pp.331-333), and so incrementally reduce overall uncertainty. In consequence, interventions made during the research were assessed in terms of their contribution to effective teaching and learning against criteria from more than one paradigmatic position (see research aim two). This is consistent with the cultural theory, or 'clumsy' (Thompson, 1990, p.179) view that to simultaneously grant credibility to foundationally differing problem definitions is likely to result in synergetic strength, rather than self-contradictory weakness. Interestingly, such a position is strongly affirmed, though quite differently theorised, in the writings of environmental education researchers from opposite poles of the paradigm debate (Robottom, 1987b; Marcinkowski, 1993).

Further consistent with the above, though the underlying approach of the research was qualitative this did not preclude the application of quantitative techniques. Similarly, though this research, because of its commitment to cultural theory, was clearly structuralist, the use of post-structuralist insights was not ruled out where these might help particular groups within the research to explore educational, environmental, developmental or managerial issues.

Cultural theory is not ecocentric because of the special importance it accords to culture, but not anthropocentric either because it recognises that humans are a part of nature (Thompson, 1997, pp.141-142). It is, in short, holistic (James and Thompson, 1989, p.87) with respect to this dimension, as it is also with regard to the dimensions of economy/environment (Thompson, pp.175-177) and facts/values

(Schwarz and Thompson, 1990, p.23). However, part of being holistic is to recognise that those who take a dichotomous view are themselves part of the whole.

In this research then, the cultural theory approach provided a framework for understanding and relating all the various groups and individuals who participated in one way or another in the research, including this researcher himself, and the many writers who informed the research. For example, it made possible the identification of congruence between the egalitarian worldview of Brunei Dayaks and the egalitarian imperatives of socially-critical theory (Gough, S., 1995, p.332). It also made possible, by means of the identification and use of adaptive concepts, an attempt to pursue the environmental education implications of this same congruence within a formal educational structure entirely controlled by traditionally hierarchical and politically-dominant Malays.

The approach from cultural theory also made possible a working distinction between the social solidarities of this researcher in his dealings with the (essentially hierarchical) academy, and the quite different solidarities he had in relation both to his research subjects and to others with an interest in the research outcomes. These included:

- the Brunei Ministries of Education, Development and Industry and Primary Resources
- small and large private firms
- departmental colleagues
- other staff within the College
- College administrators
- students
- the parents of students
- his own family.

More methodological greyness.

It has been suggested above that research approaches such as PBM or action competence occupy a grey area between 'methodology' and 'method'. However, it is also part of the case made so far that *no* black and white distinction can be made between these terms. Rather, there are only shades of grey.

The methodological choices made in this research in terms of the framework illustrated in Figure 4 have implications for the actions taken by the researcher, day by day, in the field. The broad approach felt to have been indicated by these implications is described here. More detailed issues are discussed in later chapters, as they arise.

Miles and Huberman (1994, p.9) note that qualitative data typically arise from research activity involving close proximity to a local setting over time. Case study, as "an umbrella term for a family of research methods having in common the decision to focus on enquiry around an instance" (Adelman, Jenkins and Kemmis, 1980, p.48) is therefore likely to be the source of qualitative data, almost by definition. This research employed three inter-connected case studies.

Case study was particularly appropriate to the methodological underpinnings of this research. It permitted the researcher flexibly to adopt a variety of positions in the research context on a continuum ranging from 'pure observer', through 'observer-as-participant' and 'participant-as-observer', to (historically, in this case) 'pure participant' (Cantrell, 1993, p.94). In this way it was further possible to:

> grasp motives, beliefs, concerns, interests, unconscious behaviors, customs and the like; observation (particularly participant observation) allows the inquirer to see the world as his subjects see it, to live in their time frames, to capture the phenomenom in and on its own terms, and

> to grasp the culture in its own natural, ongoing environment; observation (particularly participant observation) provides the inquirer with access to the emotional reactions of the group introspectively - that is, in a real sense it permits the observer to use *himself* as a data source; and observation (particularly participant observation) allows the observer to build on tacit knowledge, both his own and that of members of the group.
> (Guba and Lincoln, 1981, p.193)

Case study was also appropriate for this research in that it permitted the researcher flexibly to adopt a variety of roles (Stake, 1995, p.91) including those of teacher, participant observer, interviewer, advocate, councillor, consultant and evaluator. Case study permitted eclecticism with respect to research techniques and procedures (Adelman, Jenkins and Kemmis, 1980, p.49), including the use of both qualitative and quantitative data (Yin, 1994, p.14). Most importantly, case study was capable of serving multiple audiences and offering support to alternative explanations (as required by the cultural theory approach) without compromising its own internal logic (Adelman, Jenkins and Kemmis, 1980, pp.59-60).

Adelman, Jenkins and Kemmis (1980, p.60) note that case studies tend to contribute to action in their own contexts. This research certainly had action components at all three of the "levels of action research" identified by Elliott (1991, pp.124-125). Teachers took action to improve a specific syllabus. Students took action to influence and inform local decision-makers. The researcher took action to increase understanding of the ways of facilitating teacher and student learning-through-action. However, this research differs significantly in its orientation to action from the participatory action research approach advocated for environmental education by Robottom and Hart (1993, pp. 64-70). This is because in this research:

- action-taking was only one part of the research agenda,

- research approaches were not distinguished, rejected or embraced solely on political grounds (see Robottom and Hart, 1993, p.66, p.68)
- 'internalisation of the research agenda' (Robottom and Hart, 1993, p.67) by participants was not required, that is, students, teachers, this researcher and other parties to the research were expected to conceptualise the significance of the action being taken in different ways
- the methodology of the research was only negotiated with participants (Robottom and Hart, 1993, p.69) when this was felt to be helpful by this researcher.

This research took a similar approach to action to Robinson's (1993a, p119) Problem-Based Methodology in so far as this researcher maintained a degree of methodological apartness from his research subjects. However, this is a superficial similarity. Robinson was concerned with achieving agreement about educational problems and their solutions, "at all levels of analysis, including that of the researchers' theoretically informed critique of the participants' undertandings and actions" (Robinson, 1993a, p.132). This research was concerned with achieving educational goals in circumstances where different individuals and groups held "contradictory certainties" (Thompson, 1990, pp.162-163) about the *nature* of problems. Hence, a methodological framework was required capable of engaging simultaneously, not with different proposed solutions to a problem, but with competing definitions of what the problem was.

Ultimately, it was the co-existence of these competing definitions, and the impossibility of making final judgements between them under conditions of uncertainty, which gave rise to the methodological approach of this research.

CHAPTER FOUR

CASE STUDY ONE: FIRST STEPS

Introduction

It may be helpful to begin consideration of the first research case study with a restatement of the research aims. These were:

- to identify adaptive concepts within the shared context of environmental education, environmental management and economic development.
- to evaluate, in terms of the effectiveness of teaching and learning, the use of two such adaptive concepts to develop environmental education interventions in a management education programme in Brunei, a developing country
- to make a preliminary evaluation of the usefulness of adaptive concepts as a way of introducing environmental education into such management education programmes.

It was hoped from the outset that the research process would both reveal adaptive concepts and make possible refinement of processes for their identification. However, in order to launch a first case study at least one potential adaptive concept was required in advance. During the literature search the term 'quality' was noticed to occur with some frequency across the literature (see Chapter Two), and so suggested itself for this purpose. In fact, use of quality considerations as a possible focus for environmental business education had already been suggested in the environmental management literature (Charter, 1992, p. 76-78).

In the Bruneian context of Case Study One, quality was clearly an important term within each of the three 'active' rationalities identified by James and Thompson (1989), that is, the hierarchical rationality, the egalitarian rationality and the individualistic rationality. Officials within government hierarchies were concerned with the adaptation and adoption of international quality standards, and of related standards for environmental management systems (Brunei Government, 1996) (see Annex 1). The environmental education literature revealed a concern with environmental quality in a document (UNESCO-UNEP, 1977, p.2) considered foundational by authors from opposite ends of the paradigmatic spectrum (Hungerford and Volk, 1990, pp.8-9; Fien, 1993, pp.54-55). Entrepreneurs and managers in Brunei had reason to be concerned with quality management systems (Oakland, 1993; Rothery, 1993) as a consequence of the official promotion by the Brunei Ministry of Development of international standards series ISO 9000 and ISO 14000 (Rothery, 1993; Brunei Government, 1995; Welford, 1996) to consultants and contractors working on development projects in the country. Interest from management educators in the country seemed inevitable because of this, and also because of the inclusion of quality as a topic in the Cambridge Board externally examined A level course taken by students at Maktab Duli. Of course, 'quality' might be expected to mean different things to all these groups, but as an adaptive concept intended to facilitate education under conditions of uncertainty that, precisely, seemed likely to be its strength. Therefore, I began on 9 January 1996 to design an intervention in the continuing project to develop management education as a curriculum option for pre-university entrance students at Maktab Duli, with quality as its focus.

Ethical considerations

A particular feature of any qualitative research is that its ethical context is likely, or perhaps certain, to evolve during the process of research, and may do so in unpredictable ways (Miles and Huberman, 1994, p.289; Punch, 1986). This was

observed to be true in this research. Nevertheless, preconsideration of ethical issues was necessary, not least in order to establish something which could so evolve.

Miles and Huberman (1994, p.288) note that, "Any qualitative researcher who is not asleep ponders moral and ethical questions". In this research ethical considerations were both complex and worrisome because of the multi-cultural context of research and because of the multiple loyalties of this researcher. In particular, it was clearly the case that to establish a set of guiding ethical principles for the research acceptable to all parties would require an appeal to shared values. Equally clearly, the existence of such a basis of shared values could not be taken for granted. Of course, the perceived lack of a common value system among parties to the research was a fundamental reason for undertaking this particular research. However, the ability to *theorise* different value systems through the explanatory framework of cultural theory did not help in any obvious way with the problem of *following* a satisfactory ethical code in the field.

This point may be illustrated by reference to elements of two different sets of ethical core principles offered by qualitative research theorists (Miles and Huberman, 1994, pp.289-290). Sieber (1992, p.18) lists three such principles, of which one is 'justice'. Justice is defined by reference to "fair administration" and "fair distribution of costs and benefits". House (1990) also lists three guiding principles, of which one is "support for democratic values and institutions" (Miles and Huberman, 1994, p.290). However, no agreement about the meaning of 'fairness' was possible in the context of this research, and no overall consensus was found to exist on the merits of democratic values or, in fact, on the notion that democracy *has* significant merits. "Paramount" (Brunei Government, 1985, p2) in the education system of Brunei is the concept of "*Melayu Islam Beraja*" (Brunei Government, 1985, pp.35-38), or Malay Islamic Monarchy. At the time this research was carried out only approximately 67% of the population of Brunei were of ethnic Malay origin, as compared to approximately 17% ethnic Chinese and 6% indigenous (Brunei

Yearbook 1997, p.32)[1]. However, official education policy (Brunei Government, 1985, pp.1-2, 36) insisted upon the "sovereignty" (p.2) of the Malay language, the "assimilation" (p.1) of "Islamic values" and "fostering a sense of undivided loyalty to His Majesty the Sultan...the supreme ruling power" (p.36). In classrooms in Brunei the consequences of these policy positions may be observed in, for example, compulsory wearing of Islamic dress by girls whether they are Muslim or not, compulsory attendance at Islamic religious functions by all students whether Muslim or not, absolute prohibition of criticism of the person or policies of the Sultan, and the frequent absence of non-Muslims (and sometimes females) from public representations of education in the State [2]. As noted in Chapter 1 these arrangements demand political sensitivity (Silverman, 1993, pp.7-8) on the part of an outside researcher, particularly because of their historic and central cultural importance, and also because of the orientalist and historicist (Said, 1985, p.101) danger of assuming that things one does not like (as a Westerner) about the East must somehow be consequences of mistakes made in the past by the West (during colonial times, for example), which should therefore now be put right.

However, the problem was not, perhaps, as intractable as it at first seemed. Malay, Chinese and indigenous inhabitants of Brunei do not themselves, after all, share the same values [3], but they have managed to co-exist for at least 500 years in a society of which they all give every appearance of being proud.

At the time of beginning this research I had lived in Brunei for five years and nine months, and had learned as a precept of social and professional survival that if one acknowledges that the public fora of Brunei are non-negotiably Malay and Muslim, then Malay Muslims will respect one's own private space, just as they do the private, cultural spaces of the Chinese temple or indigenous Dayak longhouse. I believe that *in its Bruneian context* this research was ethical because it honestly declared itself to have two essential components which could be treated by all parties, when appropriate, as separate. First, the research promised curriculum

development genuinely in keeping with both official plans and student hopes. This was its public face. Second, I declared at the outset a private interest in the innovation as environmental education research supervised by the University of Bath to:

- the Deputy Director of Secondary Education, Cikgu Bujang bin Masu'ut. Throughout 1996 and 1997 Cikgu Bujang was seconded as Acting Principal of Maktab Duli
- The Deputy Principal Academic of the College, Dyg. Tan Lian Lian
- The Head of the Environment Unit at the Ministry of Development, Hjh. Soraya Dato Paduka Hamid, and her deputy, Pengiran Shamhary Pengiran Dato Paduka Hj. Mustapha
- Staff and students of the College.

[4]

To write this research report is, I believe, ethically consistent with the undertakings I gave. To have written a political pamphlet, engaged in participatory action research on the socially-critical model (Robottom and Hart, 1993, p.52) or insisted on environmental citizenship (Hungerford and Volk) 1990 on a U.S. model, would not have been either ethical or appropriate given the declared cultural theory approach of the research **[5]**. On the other hand, to reserve my own value position while providing an educational experience likely to encourage participants to reflect on their own values and beliefs seemed an ethical choice similar to that advocated by environmental education researchers of the action competence school (Jensen and Schnack, 1997), in the sense that it promoted educational goals rather than specific social or political outcomes.

To return to the question of shared values, while there was never any prospect of establishing a set of values which all those with an interest in the research could share, the person of the researcher was conceived of as a values-junction to which

they could all connect. I accept that this research is open to criticism from a Western values perspective. By acknowledging that the values governing the intervention in the classrooms in which it took place were different from the values underlying discussions of research outcomes and procedures at the University of Bath, this research lays itself open, perhaps, to a charge of lack of integrity. However, to insist on integrity of this kind would be to render this research either unacceptable or impracticable, because the way Bruneians have for centuries run their country is, to a significant extent, ethically at odds with assumptions typically made within the Western education academy about the purposes of education in society. In actual fact, these ethical considerations are no more than a particularly powerful example of the influence upon research of its multiple contexts, a point discussed in Chapter Three.

The ethical stance taken by this research also seems broadly consistent with the ethical advice offered to qualitative researchers by Miles and Huberman (1994, pp.296-297) using the headings: awareness; anticipation; preliminary agreements; documentation and reflection; third parties; and, regular checking and renegotiation. Ethical issues were anticipated. Preliminary agreements were made. As will be seen, it was in the nature of the research approach to produce a written, documentary record of the progress of the intervention. This facilitated both checking and renegotiation of the perceived ethical status of the research with those groups and individuals involved from the start, and the establishment of further working relationships with new interest groups (such as the Tourism Unit) in the later case studies. Finally, with regard to ethical checks with third parties, information about the progress of the intervention was made publicly available, was drawn to the specific attention of policy makers in the fields of environment and education, and was shared with the parents of students involved.

The context of Case Study One

A partial account of the detailed context of Case Study One has already emerged in this report, and much more contextual information will do so as and when it becomes relevant. However, it may be helpful to provide a brief overview. For simplicity of presentation this is done under three rough-and-ready headings.

National social and economic context: Certain widespread social and economic trends current in Bruneian society at large in 1996 appear likely to have had a bearing on the ways in which the research intervention was received.

The rate of population growth was approximately 3% per year (Cleary and Shuang, 1994). Oil prices were historically low. Exploitation of oil and gas reserves was, then as now, overwhelmingly the most significant productive activity, and was dominated by one company, Brunei Shell Petroleum (BSP). BSP is a complex set of alliances between Royal Dutch Shell, Mitsubishi and the Brunei Government. In spite of rapidly rising imports, official figures showed the balance of trade to be positive (Brunei Yearbook, 1997, p.89). However, the Government had made a very public commitment to the expansion of the, still extremely small, non-oil sector.

The employment prospects of young people in general, and graduates of Maktab Duli in particular, were undergoing a period of sharp curtailment owing to the saturation of both the petroleum sector and the (most popular) Government service (Yusra, 1994, p.3). Strong public pressure was being brought to bear on young people by Government to enter the private sector, especially as entrepreneurs (see, for example, Ali Hashim, 1994). This was seen as necessary to a Government growth policy set out in a series of National Development Plans. The Sixth Plan ended in 1995, but the seventh was not yet available to the public in January 1996.

Brunei National Development Plans have consistently included environmental objectives. The Sixth Plan made a commitment to the principle of sustainable development (Brunei Government, 1993). However the dominant theme of the planning process was the need for economic growth. In particular, Brunei in December 1995 became a founder member of BIMP-EAGA. This "Brunei Indonesia Malaysia Philippines East ASEAN Growth Area" comprises, in addition to Brunei, parts of Indonesia's Kalimantan and Sulawesi, parts of the southern Philippines, and the East Malaysian States of Sabah and Sarawak.

Finally, it should be noted that the fieldwork for this research was almost all completed during the first half of 1997. The Asian currency crisis did not occur until the second part of 1997 and was therefore not a significant factor in this research. In fact, the crisis had a limited subsequent effect on the Brunei economy which depends on US Dollar-denominated products.

The College: The attempt to provide an account of the immediate social environment in which this research took place raises directly the important issue of the validity of my own observations and the constructions I placed upon them. As already noted, I had been employed at Maktab Duli for a number of years before the commencement of research, and was employed there still at the time of writing most of this thesis. In some ways my position in relation to my research had much in common with that customary among anthropologists, who tend to combine the functions of fieldworker, analyst and author (Okely, 1994, p.20), to live close to their subject matter (Okely, 1994, p.19), and to emphasise, "the importance of personal, tacit knowledge and its transmission by means of a personal apprenticeship" (Coffey and Atkinson, 1996, p.148). All this is well and good, and I do believe that my outsider's understanding of the complexities of the Bruneian context of this research has been much enhanced by my relatively long association with both place and people. However, it therefore seems all the more important to heed Silverman's (1993, p.153) warning against granting credibility to knowledge

claims simply on the basis of close personal involvement with a research context, and to avoid privileging data on the grounds that they fit with preconceived notions of the subject or, simply, seem attractively exotic (Fielding and Fielding, 1986, p.32), particularly if any generalisable findings about the usefulness of adaptive concepts (research aim three) are to emerge. These considerations will be of continuing importance throughout this report.

All residents of Brunei are required to carry an identity card (i/c). Besides displaying a personal photograph, both thumbprints, and details of the holder's gender and race this document also has a distinguishing colour. This colour indicates citizenship status, and is therefore crucial in determining access to education at government schools and colleges. The situation with regard to Maktab Duli during the period of this research was as follows. Brunei citizens (yellow i/c) were entitled to free education at the College, subject to the regulations of the Ministry of Education. These regulations included an absolute requirement that candidates should have a 'credit' (or 'O'-level) in Malay language. It should be noted, however, that except for a small number of students pursuing Islamic religious studies, all classes are taught through the medium of English. In 1993 the Ministry of Education had imposed a quota on the number of Chinese (citizens or not) permitted to study Management at the College. However, by 1996 this ruling had fallen into neglect.

Chinese Bruneians may be either citizens or permanent residents. The children of permanent residents are not citizens, and it is very difficult for permanent residents to obtain formal citizenship. Rather, they are classified as 'stateless' (purple i/c). To be admitted as students at Maktab Duli, purple i/c holders needed to meet the entry requirement in Malay language, pay fees, and obtain the approval of the Ministry of Education. Upon completing their studies they could seek places in the local university (Universiti Brunei Darussalam, or UBD), but not the technical college (Institut Teknologi Brunei, or ITB). A significant number of students involved in this research were purple i/c holders. This seemed likely to have a

bearing on their view of their education, and their long term commitment to residence in Brunei.

Finally, contract workers of all kinds carry a green i/c. At Maktab Duli during this research the great majority of teaching staff were green i/c holders. Numbers of contract teachers, both at the College and in the country as a whole, were increasing. All administrative positions above Head of Department level were reserved for yellow i/c holders. Bruneian teachers, typically trained at UBD, were common at primary and lower secondary levels (and, of course, in religious education) throughout the country. However, it was a requirement of appointment to Maktab Duli to have graduated in a specialist field, normally from an overseas university, as well as being a trained teacher. Few local teachers met this requirement or, to put it another way, few local overseas graduates wanted to be teachers. Those who did, or who were officially compelled, would normally expect a short classroom career of perhaps one or two years in length to be followed by promotion to an administrative role [6]. Teachers directly involved in Case Study One were all green i/c holders, comprising two (including myself) from UK, one from Canada, one from Australia and one from New Zealand.

Maktab Duli is located in the busy suburb of Gadong, on the outskirts of Bandar Seri Begawan. The area is notable as the centre for car dealerships in the country, and as home to the main fish market which is accessed directly by fishermen in local *prahau* boats by means of a tributary of the Brunei river. Admissions to the College take place every March, and examinations are held every November. This meant that at the outset of Case Study One, in January 1996, only the Upper Sixth cohort of students was present, with a new, Lower Sixth intake swelling total student numbers to just over one thousand in March. Students were then roughly equally divided between Upper and Lower Sixth. Case Study One focused on the Upper Sixth cohort (the new Lower Sixth cohort subsequently became the subjects of Case Study Two and Case Study Three), consisting of a total of 167 students studying

Management of Business. This figure represents *all* the students studying Management at this level in Brunei at the time.

The College curriculum was modelled on the UK system. All students took at least three A-level subjects, of which Management of Business could be one. At the time of the research all students having previously obtained a 'credit' in O-level English also took a general studies course known as General Paper, or 'GP'. Those without such a credit repeated English O-level until they either obtained a credit or left the college [6].

On any day at Maktab Duli one might overhear conversations taking place in English, Malay (in either standard or Brunei dialect forms), Hokkien, Cantonese or Mandarin. While there are students whose first language is one of the Dayak tongues, it is unusual to hear these publicly spoken. Greenall Gough (1993b) has made a case that environmental education should involve, "listening to the silenced voices speaking in their own languages" (Greenall Gough, 1993b, p.10). What this would mean in Brunei is not absolutely clear. Studies suggest that Malay is not imperilled or 'silenced' (Jones 1991; Ozog 1991), though there is research evidence from Singapore that Chinese dialects may be adversely affected by the official promotion of English there (Pakir, 1991, p.1012). It seems likely that Dayak languages *are* imperilled throughout North Borneo, along with the rest of Dayak culture (see Colchester 1992, pp. 45-47), though the threat may well be of displacement by Malay rather than by English. The attempt to privilege Malay appears to be a long-standing feature of race relations in the country. The system of language education in Brunei is known as *Dwibahasa*. Its official goal is the achievement of a society bilingual in Malay and English (Ahmad bin Hj. Jumat, 1991).

The globalisation of business (and education about business) seems likely to have contributed to, or in this case reinforced, the globalisation of the English language. However, it may also be the case, as Jernudd (1991, pp.513-514) argues, that this

process has also led to a strengthening of local languages precisely because of the growing perception, among those who speak them, that they are under threat. Further, as Honey (1991, p.191) notes, all language codes are not transferable between social and cultural contexts with equal facility. One might argue, therefore, that to deny Bruneian students access to globally standardised usages on post-structuralist educational grounds would be as much an act of oppression as to underprivilege local usages. Language was clearly a very important and complex issue in the context of this research intervention. This was not only true in that theoretical hinterland of post-modern debate to which, of those involved at the research site, and as far as I know, only I had (or sought) access. It was observed, for example, in later stages of the research (see Chapter 12) that students would confer in a shared first language, or in Malay if they had no common first language, about how to convey meanings in English for my benefit.

Attendance at the College is considered highly prestigious among Bruneians. This is spite of the fact that its buildings are dilapidated and were, in 1996 and 1997, collapsing in places. There was no significant budget from the Ministry of Education for buildings maintenance in 1996, but in 1997 some temporary repairs were effected following a visit by the Minister himself. However, the College is unusual in Brunei in having air-conditioned teaching rooms. Given the tropical climate, these do aid teaching and learning. Approximately half the student body was resident in the on-campus student hostel in 1996 and 1997. This establishment provides separate, supervised accommodation for both male and female students. The effects of hostel residence upon a particular student's progress and welfare seem to depend on a variety of factors, not least the amount of sleep he or she gets since residents are woken for dawn prayers, but are not pressed to retire at any particular hour. Further, during 1996 the hostel was frequently without supplies of piped water for up to five days at a time, and the fabric of the building was in very poor condition. On the other hand, it is clear that many students represent the first generation of their families to receive formal education. This means that there may be little

understanding of the needs of an A-level candidate, particularly with respect to private study time and facilities, in a family home where traditional chores still need to be done. For such students hostel residence may provide an unrivalled opportunity for study.

The College is on two floors, with separate administration block, library, auditorium and hostel on the campus. The design of the overall teaching space is two quadrangles linked at one corner. Rooms are enclosed but corridors are open to the air, though covered. During the period of this research, management was taught in four adjacent ground floor rooms. Staff were accommodated in a shared office on the floor above, to which students had open access for personal consultations.

Though I myself was Head of Department throughout the period of this research, this was essentially an administrative position. The Department ran on collegial lines with respect to academic matters. All the staff directly involved in the research were very experienced and well qualified teachers who brought different specialisms and skills to the work. It was made quite clear that participation in Case Study One was voluntary. However, all those teaching the appropriate cohort did, in fact, volunteer. Very early in the Case Study, on 8 January, the Head of the General Paper Department also expressed interest, on behalf of his staff, in the project. At that stage, however, it was not clear how that interest might best be developed.

Environmental education was not entirely new in Brunei at the time this research began, though an administrative problem existed because of the division of responsibility for such education between the Ministry of Education and the Ministry of Development. The following environmental education activities had already taken place, though none had been formally evaluated.

- In 1993 the Brunei Ministry of Development and BSP had commissioned an environmental awareness course from the College of Petroleum and Energy

Studies, Oxford. This was targeted at policy makers and managers, including some with influence over upper-secondary education.

- Universiti Brunei Darussalam (UBD) were operating a rainforest study centre in remote jungle at Belalong, in the Temburong District of Brunei, which parties from Maktab Duli occasionally visited. (Cranbrook and Edwards, 1994).
- In 1995 the Ministry of Development had commissioned me to prepare environmental education materials in conjunction with an infrastructure project. These were distributed to all Brunei schools, and were extensively used in the College, particularly by English and GP teachers.
- In 1996 BSP produced an educational video, "Treasures of Brunei Darussalam", which was promoted as a resource to science teachers.
- Environmental education for sustainability was being promoted regionally by a collaboration between the Asia-Pacific Centre of Educational Innovation for Development, UNESCO, and Griffith University (Fien and Corcoran, 1996), again with possible influence upon policy makers.
- The South East Asian Ministers of Education Organisation Regional Language Centre (SEAMEO-RELC) in Singapore had done some imaginative curriculum development promoting the integration of environmental education with second language instruction (Jacobs, 1993), particularly in conjunction with the Centre for British Teachers (CfBT) which had a contract to provide the Ministry of Education with English teachers. This work had been promoted at a two day conference in Bandar Seri Begawan in August 1995 which all English teachers from Maktab Duli attended.

Environmental context: Day to day responsibility for environmental matters in Brunei rested at the time of this research, and at the time of writing still rests, with the Environment Unit at the Ministry of Development. This Unit was established in 1993 by redesignation of the Landscape and Environment Section of the Town and Country Planning Department. At the same time a National Committee on the Environment (NCE) was established, chaired by the Minister of Development and

including both public and private-sector representatives. The Environment Unit acts as Secretariat to the NCE, is the point of focus for international environmental matters, and has shared responsibility for environmental education, information and awareness with the Ministry of Education (Soraya, 1996). However, certain matters which clearly do have environmental importance are defined as outside the Unit's scope. For example, the Department of Forestry has responsibility for the oversight of timber harvesting and reserves, forest conservation and the recreational use of forests, as well as the development of the *Ulu Temburong* National Park. The Brunei Museum has responsibility for wildlife protection, and the Department of Fisheries protects and manages marine resources (Eaton, 1994). The Head of the Tourism Unit, which is part of the Ministry of Industry and Primary Resources, told this researcher on 29 January 1997 that he had "no dealings" with the Environment Unit (Sheikh Jamaluddin bin Sheikh Mohamed, personal communication). In early 1996, when Case Study One began, it was not clear what budgetary provision had been made for the Environment Unit in the Seventh National Development Plan. According to its Environment Officer, throughout the period of this research the Unit's small staff were fully occupied in responding to communications from various international environmental bodies (Pg. Shamhary Pg. Dato Paduka Hj. Mustapha, personal communication, 16 April 1997).

Economic activity in Brunei clearly has global environmental implications because of the overwhelming emphasis on oil and gas production. However, the relative affluence resulting from the oil price shocks of the 1970s has meant that other environmental assets have fared better than in neighbouring Sarawak, Sabah and Kalimantan. Forests cover 80% of Brunei's land area, and are characterised by a high degree of biodiversity. Brunei has control over approximately 38,600 square kilometres of the South China Sea in which fishing rates are well below maximum sustainable yield. Agricultural land is under-utilised (Eaton, 1994). The main environmental concerns identified by the Environment Unit in 1996 were:

- water and air pollution - oil spills, soil erosion, sewage
- vegetation loss/habitat destruction/loss of biodiversity
- contamination of soils and water due to toxic chemicals
- solid waste problems
- health problems
- contribution to global warming
- contribution to ozone depletion
- diminishing natural resources

Source: Overhead transparency used by Hjh. Soraya Dato Paduka Hamid, Head of the Environment Unit, in her address to the Seminar on Introduction to ISO 14000, 5 June 1996, Bandar Seri Begawan.

Problems of 'haze', or smoke resulting from forest fires in Brunei and the rest of Borneo were noticeable but slight in 1996. They became much more serious from July 1997 onwards, and were extreme at the time of writing this chapter in April 1998. So environmentally catastrophic were these fires that it seems proper to mention them as part of the overall historical context in which this research took place. There is no doubt at all that the overwhelming majority of fires were started deliberately. Burning is the traditional method of land clearance for small farmers throughout Borneo, but has more recently been employed on a much greater scale by (often politically well-connected) commercial interests bent on development of previously forested areas as palm oil plantations or, in central Kalimantan, rice fields (see, for example, Aglionby, 1998; Becker, 1998; Nagasaka, 1998; Tedjasukmana, 1998. Also see Fergal Keane's excellent report from East Kalimantan for BBC World, April, 1998).

Contingency plans

The typical initial research design for an interpretive study has been described as, "a broad outline of contingency plans open to change throughout the study" (Cantrell,

1993, p.88). This makes perfect sense from the point of view of an interpretive researcher, and it was certainly true in this research that plans and methods were developed over time. However, the design of this research could not be entirely provisional (see also Chapter 2). The social setting in which the research was embedded was governed by at least two pre-existing plans. These were the published College programme, and the published scheme of work of the Management of Business Department **[8]**. Adherence to these was essential in order to:

- time particular interventions appropriately
- give appropriate notice of particular interventions
- maintain the support of students, teachers and administrators
- achieve research aims two and three. This research seeks to promote the introduction of environmental education into management education in actual, rather than ideal, situations.

Therefore, an important characteristic of the context of this research was the need to announce major interventions in advance, and to keep strictly to the timetable so created. The main interventions of Case Study One were announced on 7 February 1996. Of course, what each intervention was to include had only been broadly decided at that stage, and was able to continue to evolve in the mind of this researcher, as were the methods of data analysis to be used. A summary of Case Study One research interventions is given in Table 1.

The staff questionnaire

Posch (1991, pp.16-17) notes that important problems for teachers introducing environmental education initiatives into schools tend to include a tendency for such initiatives to be marginalised, misunderstood by colleagues and to be a source of public conflict. A short questionnaire was designed, having as one of its three purposes to obtain some sense of whether a business management education

ACTIVITY	OUTPUT	DATA ANALYSIS
Staff questionnaire.	Completed staff responses detailing staff attitudes to management education, business, the environment and development.	Quantitative.
Student pre-test.	Completed student responses detailing attitudes to the cement works development.	Content analysis.
Futures.	Discussions between students Discussions between staff and students. Discussions between staff.	Field notes. Classes of interest.
	Written responses detailing attitudes to the plastics factory development. Written futures projections.	Loose networks. Classes of Interest. Dilemma analysis.
Perspective document.	Completed student responses.	Quantitative and interpretive.
Input to business seminar.	Student action and reflections.	Field notes. Interpretive.
Staff evaluation instrument.	Completed staff responses.	Loose networks. Classes of interest.

Table 1: Summary of Reseach Interventions in Case Study One

programme which focused on quality and the environment would be seen by the staff as a proper and understandable component of mainstream College activities. The second purpose of the questionnaire was to announce the research to College staff. Thirdly, I hoped that the data gathered could be used by students during the intervention. A copy of the questionnaire, and the short introductory note which accompanied it, will be found as Annex 2.

The questionnaire consisted of twenty statements. Respondents were asked to rank each of these on a scale from 1 to 5 according to whether they strongly agreed (1), agreed, had no opinion, disagreed or strongly disagreed (5). Questionnaires were issued on 10 February 1996 by insertion in the pigeon holes of all teaching and administrative staff. The issue of the likely acceptability within the College of the environmental education intervention proposed was addressed by items number:

- 2: Management teachers should avoid discussion of controversial business issues.
- 7: Non-traditional subjects like Management should not be taught in sixth form colleges.
- 9: To achieve quality products should be a central concern of modern business.
- 20: An important aspect of production quality is avoidance of waste or environmental damage.

These items were 'buried' among sixteen others. These sixteen were devised partly for this purpose of 'burying', and partly in the hope that they might suggest interesting leads to be pursued either by students or by myself.

In all 90 questionnaires were distributed. 52 (57.7%) were completed and returned. 45 respondents either disagreed or strongly disagreed with item 2. This is 86.5% of those responding and 50% of the total. One respondent qualified his or her agreement with the statement with the annotation, "depends if against laws or

religion of the land". 43 respondents disagreed or strongly disagreed with statement 7, This is 82.7% of those responding and 47.7% of the total. One respondent left the item blank, affixing the annotation, "management who's (Asian? British?)". 42 respondents agreed or strongly agreed with item 9. This is 80.7% of those responding or 46.6% of the total. One respondent who agreed with the item added, "yes quality but not at the expense to environment, mankind, resource etc". Finally, 45 respondents agreed or strongly agreed with item 20. Again, this is 86.5% of those responding or 50% of the total. One respondent who agreed with this item added this comment (as shown) beneath the word 'is': "currently, depends where you are. both are costs so 'should' this be important - Yes".

It was never imagined that these numbers had statistical significance of any kind, but they did seem to be qualitatively significant. Looking at them I was encouraged to suppose that, at the very least, a sizeable minority of College staff found the idea of the intervention proper and unremarkable. It seemed unlikely therefore that the research would encounter widespread hostility from other teachers or administrative staff, at least for the time being. Further, the goal of announcing that research was in progress was achieved. One member of staff, the (expatriate) Head of Careers, took me on one side and suggested that I should have kept my research interest secret. Many other comments were received from staff. These seemed to fall into three broad categories:

- several staff members told me that they were considering, or had at one time considered, doing a Ph.D., or asked questions about the mechanics of obtaining a doctorate, for example, "are you doing a one year one?". The preamble to the questionnaire did not actually say that I was attempting a doctorate, but this appeared to be widely known.
- several staff members offered criticism of the design of the questionnaire, or offered advice as to how it might be improved. For example, one written comment

was, "leaves a lot to interpretation of terminology in questions as usual in q'aires".

- several staff members offered information about environmental issues, for example I received a note to the effect, "Did you know that recycling paper that has already been printed on is potentially more environmentally damaging than putting it directly into landfill or burning it?".

Some of the data yielded by this questionnaire were used with students, as planned, in later stages of the Case Study (see Annex 3).

The student 'pre-test'

The designation 'pre-test' chosen for this research instrument (Annex 4) may be misleading. It is intended to have none of the experimental or quasi-experimental (Cohen and Mannion, 1994, pp.164-169) connotations which are often associated with the term 'pre-test' in the education research literature. Cohen and Mannion (1994, pp. 170-172) summarise seven threats to the internal validity of experimental pre-test/post-test research designs, and a further six threats to their external validity, any of which might reasonably be thought to invalidate experimental or quantitative claims for this 'pre-test'. Clearly, some explanation of this misnomer is required.

The instrument was called a 'pre-test' in its research context because this was a name with which the teachers who implemented it in their classrooms were comfortable. It was presented to them as a student task which would:

- introduce students to some of the concerns which would be important in forthcoming work on quality
- assist this researcher in preparing that work by providing information about how the students initially responded to those concerns.

Responses from teachers were more accepting of the notion that this was a pre-test than to the possible alternative terminology, 'introductory exercise'. I speculate that the teachers were more attracted by a sense of actively participating in an ongoing, dynamic innovation than by the idea of simply implementing a programme that was already fixed in form, as 'introductory exercise' would more seem to suggest. On being handed his copies of the pre-test one teacher (AL) commented, with some appearance of enthusiasm, "so we give them this, see what they know and take it from there?". As the forthcoming programme was not finally fixed in form or content at this stage, this was a reasonably appropriate view of the situation.

In any case, 'pre-test' it became for the teachers. However, the teachers also unanimously agreed to avoid referring to it as any sort of 'test' with students. Among the students of Maktab Duli this word has powerfully associations with evaluation, rankings and official scores, which were felt to be inappropriate, at least for the time being.

The design of the pre-test made opportunistic use of an approach to the Management of Business Department by representatives of Butra Djajanti Cement, a recently locally established subsidiary of an Indonesian multi-national corporation. Butra Djajanti had recently commenced operation at a designated industrial area at an environmentally sensitive location near the point at which Brunei Bay meets the South China Sea [9], were advanced in their pursuit of the international standards series for quality management system, ISO 9000, and were actively looking into adoption of the related ISO 14000 standards series for environmental management. A representative of the company had visited the College, spoken with staff, and offered to make materials and information available.

Young people in Brunei are affected both by extremely rapid change and by determined attempts, often led by religious figures, to preserve traditional ways of life. Both change and tradition are officially championed. HM Sultan is Head of the

secular State and also Head of the State Religion. So it was that, in the course of any unremarkable, typical day, students taking part in this research were likely to have encountered and responded to, for example:

- parents who may have had no formal or non-religious education, who were perhaps monolingual in Malay, or bilingual in a Chinese dialect and Malay, and who were perhaps devout Muslims, Buddhists or Christians
- religious teachers, especially *ustaz*, or teachers of Islamic religious doctrine and law
- expatriate teachers from the West, or the Indian subcontinent
- 24-hour satellite television, especially Star - TV, which has three movie channels and the pop-video channels MTV and Channel V **[10]**
- Capital Radio, which is relayed live from London.

In view of these multiple and incongruous influences, the pre-test was constructed as a simple exercise which encouraged students to reflect on real, environmentally-significant change, in a familiar setting, from the perspectives of some of the different social solidarities (Thompson, 1997, p.142) which they might themselves have either at the time of the intervention, or in the future, with respect to business development in Brunei. These possible perspectives were those of:

- a private-sector firm
- the Brunei Government
- a customer
- a resident of a particular *kampong* (village), Kampong Masjid Lama
- a citizen or permanent resident living elsewhere in the country.

Students' reflections were encouraged by information about Butra Djajanti Cement, including the firm's claimed commitment to 'environmental awareness and protection'. Students were asked to say why they thought such awareness and

protection might be seen as important by each of the interest groups listed above. All teaching groups completed this task on 12 February 1996. 152 responses were received, there being 15 absences on that day. Teachers were asked simply to issue and collect the exercise without further comment at this stage.

In all, 54 reasons were suggested by students for the importance of environmental awareness and protection. These are summarised in Table 2. Responses were only included together under a single heading where the same form of words was used. Hence, for example, concerns about 'water quality' were not included with concerns about 'quality of drinking water', but recorded as separate reasons. Two students stated that environmental awareness and protection were not important to citizens and residents of Brunei.

The most common reasons students gave for the Butra Djajanti company to show concern for environmental awareness and protection were: the need for legal compliance (24), the environmental concerns of company managers (37), the business importance of achieving overall production quality (45), maintenance of the health of employees (40), maintenance of the company's good image (63), and achievement of competitive advantage (40). However, not one of these was mentioned by as many as half the students. Further, the need to conserve the environment (expressed as generally as that), which was a relatively frequently given reason why all the other interest groups mentioned in the pre-test might think these matters important, was not mentioned by a single student with respect to the company. As noted, the environmental concerns of managers were so mentioned by 37 students. Also, the social responsibility of managers was cited by three. It may have been significant that, as management students, these young people were all familiar with the

Table 2 **Results of the 'pre-test': numbers of students (n=152) identifying particular social groups with particular reasons for thinking environmental awareness and protection important**

	environmental awareness and protection seen as important to:				
environmental awareness and protection important because of:	private sector firm	Brunei government	a customer	*Kampong Masiid Lama* residents	other Brunei residents
remediation costs of environmental damage	4	7	1	0	0
safety assurance	5	0	0	0	0
legal compliance	24	0	5	0	0
government policy	0	3	0	0	0
need to maintain international standing	0	9	0	0	1
personal environmental concerns of managers	37	0	0	0	0
environmental concerns of customers	8	0	47	0	0
environmental concerns of company employees	4	0	0	0	0
to increase worker motivation	2	0	0	0	0
business goal of social responsibility	3	0	0	0	0
National Development Plan	0	1	0	0	0
need to achieve overall quality	45	6	56	1	15
desire by business to win awards	1	0	0	0	0
need to maintain employee health	40	5	0	0	0
need to maintain health of local people	11	45	16	60	43
need to ensure customer safety	0	0	30	0	8
water quality concerns	0	0	0	27	6
concerns over acid rain	1	2	0	3	3
need to avoid drinking water contamination	0	1	0	0	0

	private sector firm	Brunei government	a customer	*Kampong Masjid Lama* residents	other Brunei residents
environmental awareness and protection important because of:					
needs of fishermen	0	1	0	3	3
need to protect beaches	0	0	0	0	2
consumers' desire to buy from firms with a good environmental reputation	0	0	10	0	0
contribution to competitive advantage	40	0	2	0	0
contribution to market-place survival	0	0	1	0	0
associated increases in company income (for the national benefit)	0	0	0	0	2
local public relations	1	0	0	0	0
need to attract investors	1	5	0	1	0
need to attract tourists	0	9	0	1	2
need to keep Brunei beautiful	0	0	0	2	11
national pride/pride in the *kampong*	0	4	0	2	3
need to promote national 'well-being'	0	4	0	0	1
resource conservation	0	7	0	4	0
general environmental conservation needs	0	94	47	58	62
need to preserve traditional lifestyles	0	0	0	4	0
adverse effects of pollution/development on local property prices	0	0	0	2	0
increased inconvenience for car users resulting from pollution/development	0	0	0	2	0
need to avoid adverse effects on the elderly	0	0	0	1	0

	private sector firm	Brunei government	a customer	*Kampong Masjid Lama* residents	other Brunei residents
environmental awareness and protection important to:					
avoid threat to social harmony	0	0	0	0	2
avoid increased stress	0	0	0	0	1
deter migration	0	0	0	0	1
protect ozone layer	1	1	0	1	0
improve national economic performance	0	6	0	0	0
prevent air pollution	0	11	0	59	18
prevent noise pollution	0	0	0	8	0
improve employment prospects	0	0	0	2	1
regulate foreign business	0	1	0	0	0
avert global warming	0	1	0	0	0
avoid dangers from tests at cement works	0	0	0	1	0
improve future prospects	0	0	0	0	3
ease recruitment of foreign migrant labour	0	0	0	0	1
avoid soil erosion	0	0	0	0	1
avoid adverse effects on agriculture	0	0	0	0	3
avoid abnormal births	0	0	0	0	1
avoid climate change	0	0	0	0	1

separation between ownership and control in corporate bodies. The concerns of managers are not necessarily the same thing as the concerns of company shareholders, particularly if a firm has local managers but foreign owners, and students would have known this.

It would seem, therefore, that environmental awareness and protection were not to any significant extent perceived by students as a primary corporate goal. They *were* perceived by some, however, as matters which might be of instrumental importance in achieving other corporate goals, such as legal compliance or market advantage. This situation provoked some interesting reflections on the literature.

Writing from the perspective of a socially-critical environmental education Webster (1996) has deplored business education in the following terms:

> Business education is a subset of economics; it is economics with the values taken as given and the focus on how a business operates and survives. It is an example of the reductionist, utilitarian, modernist ethos carried to its limits. 'Never mind the values, how do I work this!?'
> (Webster, 1996, p.76)

In this research, however, we see experienced business educators willingly introducing a curriculum innovation about the achievement of quality within a well-established and traditional business syllabus. The notion of quality is not obviously devoid of value content. Further, the ISO 14000 standards series (BSI, 1994), about which these teachers had voluntarily committed themselves to teach by this stage, incorporates 27 "guiding principles" from the Rio Declaration (UNCED, 1992) and a further 16 from the International Chamber of Commerce Business Charter for Sustainable Development (ICC, 1991), which clearly do have appreciable values-

content. Finally, statements such as the following are not uncommon in the management literature on quality:

> Sustainable quality management - a holistic, value-centred approach that recognises the need to maintain human and natural systems ...may be the key not only to achieving sustainable development but also to unleashing the full potential of the intellectual and organisational revolution that TQM and other innovations are creating. (James, 1996, p.47)

However, while the idea that business education is intrinsically disposed to avoid questions of values seems, at best, extremely questionable **[11]**, first impressions obtained through the pre-test by this research were that individual students either:

- did not think that a firm such as Butra Djajanti should be guided by values concerns, or
- did not believe that a suggestion that Butra Djajanti should be guided by such concerns would be regarded as an acceptable response on their part.

Both possibilities were interesting. If the former were the case then business education which focused on quality might have potential to emerge as the champion of values over expediency rather than, as Webster (1996, p.76) clearly supposes, the reverse. If the latter was true then the situation was, to a degree, familiar. For example, Pepper (1989) has argued that environmental education:

> is about drawing out what is likely already to be there - not inculcation or indoctrination. If pupils are enabled to analyse the values behind their present socially-learned behaviour patterns they will conclude for themselves that different behaviour requires different values - and these will probably

be values that they believe in at heart, because at heart most kids are decent and nice.
(Pepper, 1989, pp.86-87)

However, even were it possible in a Western context to establish categorically what it means to be 'decent and nice', this seemed unlikely to be straightforward in a cross-cultural, multi-cultural learning environment such as that of Maktab Duli. While students may indeed have said things they did not believe 'at heart', there seemed little reason to suppose that they all believed the same things 'at heart', or that what they believed 'at heart' was the same all the time. It was felt that the attribution to students of a true self, or 'heart', from which they departed only because misled, was not particularly useful as a conceptual device for this research. Rather, it was accepted that students might think a statement appropriate in one context (say, a management education pre-test within a Western curriculum) but inappropriate in another (say, a discussion with an *ustaz*). As already noted, Cultural Theory was chosen as a conceptual framework by which such contexts might be classified. A student might (rightly or wrongly) suppose management education to require individualistic organisational loyalties (Figure 1). Islamic religious education clearly demands hierarchical organisational loyalties. If therefore, as seemed to be the case, the perceptions of students [12] concerning the appropriate role of values in business were different from the perceptions of their management teachers, this was hypothesised to be likely to be a consequence either of the different organisational loyalties each of those two groups had, or of the different organisational loyalties they each believed to be appropriate within a business organisation.

94 students noted in their responses that the Government had a general responsibility to protect the environment. 45 indicated that the Government should have a concern with the health of local people. The only other reason for Government concern to reach double figures was air pollution (11). Mention of Government responsibility for specific issues was rare. For example, the need to

protect fisheries was mentioned in this context by only one student. Only one student showed awareness that there were environmental aspects to the established national planning process.

Responses concerning customers' concern for environmental awareness and protection showed a similar lack of specificity. 47 students referred in general terms to a need for environmental conservation. 37 suggested that customers would have environmental concerns, without offering any detail as to what these might be. 30 mentioned the need to ensure customer safety and 16 said that customers would have an interest in the maintenance of the health of local people. Only 10 students expressed the opinion that customers would prefer to buy from a company with a good environmental reputation. There was very little evidence of awareness of, or enthusiasm for, green consumer movements of the sort which have attracted attention in the management literature (Cowell, 1993), seriously impacted upon some major companies **[13]**, been roundly denounced by some environmental educators (e.g. Huckle, 1993, p.52, p.56) and promoted by others (e.g. Council for Environmental Education/WWF, 1995, p.7, p.73).

The greatest likely area of concern for residents of Kampong Masjid Lama, which is adjacent to Butra Djajanti's premises, was envisaged by students as being public health. 60 cited the need for local people to maintain their health as a reason for them to be concerned with environmental awareness and protection. 59 students expressed worries about air pollution **[14]** and there were 58 general observations about the need for environmental conservation. The need to maintain water quality was mentioned by 27 students. Interestingly in the light of what was to come later in the research, only 4 students mentioned the desirability of maintaining traditional lifestyles in response to this item. When the query was extended to cover citizens and residents of the country as a whole, a similar pattern of health-oriented (43 students) or vague environmental conservation (62) responses emerged. 15 students

thought that those in the more widely defined citizens and residents category would also have a concern to ensure overall production quality.

The pre-test introduced both local environmental issues associated with quality, and the notion that different groups may have different perspectives on such issues, into these management classrooms. It helped to establish their legitimacy and ordinariness in that setting among students and teachers. It revealed no very strong or widespread concern or awareness among students about the environmental affects of development. Whether this was because, for one reason or another, students chose not to reveal their concerns, or because no such concerns existed, remained as an issue for the continuing research.

ENDNOTES TO CHAPTER 4

1. Apart from a small population of resident Indians these are the only ethnic groups of any significance from an educational point of view. The remaining population is expatriate. Of these, the greatest number are labourers from Thailand, Bangladesh and the Philippines (Thambipillai, 1992, p.vi). These migrant workers have no right to be accompanied by children. Expatriates from Europe, North America, Australia and New Zealand typically send their children to the Brunei International School which follows the UK National curriculum, or to boarding schools outside Brunei.
2. In 1990, for example, a special commemorative stamp was issued in honour of 'Teacher's Day' or *Hari Guru*. Valued at 0.90 cents, and therefore exactly appropriate for ordinary airmail letters to Europe, it depicted an all-male, all-Malay upper-secondary classroom in which everyone, including the teacher, was wearing the *songkok* or Malay religious head-dress. In fact, approximately twice as many girls as boys succeed in secondary education by achieving the grades needed to continue in education past age sixteen. These grades are quite low by

UK standards, and almost everyone who obtains the grades does so continue. Many of those who succeed are Chinese. At upper secondary level most teachers are expatriates or Bruneian women.

3. This may not be true of Chinese or indigenous individuals who have converted to Islam. However, conversion attracts a financial reward, and there is no doubt that some convert simply in order to obtain it.
4. 'Cikgu' (pronounced chig-goo) is a title often taken by Malay teachers in Brunei. It's sense is perhaps closest to the English word 'educator'. The Malay appellation 'bin' means 'son of', and separates a person's given name(s) from their father's name(s). 'Dyg.', and also 'Dk.' are standard abbreviations of honorific titles applied to females. The full versions are 'Dayang' and 'Dayanku' respectively. 'Hj.' and 'Hjh.' are standard abbreviations of 'Haji' (for males) and 'Hajjah' (for females), which are incorporated into the names of individuals who have performed the pilgrimage to Mecca, or haj. There is a rich seam of other titles which, when appropriate, become part of a person's name. These include, in ascending order of importance, Pengiran (Pg.), Dato, Dato Paduka, Pehin, Pengiran Anak, Yang Amat Mulia, and Yang Teramat Mulia. The last three of these indicate membership of the Royal Family.
5. This is not, however, to forego the right to claim progress *from the starting point of this research* in achieving environmental education goals as defined from either of these theoretical perspectives.
6. There are quite deep seated cultural factors at work here. Administration has been considered the proper role of successful Malays since, at least, the time of the First White Rajah, James Brooke, who arrived in North Borneo in 1839 (Payne, 1960). Local research among trainee teachers at the primary level has found that almost 90% of Bruneian trainee teachers cite 'status' as an important reason for entering the profession. The lowest scoring reason in this research was 'nature of the job' (Chui Seng Yong, 1994). Chui Seng Yong (1994, p.123) also found that, "too few academically talented students are attracted to teaching, and...too many academically weak students are allowed into teaching".

7. There are two curiosities here from the point of view of a UK-based educator. First, the Cambridge Examination Board issues result slips to Bruneian O-level candidates based upon the numerical grading system which was abolished in the UK many years ago. However, the designation given to different grades is not the same as was the case in UK. Grades 1-6 attract the designation 'credit'. Grades 7 and 8 are described as 'pass', and grade 9, only, is termed a 'fail'. Admission to Maktab Duli, an English medium College, was and is still possible with a Grade 9 in English, though Grade 8 is clearly set as the target grade for applicants in Ministry of Education documents. A common and recurring complaint of teachers in all subjects is that students often lack the basic minimum language competencies. Ministry officials, on the other hand, show little patience with this claim. Second, it is common in Brunei for students to repeat levels of study at which they have not initially been successful, perhaps many times. For example, during the period of this research I had a chance encounter with a Bruneian former colleague, who had been posted as Principal to a new secondary (nominally 11-16) school in Kampong Lumapas, a remote part of Brunei. He told me that his school had opened with only two classes of First-year and two of Second-year pupils. Of these pupils, three were aged over twenty years.
8. These fixed programmes depended upon others, particularly the overseas examinations calendar of the Cambridge Examinations Board and the Islamic Calendar. It should be noted that the Islamic lunar year is shorter than the Christian solar year, with the result that the dates of terms and holidays at Maktab Duli change from one (solar) year to the next.
9. The Temburong district of Brunei is divided from the rest of the country by the Limbang District of Sarawak, East Malaysia. Travelling from west to east, Brunei Bay is fed by the Brunei, Limbang, and Temburong rivers. Beyond Temburong, forming the opposite side of the mouth of Brunei Bay from Brunei itself is Sabah, the second state of East Malaysia. In spite of long human occupation the waters of Brunei Bay are rich in marine life. The many islands in the Bay are home to a wide variety of species, notably proboscis monkeys and giant fruit bats. At its

mouth the Bay is 15 kilometres across, and often very shallow. Tidal variations of over two meters therefore mean that the area of dry land exposed at any particular time varies considerably, a point of significance for most commercial uses of the area.

10. This raises the question of differential treatment of men and women, in Brunei in general and Maktab Duli in particular, and of attitudes to sexual behaviour. Star TV is available free to anyone who has bought a B$300 (GBP 110) set-top decoder. The pop video channels are shown uncensored in real time. They depict behaviour and dress on the part of women which, if emulated by a Brunei Malay girl, would result in social ostracism and parental retribution. To illustrate, in 1991 the College authorities at Maktab Duli discovered that a small number of female hostel residents had had unsupervised meetings with male hostel residents. There was never any suggestion that physical contact had taken place. All girl students were assembled for an hour's address by the (female) Principal, during which she described them as 'dirty' and 'prostitutes'. No action was taken against the boys. College uniform for all girls consists of *baju kurong* and *tudong*. The former is in two pieces and covers the body from neck to ankles. The latter covers the head, neck and shoulders, and is pinned tightly under the chin. Outside College hours jeans are becoming more common for girls, usually with a long tee-shirt worn outside, but many stick to full Malay dress. The *tudong* is often retained, even when jeans are worn. Off the College premises Chinese girls frequently wear miniskirts. Malay women wear full *baju kurong* and *tudong*, usually in bright colours, for both work and social engagements. Men and boys wear shirt and long trousers, except for religious and traditional functions when they wear *baju melayu*, a lightweight, colourful suit and wrap. Malay men are allowed up to four wives. Female circumcision certainly still occurs and is, in fact, celebrated by a display in the Brunei Museum. However, I am not able to say how widespread this practice is, or to what extent it may be performed in merely symbolic fashion.

11. Nor is it possible to let pass the statement that business education is a subset of economics. It is further a subset of, at least, sociology, psychology and education. It has also been identified as having a role to play in the empowerment of women in developing countries (Opondo, 1980), a point which may have significance for this research.
12. Or of egalitarian environmental educators, for that matter.
13. For example, following the Brent Spar incident and subsequent consumer boycott, as well as high-profile, environment-related difficulties in Nigeria, Shell has changed its approach for new explorations in the Amazon (Jones, 1997) and claims to have, "a new way of doing business" (Jones, 1997, p.90) which includes a commitment to consultation with all stakeholders, transparency of operations, and the promotion of sustainable development.
14. They were vindicated in this. Butra Djajanti's subsequent operations produced a storm of local protest about dust emissions from the plant.

CHAPTER 5

CASE STUDY ONE: "PROGRESSIVE PLASTICS"

Quality week

Case Study One continued with a week-long unit of work based upon the adaptive concept 'quality'. This work was undertaken by all nine groups of students with their normal teachers during timetabled contact time in the week of 11 - 16th March 1996, and also as a full weekly allocation of homework. This period of time became known as 'quality week'. All students were provided with a resource booklet consisting of nine pages (Annex 3). This booklet was designed by this researcher, but circulated to all participating teachers in advance in order to enable them to familiarise themselves with its contents, confirm their participation, prepare any additional resources they wished to use, and develop an appropriate classroom strategy. It should be noted that quality week was far from being the only part of the course in which students studied quality issues. These were integral to other areas of study, such as operations management, marketing, the business environment and budgeting.

The quality week booklet indicated that students should discuss their work within groups of two, three or four members. In the event all the teachers opted to allow students themselves to determine the membership of these groups. One consequence of this was a tendency for single-sex groups to form **[1]**. The booklet also made clear to students that the work was time-constrained, occupied a well-defined place in the management curriculum they were following, and would form the basis for a departmental assessment of their academic progress within the normal evaluation procedures of the College.

It was announced to students that there would be an opportunity for some of them to present work at a function arranged by the Ministry of Development.

The quality week resource booklet

The booklet required student groups to complete four activities relating to a (fictional) proposal by a local/foreign joint venture company called Progressive Plastics to establish an industrial plant for the manufacture of plastic bags. This facility was to be located at the same (non-fictional) industrial estate occupied by Butra Djajanti, the cement manufacturering firm which had been introduced to students during the pre-test. Though fictional, such a proposal was entirely credible for that location, given that plastic bags are manufactured from ethane gas, which is produced as a waste product by oil and gas refineries and is therefore potentially readily available as a raw material in Brunei. Further, industrial chemical industries were favoured with 'pioneer industry' status by the Brunei Economic Development Board (Brunei Yearbook, 1997, pp.118-119) and so subject to tax advantages.

Also as with the pre-test, students were asked to consider the proposed development from a variety of perspectives. However the four tasks they were asked to complete differed from those of the pre-test in that they involved much more detailed treatment of issues, directed students to adopt a series of quite closely-defined roles rather than more general social perspectives, and focused exclusively on matters related to quality. The roles students were required to engage with were:

- a local manager hired by Progressive Plastics to report on the local policy situation with respect to quality and environment
- a Ministry of Development officer charged with monitoring and regulation of the proposed plant

- a citizen responding to a debate in the local paper about quality and plastics [2] [3].
- a scenario writer for the multi-national joint venture partner of Progressive Plastics [4]

The booklet included selected information designed to:

- establish the nature of the links between the management concept of quality, quality standards and environmental management systems
- make clear the extent of Government and private sector involvement and interest in Brunei and the wider South East Asian region in quality, quality standards and environmental management systems
- establish a link between official policy on sustainable development and the environmental performance of business
- promote understanding of the local context of sustainable development and environmental quality issues
- engender debate and opinion-formation by presenting views collected by means of the staff questionnaire, while encouraging students to value and deploy their own local knowledge
- provide environmental and production information relating to the manufacture of plastic bags
- encourage consideration of the possible relationships between development, business profitability and environmental quality
- establish the relevance of all the above to the proposed development by Progressive Plastics

In addition to the booklet, a number of documents were made available in all classrooms, including the Sixth National Development Plan (Brunei Government, 1993), the draft specification for ISO 14000 (BSI, 1994), copies of the Brunei/ISO specifications for quality standards (Brunei Ministry of Development, 1994), and

the educational materials associated with a Waste Reduction Campaign (Brunei Ministry of Development, 1995) held the previous year. Finally, a number of teachers found topical materials relating to quality management issues in the local context or to ISO 14000. These they copied and made available to all participating staff in line with normal departmental practice.

Staff and students during quality week

The timetable of Maktab Duli was organised into five blocks. Two Management classes for this cohort were timetabled in each of Blocks 1, 2, 4, and 5. Only one class was timetabled in Block 3. Students had been allocated randomly to classes at the commencement of the course by the database officer, and to individual teachers by myself as Head of Department. The College day consisted of four one-hour classes during the mornings (7.30 - 12.05) and one two-hour class during the afternoon (nominally 2.30 - 4.30, though in practice often brought forward). The first session of the school day was occupied by Block 1 on Mondays, Block 2 on Tuesdays and so on, so that Block 5 classes were taught first on Saturdays [5]. This meant that during a single week every class was taught in every timetable slot, and received a total of six hours of contact time. All classes were allocated to a single teaching room for all their lessons. The homework allocation for a full week was nominally five to eight hours.

Systematic observation of other teachers' delivery of the quality booklet was not possible, and so was not a planned data source. It *would* have been possible for this researcher to observe classes taught by other staff, but this would have been a variation from the normal context of teacher-observation in both the Department and the College [6], and so would have run contrary to the intention to introduce the adaptive concept-based intervention into a management education setting which was as natural as possible (Cohen and Mannion, 1994, p.108). However, observation of

teachers before and after teaching was possible. At these times, discussions between teachers about technical aspects of the material were common. For example, three staff (BH, RS, SE) wanted more detailed information on the specific processes of accreditation to ISO 14000, and the ways in which these might be applied in Brunei. Interestingly perhaps, they did not immediately approach me for this intelligence but became involved in discussions first with IF [7], who had a background in industrial health and safety, and subsequently with AL, who had established for himself a role within the Department as archivist of local business information. In short, they appeared to do what they would normally do when teaching shared content, that is, discuss the work with any colleague who happened to be available in the staff office at the time and who might have something in particular to contribute. Similarly, the procedural issue of whether to specify a timetable to students for the completion of specific tasks during quality week also generated discussion, but no overall consensus was reached and practice varied from one classroom to another.

Casual observation of classrooms, on the other hand, was made convenient by the physical configuration of the College buildings. The rooms used for Management teaching lay on a natural route from the Management staff office to the central administration block. This meant that it was quite normal for the Head of Department, myself, to pass by teaching rooms several times in an hour while lessons were in progress, because of the various demands of departmental administration, meetings, reprographics, requisitions, telephone and fax, not to mention the availability of coffee in the staff lounge. Observations made in the course of such journeys were necessarily fleeting and of limited value. Nevertheless they provided an opportunity to match the appearance of what was happening in lessons with teachers' own accounts, and were consistent with the aim of avoiding, as far as possible, disturbance to the ordinary activity of the case (Stake, 1995, p.12).

It was clear that different teachers took different approaches to the groupwork specified by the resource booklet. For example, AL made a point of prefacing each

lesson with a brief (5-minute or so) presentation of his own on some aspect of the work. This he referred to as, "getting things moving", and, "getting everyone focused". He moved between groups during lessons offering suggestions, advice and praise. On no occasion did I observe him not to be engaged with students. By contrast RS, having (by his own account) organised the physical distribution of students around the room to his satisfaction, made sure that the requirements of the various tasks had been understood, and made clear his availability in principle to deal with queries, did work of his own at the front desk. It was engaged in this activity that my casual observations most frequently discovered him. SE also preferred to allow students to, as he said, "get on with it" [8]. However, I most frequently observed him standing or patrolling the room as though in anticipation of questions.

It seems likely that teachers' different styles had different effects upon the disposition of students to seek advice. As will become clear, it was my own experience with those students I myself taught that making myself very obviously available as a source of help and information seemed sometimes to prompt enquiries. Against this, it should be noted that all students were being taught by their regular teachers, and were therefore likely to be accustomed to the particular methods of working they had. It may also have been the case that factors within the physical environment influenced each teacher's choice of approach. The room used by RS had the weakest air-conditioning. Particularly during the long afternoon sessions this would have made the minimisation of physical movement attractive [9].

I was, of course, able closely to observe the eighteen students in my own class. Like all participating students, these young people had some previous experience of working in groups as part of their studies in Management. In line with normal departmental practice, certain other aspects of the syllabus, for example decision-making and critical path analysis, had previously been taught to all classes in this cohort over a pre-specified time-period, with common resources and using a groupwork approach.

In my own class students were not directed in forming their groups beyond the instructions which appeared in the booklet. However, and contrary to the letter of those instructions, I decided to allow one group of five, which contained all the male students in the class. Had this group been split one of the resulting sub-groups would have necessarily been extremely weak, particularly with regard to command of English. To have forced the male students to disperse among the other groups would have introduced a dynamic which, as a non-Muslim outsider, I was not sure I would always understand.

These were some characteristics of the groups which formed in my own class during Case Study One:

Group 1; Three Malay girls (Roslina, JoJo and Mu'izzah), from well-to-do Bruneian families. Unusually forthright and lively for Bruneian young women. All intelligent, though JoJo's poor English meant that she was never likely to succeed at A-level. She was aware of this. Mu'izzah's ambition was to study Business at Sheffield University. She was the niece of the Head of the Environment Unit at the Ministry of Development, and so had unusually good access to extra information about environmental quality issues in Brunei.

Group 2; Four Malay girls (Bibyzuraini, Marinah, Zulinah and Norkhalifah). All very quiet and shy. Zulinah had the best command of English, and came from a slightly more affluent background than the other three. The parents of Bibyzuraini and Norkhalifah were both relatively poor Bruneians who were very unlikely to have received any formal education and spoke no English at all. Perhaps partly for this reason both girls were much more comfortable in Malay. Marinah was hard to place, as she was frequently absent and I never met her parents. Her English was also extremely weak. The most striking aspect of this group was the great seriousness with which Bibyzurani and Norkhalifah, weak students from poor (and, I am quite

sure, religiously very devout) families approached this work. Their application and determination were very great.

Group 3: Two girls, one (Yick Wei) overseas Chinese and one (Bhavaani) Indian. Both very able. Yick Wei was a non-citizen permanent resident (purple i/c). Bhavaani was a green i/c, her parents being contract employees in Brunei. The parents of both these students were paying substantial fees in order to have them educated at Maktab Duli. For obvious reasons these girls were more outward looking than the rest, both in their treatment of the quality week materials and, more broadly, in their attitudes to their own education.

Group 4: Four girls, of which three (Malini, Marianah, and Mahnun) were Malay Bruneians and one (Hui Ling) was a Chinese Bruneian citizen. All rather quiet, but well motivated, able and adequately proficient in English. All from families in which the parents showed evidence of some formal education.

Group 5: Five boys, of which four (Fadzillah, Zulikeram, Saifullizan and Noorshah) were Brunei Malay and one (Teck King) was a Chinese Brunei citizen. Zulikeram's family appeared to be wealthy. He was cheerfully lazy. Teck King's family were in business. He was sharp, street-wise, and clearly regarded as a major asset by his fellow group members. The other three were weak in all aspects of their work, and may have experienced a degree of discomfort to the extent that they (wrongly) perceived a possibility that their efforts would be compared publicly with those of (particularly) Yick Wei and Bhavaani. Had this been allowed to happen it would certainly have created a degree of cultural embarrassment. This may go some way to explain why this group, as far as possible, avoided displaying any work in class throughout the week other than that immediately in hand, only to produce everything that was required of them from a place of concealment at the last moment.

It is perhaps worth emphasising that this very heterogeneous mix was typical of the entire cohort, and of cohorts involved in further stages of this research.

Quality week data collected from students and staff: introductory comments and description

Quality week produced 1082 pages of written data from students, which were read by this researcher, graded and returned. Grading of work was considered essential in order both to maintain the naturalness of the research setting and to establish the intervention as legitimate according to the criteria typically applied in management courses. High grades were awarded to students who demonstrated a command of management issues relating to environmental quality consistent with the content and skills requirements of the examining Board, that is, work was graded from the perspective of management education. Work was not graded from the perspective of environmental education. Whether students' work in environmental education should be graded is an open question. Grading is contrary to the perspective of critical theory (Kemmis, 1983, pp.2-3), but would seem perfectly consistent with many of the "learner objectives" advocated from a positivist perspective by Hungerford *et al* (1988, pp. 5-7). However, in this research it was felt, once more, that maintenance of the naturalness of the research setting required that the inclusion of a second set of grades be avoided. Simply, students were not expecting to be graded for environmental education because environmental education was not, nominally, what they were doing.

A principal focus upon the collection from students of *written* data in this research was adopted for two reasons. First, each of the four tasks assigned to students required that they consider future events. Indeed, the fourth task specifically required the preparation of a detailed scenario for Brunei for the year 2020 **[10]**. The potential value of futures studies to assist environmental education, and the

importance of understanding young peoples' conceptualisations of their futures in educational planning for a sustainable future have been established in the literature of environmental education (Hicks and Holden, 1995; Hicks, 1996; Hutchinson, 1997). Further, scenario-building by futurists has been an important strand of those official planning processes in the region which, particularly under the auspices of the South East Asian Ministers of Education Organisation (SEAMEO) **[11]**, have been instrumental in encouraging the establishment of courses in Management and entrepreneurship such as that at Maktab Duli (Habana, 1993; Wilson, 1994). Research in the field of educational planning has found written data most useful in working to envision future possibilities with adults (Weindling, 1997, p.227). There is also research evidence that written data about children's' conceptions of the future are likely to be richer than spoken data. Hicks and Holden (1995) have written:

> Pupils see and read more than they think and talk about the future. There seems to be a dissonance between children's exposure to futures-related issues and their willingness to think or talk about them...Pupils' interests become more alive when they *write* about their hopes and fears for the local area, since this draws on their direct daily experience.
> (Hicks and Holden, 1995, p.188, original emphasis)

To anticipate later chapters (see especially Chapter 12), it might usefully be noted here that this point appeared to be borne out to a significant degree by this research during later Case Studies, when follow-up group interviews were undertaken with samples of participating students.

The second reason for focusing on written data from students concerned the linguistic and cultural setting of this research. Research evidence clearly supports the view that young Bruneians are likely to be embarrassed and inhibited when speaking English. Dunseath (1991) recorded the comments of first-year B.Ed. students at Universiti Brunei Darussalam concerning their feelings about speaking English. A

sample of these comments are included here to illustrate the potential extent of the difficulty. It should be noted that these University students might reasonably be expected to have English language ability equal to or better than that of most Management students at Maktab Duli:

> With a good and fluency in English we will not have the feeling of shamefulness or embarrassment when talking.
>
> I would like to be expert in talking in English so that I would not be shame to talk to other people, especially those who didn't know how to speak Malay.
>
> I am very sad with my academic performance these few months due to my English...Also, I was embarrassed to talk to lecturers concerning my academic problem due to my poor oral communication.
> (Selected from Dunseath, 1991, pp.472-473)

In the course of quality week, written data were collected from students for three primary purposes and two subsidiary purposes. The primary purposes were:

- to evaluate the intervention using the adaptive concept quality in terms of the effectiveness of teaching and learning (research aim 2).
- to contribute to the achievement of research aim 3 by opening an archive of information which might eventually make possible a preliminary evaluation of the usefulness of adaptive concepts as a way of introducing environmental education into management education programmes.
- to make possible the refinement of the process of identification of adaptive concepts within the shared context of environmental education, environmental management and economic development (research aim 1).

These primary purposes concerned either the use of a specific adaptive concept, or the generation of adaptive concepts in general, as means towards the achievement of a degree of educational integration through promotion of discourse between holders of different perspectives. These different perspectives were acknowledged, in the light of cultural theory, to be different legitimate responses to the existence of underlying uncertainty.

The subsidiary purposes of data collection concerned the use of the adaptive concept as a focus for social research. They were:

- to begin to develop a qualitative understanding of the specific context of this research.
- to make progress towards a preliminary evaluation of adaptive concepts as a focus of qualitative research.

The significance of these subsidiary purposes lies in the general hypothesis that as successive adaptive concepts are used to introduce environmental education into a particular management education programme, their effectiveness (in terms of teaching and learning) is likely to increase incrementally if the use of each adaptive concept makes possible refinements in the use of its successors through enhanced understanding of their shared context. Of course, the amount of data required to test this general hypothesis thoroughly would be very large. This research can do no more than make a small, initial contribution.

Additional data were collected from participating staff members in the form of a written Evaluation Report. This form of data collection was preferred because:

- preparation by teachers of a written evaluation of a curriculum innovation within the Department would be normal practice.
- the considered views of these teachers were being sought.

Even so, the Evaluation Reports raised certain methodological problems. In particular, they raised an issue of validity in respect of the Evaluation Report *Preface*. That particular document bore uniquely upon the way in which a small number of individuals supplied particular data in a specific, complex social context over a very short period of time, and upon the my own interpretation of those data.

The conditions under which teachers provided their comments were not entirely natural, because they were all aware of my ulterior motive in satisfying the requirements for a Ph.D. in Education **[12]**. For this reason I introduced the Evaluation Report pro-forma with a Preface (Annex 5) in which I sought to make clear the nature of my interest and its essential consistency with shared goals of the Department. This Preface was, certainly, a document of questionable merit, since it depended for its effectiveness in securing internally valid responses from teachers upon the correctness of a number of inter-related assumptions on my own part about those shared goals. In fact, the nature of the goals of educational organisations, and the extent to which they are likely to be shared or, in fact, exist at all in any unified sense, are extremely problematic (see, for example, Scheerens, 1997). I assumed that teachers would report their genuinely-held views because they would join me in hoping that in this way shared goals would be promoted. In doing so I trusted my own intuitive sense of what those goals might be. It is not impossible, however, that teachers reported false views, either in the pursuit of goals of their own, or to promote goals for the Department which I did not share.

That problems of this kind are intrinsic to qualitative research and, as Ball (1990, p.167) puts it, "Qualitative research cannot be made 'researcher-proof' ", does not make this particular problem disappear. However, a decision to proceed in spite of it was necessitated by lack of realistic alternatives, and mitigated to some extent by the comments of Campbell (1978) and Cronbach (1980):

> Participants...will usually have a better observational position than will anthropologists or other outside observers of a new programme. They usually have experienced the pre-programme conditions from the same viewing point as they have the special programme. Their experience of the programme will have been more relevant, direct and valid, less vicarious.
> (Campbell, 1978, p.202)

> The validity of an interpretation cannot be *established* by a research monograph or detailed manual. The aim for the report is to advance sensible discussion. Why should we wish for more?
> (Cronbach, 1980, p.107)

As with the written quality week data collected from students, the staff evaluation material was collected for both primary and secondary purposes. Data from students were coded first. This was a very substantial task, which took until 22 July to complete. Data from staff were collected and coded subsequently, starting on 27 July. In the meantime, however, two other matters relating to the quality week data required attention or assimilation, and two other data-generating events occurred. The former pair were:

- the initial reading and assessment of students' quality week data by this researcher.
- observational data about my own students' quality week experiences.

The new data-generating events were:

- the 'monthly test' (held in the week beginning 25 March).
- the 'ISO Seminar' (held on 5 June).

These four elements are described and discussed now, before proceeding, in the following chapters, to a discussion of the data coding methodology employed upon the student and staff quality week data, and the course of the research subsequent to the completion of that coding. This is not an ideal arrangement, since in reality a number of research activities were taking place at any one time. Nevertheless, it is hoped in this way to provide the reader with a sense of where this research stood, in relation to the achievement of its aims, prior to the completion of the first stage of detailed coding of written quality week data. In this way also, the account so far provided of *who* and *where* the students involved in quality week were can be linked in this single chapter to a preliminary, impressionistic account of their experiences. Coding qualitative data inevitably implies a gain of orderliness in exchange for a loss of immediacy and comprehensiveness. For example, Mason, (1994, pp.93-96) has described the tendency of information to lose its context as it is organised into categories. While noting Miles and Huberman's (1994, pp. 10-11) warning that data reduction is continuous in any qualitative study because anticipatory data reduction necessarily occurs, this account of this stage of this research is organised in such a way as to precede description of the principal coding procedures employed with an overview of the developing context of data collection in which they were embedded.

First impressions of students' written quality week submissions

The task of assessing students' submissions so that these could be returned was a pressing and time-consuming one. Normal departmental marking procedures, in which the work of any particular class group is assessed by that group's own teacher, were suspended and instead all work was assessed by this researcher. It was felt that the advantages of this approach outweighed the disadvantages. The main advantage was that this researcher obtained immediate access to the data. Had scripts been graded by individual class teachers a delay of 7 - 10 days would have occurred, with the associated possibility that one or more teachers might have withheld items which, for instance, they considered to show their own delivery of

the quality week material in a poor light. A further advantage was the achievement of very tight control over the criteria used in grading, which meant that a considerable degree of comparability could be expected, for each quality week task, across the different class groups. Nevertheless, there were at least three disadvantages of this approach. First, it signalled that quality week was, to this extent at least, an exceptional rather than a normal curriculum innovation within the Department. Secondly, the physical scale of the task meant that some students did not receive feedback upon their work for several weeks. That this was unsatisfactory was pointed out by BH in the following terms:

> Feedback, due to the huge volume, was too slow, (understandably). But it should be noted that the students did appreciate the substantial comments on returned papers.

Thirdly, any advantages derived from mutual understanding which might have developed, and/or be developing between students and their own teachers in relation to writing and marking were lost.

The impression obtained of the data during this formal process of assessment certainly influenced the eventual choice of a precise coding method. Miles and Huberman (1994, p.58) have made the case for creating a provisional list of codes prior to the commencement of field work. No such list was created in this instance for three inter-related reasons. First, as already noted, this researcher was not physically present when much of this data was generated. Silverman (1993) notes that:

> While the rush to categorise is laudable, it should always occur in the context of a solid body of original data. The ideal form for this is a tape-recording or original document.
> (Silverman, 1993, p.39)

This being so, the establishment of a degree of initial familiarity on the part of this researcher with the original documents to be coded seemed entirely desirable. Second, this researcher's interest in examining the written data was to identify categories thought important by the students in confronting a range of culturally significant, culturally-mediated cues relating to business management and the environment. This is not to say that there were no categories that this researcher might have hoped students would think important, but rather that it would have been difficult to judge the intervention a success in terms of its environmental education aims if it had produced no surprises in this respect. This was because the purposes of environmental education, seen from either critical or positivist paradigmatic orientations, crucially involve enabling learners to create something new. Hence, for example, from a positivist perspective, Hungerford, Peyton and Wilke's (1980, p.2) "superordinate goal" of environmental education is to produce individuals:

> who are willing to work...toward achieving and/or maintaining a *dynamic equilibrium* between quality of life and quality of the environment. (Hungerford, Peyton and Wilke, 1980, p.2, emphasis added).

The critical theory view is that students should be engaged in the, "active resolution of environmental questions, issues and problems" (Fien, 1993, p.5). Both views emphasise the importance of empowerment (Hungerford and Volk, 1990; Fien, 1993, pp.73-74) as do approaches to education and training from environmental management specialists (Sharp, 1992, pp. 43-44; Bird, 1996, p.232 **[13]**).

Finally, no provisional list of coding categories was created in advance because, as Miles and Huberman (1994) themselves note:

> Coding is not just something you do to 'get the data ready' for analysis, but...something that drives ongoing data collection.
> (Miles and Huberman, 1994, p.65)

It seemed best, therefore, to obtain a feel for the data already collected before designing a system coding capable of contributing to its enhancement.

In reading the students' responses it quickly became clear that Task 4, which asked for the development of scenarios to the year 2020, had produced the most extensive and varied response from a substantial majority of students. Most responses began with projections of rapid economic growth, diversification away from reliance on oil and gas, and the deployment locally of the latest technologies. Such changes were frequently linked to Brunei's participation in BIMP-EAGA (see Chapter 4), and the related official development target of SHuTT **[14]**. All this was, in itself, unsurprising since such predictions were well established as the stuff of government planning and official propaganda. It was clear that in this respect Singapore served as a model for many students. For example, one commented that Brunei would become, "one of the most developed countries in the world, like Singapore". The construction of a Mass Transit Railway on the Singapore model was a prediction which occurred with some frequency, as were the proliferation of skyscrapers and the development of the interior **[15]**. "Every part of the land will have a use" was one expectation. Extensive privatisation was also widely anticipated **[16]**. A comment was, "Bruneians will no longer depend on the government". Another student identified presently-occurring interference in communications, black-outs, water-shortages and road erosion as, "weaknesses of the services provided by the Government sector". At the same time many felt that the changes they expected to see would require thorough regulation by government. One wrote:

> The government will have to impose stricter rules and regulations so that the public will co-operate and the process of development can be done properly. **[17]**

Further regarding Government activity, one student anticipated higher taxes and charges for public utilities. A higher cost of living was a prediction of another. One student identified the division of responsibilities for environmental matters between different Government ministries as a problem. A further point made by some was that the Government should set, not only environmental standards for business, but also "ethical" standards, particularly for multi-national corporations.

The expectation that Brunei would receive more visits from tourists was frequently expressed. Tourism was seen by many as a means to diversification and a potential source of non-oil income. Tourism development was often linked to the rainforest. The following extracts from the work of a single student capture some of the tensions inherent in this:

> Brunei has [a] 'valuable' asset, which is its rainforest, and should use it to the very best advantage. Ecotourism will be the most visibly growing industry in Brunei by the year 2020...Westerners will pay any price [to see] valuable species...more national parks and recreational sites will be opened to the public in order to preserve the forests...[but there will be] loss of valuable rainforest to open up new land.

However, it was sometimes hard to avoid a feeling that perhaps students had an exaggerated idea of the extent of global deforestation **[18]**. Another extract illustrates this:

> Brunei has done greatly in preserving the rainforest in Temburong. People will flood from all over the world to experience this wonderful sight because

all the trees they have ever seen are from those re-runs of the National Geographic.

However, not everyone favoured increased tourism. The view that it threatened traditional lifestyles was widespread. A considered example of this was,

The social lives of Bruneians can be adversely affected if they learn and acquire undesirable habits and manners from some foreigners.

The prospect of development was viewed with excitement by many students, and seen as a potential source of pride by others.

Any countries that ignore development will be left behind

wrote one. According to another, Brunei would be "famous" by 2020 and

developed in order to become one of the attraction countries of the world.

Technological progress was sometimes seen as a means to development, and sometimes as its consequence, but either way the student who wrote,

Brunei's community will be leading life in advanced technology

and anticipated the computerisation of "every possible thing" expressed the opinion of many. Another suggestion was that in 2020,

everything is going to be done by machines and robots.

However, there was also a clear sense on the part of many students that this process of development, though desirable and apparently irresistible, would bring with it

unavoidable and unfortunate consequences. One commented that pollution, "is inevitable", another that,

> money is the most important aspect in everything, especially in the era of modern technology.

An alternative view was that Brunei, when developed, would have

> matured in management and the right kind of progressive thinking.

Many students anticipated increases in foreign investment and/or self-sufficiency. Self-sufficiency in rice was described as,

> an ambition...healthy for the public's way of thinking.

Local rice production was expected by many to increase dramatically, and a large number mentioned exploitation of Brunei's extensive proven reserves of high quality silica sand as a potential source of new industrial growth. Some students put great faith in this sand, including one who described it as existing in "unlimited quantities". Others displayed a more realistic view, best illustrated by the suggestion that

> this income can be used in purchasing other sophisticated equipment for other production processes e.g. in agriculture.

Foreign investment was expected to be attracted by Brunei's

> economic stability and calm human and social environment.

Several students also drew attention to rapid population growth [19] in Brunei, or expressed the hope that development would bring with it more jobs, or anticipated a

reduction in the number of foreign workers in the country. Singapore was again cited, this time as an over-populated and crowded premonition of what the future held in store.

While physical and technological development was anticipated almost universally, financial development was little mentioned. This would be less remarkable elsewhere than on a management course. One student did make the interesting remark that a local Stock Exchange should be developed so that Bruneians would not "waste their money on unimportant items". However, "increases in indebtedness" were predicted by a few.

Not all students accepted the imperative to develop. One, rejecting "development for its own sake" nevertheless felt that Brunei would be "competitive" by 2020. Another warned of the dangers to the nation of getting "carried away" with development, a third stressed the importance of not cutting down the rainforest for development, and a fourth referred to a recent public remark of the Sultan to the effect that crime results from development without values. In another comment, on the expected standard of living of Bruneians in 2020, the need to avoid "useless progress" was emphasised. Nor was development always uniquely associated with industrialisation. A student remarked that development "means" better education, continuing this thought with the observation that there would be suffering by "poor people who can't afford to pay for better education". Technology was not without critics either, a student observing that it made "us lazy".

Only one particular student's views stood out because of their sheer contrariness compared to the rest. She was an ethnic Iban Muslim convert **[20]**, who associated development not with tall buildings but with "a lot of squatter settlements" **[21]**. She also noted, correctly and possibly ironically, that:

> In some parts of Brunei it is getting hotter due to the felling of the trees necessary to improve the living standards of Bruneians.

This thought leads naturally to a consideration of the place of the environment in students' scenarios. These were occasionally colourful, as for example the student who wrote

> we are all vampires, sucking and draining the Earth's healthy environment

or another who lamented the loss of natural beauty that would result from:

> an effort to catch up with the rest of the world...The environment will be dominated by roads, airports, buildings and so on. Thus, not leaving much room for anything else.

Related to this last point, but much more common, was a tendency to identify environmental damage with aspects of the development process which were specifically Western in nature, and which therefore might be avoided. For example, one student identified the threat to the local environment as originating with "foreign companies", and a perceived threat to traditional values as caused by "Western influence, products and technology" including television. This same student made an explicit identification between quality and the use of "traditional skills and technologies" **[22]**. Another referred to the need to "prevent wasteful products". A number of students identified the official state doctrine of *Melayu Islam Beraja* as a safeguard of their culture and way of life. Quite at odds with this, another student argued that development and industrialisation were likely to increase environmental awareness. The belief that Brunei's environment was at present "pristine' was expressed on a number of occasions, though another opinion was that it was "not too bad". There were assertions of the need for more environmental understanding and enhanced co-operative environmental effort among Bruneians.

Technology was often seen as a threat to traditional values, but it was also very much favoured as a partial or total solution to environmental problems. It was frequently linked to recycling, and sometimes to a proposed virtuous triangle in which development partly consisted of, and was simultaneously redeemed by, the growth of a booming recycling industry. Some argued that technology should be applied selectively, mentioning hydroponics, fish farming and genetically-engineered crops and animals in environmentally-favourable terms. Also, technology was seen as already playing an important role in environmental protection. For example, a student wrote

> We can see many manufacturers are taking good care of the environment such as the use of unleaded petrol and the use of solar energy.

However, a good deal of environmental pessimism was also in evidence. The view was expressed that recycling would not be effective because people "won't bother". Erosion was a frequently-mentioned fear, along with its associated problems of siltation and flooding. There was also much concern about the atmosphere, though this was frequently scientifically confused, for example:

> There will be an effect on the environment, like the factories will create carbon dioxide and then up to the sky and become acid rain, it will produce hole in the ozone layer.

Adverse effects upon air quality of increased car-use were often mentioned, as were dangers to the atmosphere from excessive felling of trees. Water pollution was also widely perceived as a potential problem, though there were others who felt that development would reduce this rather than the opposite **[23]**. The importance of the sea, "our main source of food", was often emphasised. The *Kampong Ayer* was singled out as a concern by many students. One wrote,

> I would be glad if this area is clean and comfortable as I was born there.

Stress and health problems were widely expected to increase. Awareness of threats to the individual were sometimes set alongside quite nebulous global concerns. For example, in the space of a few lines one student worried about that development might lead both to an "unhealthy way of living" and to "global environmental imbalance". Many students raised environmental concerns mentioned in the quality week booklet in a matter-of-fact way.

Concerns about the environmental effects of development were expressed by the great majority of students, but not universally held. One view was that development

> will cause slight distraction to the environment but its benefit to people, plants and other world life is more visible.

A number of students made a point of their opposition to the notion that trade restrictions might be enforced against countries whose environmental performance was judged unsatisfactory.

Almost all students demonstrated some willingness to use quality, and particularly environmental quality standards, as focus for discussion of the relationships (however perceived) between development, their environment, their culture and their hopes. Often this provided a link between responses to Task Four and other tasks, especially Task One, which required a managerial report on the advantages and disadvantages of quality standard accreditation from a local perspective. Views of the likely effectiveness of environmental quality standards varied enormously.

The quality week booklet included a wide range of ideas and suggestions as to the potential usefulness of ISO 14000 as a tool for environmental conservation in the

context of business activity. In this respect, therefore, this researcher's interest centred on the ideas students chose to emphasise, to reject, and to develop.

Most saw environmental management standards as a more or less important aspect of the regulatory powers of government. ISO 14000 was often linked by these students to Brunei's stated commitment to sustainable development, and/or the environmental requirements of international law. For others, however, the main force of environmental management standards in general, and ISO 14000 in particular, lay in their requirement that accredited companies use accredited suppliers, since this would have the affect of spreading environmental liability through markets. The possibilities of obtaining, through accreditation, a competitive advantage and/or improved access to export markets were often mentioned, as was the further possibility of reducing future costs of legal compliance. Still others emphasised the formulation of ISO 14000 so as to require continuous improvement, rather than compliance to absolute environmental standards, as a strength in a developing country context. The view was frequently expressed that ISO accreditation could help improve relationships and communication between business and people in its local area. Other possible advantages mentioned included raised levels of employee involvement, and greater customer confidence. Finally, some were pessimistic about the potential of quality standards to make a difference, or, as already noted, felt there was no significant problem to address.

Task Two required students to design a questionnaire on behalf of the Ministry of Development to evaluate the proposed Progressive Plastics development against official regulations and policy. Many responses were poorly designed as data collection instruments. However, while this was a concern from the perspective of management education, from the perspective of this research interest focused on what the students wanted to ask about, rather than how they went about asking it. Frequently asked questions concerned:

- general health and safety policy
- provision for accidents and emergencies
- recycling policy
- biodegradability of outputs
- habitat disruption
- disposal of products at the end of their useful life
- training policy
- emissions to air or water
- waste disposal
- complaints procedures
- degree of responsibility accepted for pollution caused by customer abuse of the product
- degree of employee involvement in decision-making
- commitment to observe and/or maintain local values
- support for sustainable development
- willingness to support public campaigns
- energy conservation
- research and development into 'green' technologies

With regard to the subsidiary question asked in Task Two, opinions were divided on the merits of plastic bags as a product, with students trading off convenience against biodegradability in a various proportions. The separation of the environment from ideas about standards of living was not uncommon. One student saw it like this:

> From an economic and consumer's point of view they have improved living standards...from an environmental point of view they have made Brunei unbearable and dirty.

Task Three was unsatisfactory in some respects. Part of it was clearly too difficult for many students, and responses were often short. However, the difference between product and process was widely understood. No consensus was forthcoming on the question of whether the manufacture of plastic bags was intrinsically environmentally unsound, though a majority thought it was not. One student, exonerating the company, placed the blame for pollution firmly upon local end-users:

> To maintain our country from being polluted we should first keep ourselves clean and live in a healthy family and surroundings.

Another, supporting this view, referred to the "ignorance" of *Kampong Ayer* residents. A further opinion was that:

> The customer who buys the product is the one who causes harm to the environment.

Still others stressed the view that the international image of the country was threatened by careless disposal of plastic bags, and envisaged a role for the government in controlling this. However, the dissenting view was summed up by this student:

> It's much better to live in the past where you used baskets for packaging and storing your things and it didn't cause much pollution.

She supported her view that plastics manufacturing could not be 'green' by saying that the meaning of 'green' was "peaceness...calm". Another student commented "we can still live without plastic...new is not always best". Finally, one response mentioned a traditional technology for producing an alternative material from prawn skins. Suitable skins could be identified because when peeling takes place:

a big amount of the skin is left behind which lead the butterfly to assemble there.

This, then, was the flavour of the data collected from students during quality week which required systematic analysis.

Classroom observations during quality week : An outsider inside

As already noted, observation of students during the course of quality week was partial, and was not intended as a primary source of data collection. Nevertheless, it may have served a useful purpose as a means of both supplementing, and prompting contextualisation of, data.

To take the question of data contextualisation first, an important aspect of the circumstances of this research was the unusual context not only of the teacher-as-researcher (Stenhouse, 1975, pp. 142-165) but also of the teacher-as-teacher. Yinger (1986, p.273) identifies two, "dominant images" which have influenced teachers. These are "the teacher-as-skilled-manager" and "the teacher-as-decision-maker". More recently, Bennett (1997, pp. 45-48) has developed a classification of the work involved in teaching which employs four categories first proposed by Wise *et al* (1984). The categories are; teaching as labour, teaching as craft, teaching as profession, and teaching as art. However, none of these designations wholly captures the situation of the teachers involved in this research, including myself, because they convey no sense of the teacher as *outsider*. We were all culturally-displaced, temporary actors in the social contexts of both Maktab Duli in particular, and Brunei in general. Thus, though we owned the curriculum or, more accurately, co-owned it with the students, we had no automatic ownership or rights in respect of the wider social project it was meant to serve. For example, though economic progress was clearly an expected outcome of management education in Brunei (Ali

Hashim, 1994), contemporary Western educational thinking on mechanisms through which the one might contribute to the other, for example through the narrowing of inequalities of opportunity (Brown and Lauder, 1997, p.188), was clearly both unwelcome and unacceptable given the prior claim on students of (traditional!) state ideology **[24]**. This point also bears on the conceptualisation of the teacher-as-researcher. Stenhouse (1975) argues that it is possible for a teacher to simultaneously be a researcher only in classrooms which are 'open'. He writes:

> The particular characteristic of the 'open' classroom...which is relevant here is that of open negotiation and hence definition of the teacher's role. Such a definition is of course a gradual and progressive definition because it is learned by the participants in the classroom situation. Now, in order to be an observer/researcher, the teacher needs to teach that definition of himself to the pupils...this is quite possible provided he makes it clear that the reason he is playing the role of researcher is to improve his teaching and make things better for them.
> (Stenhouse, 1975, p.155)

In this research there was a further need to convince those people designated as guardians of Brunei's social project, including government officials, administrators, and citizens who happened also to be parents, of the benefits of teachers doing research. Seen from this perspective, then, the role of the adaptive concept *quality* in this case was to establish common ground between the research interests of this researcher, the learning needs of students, and the social prerogative of the authorities and the citizenry, in such a way that an intervention inspired by Western educational thinking could be deemed progressive in an oriental social context.

Regarding the role of classroom observation in supplementing the written data, it needs to be re-emphasised that this was very much a secondary activity compared to the major effort of data collection through students' written responses. Indeed, since

the objective was to introduce environmental education into the management education programme as naturally as possible, it followed that unremarkable classroom outcomes, in which everything happened pretty much as usual, were being actively sought - though of course that did not mean that such 'unremarkable' outcomes did not merit description. Further, replacing observation with students' written data as the focus of research avoids an important problem for participant observation noted by Wolcott (1988). He writes:

> occupying the role of researcher in a cross-cultural classroom may have made a genuine participant-observer study possible, but it also diverted from my research effort the energy that full-time teaching demands.
> (Wolcott, 1988, p.193)

Nevertheless, I was there. I did observe, I did record, and I called the recorded observations 'fieldnotes'. They were very disappointing. A number of guiding principles for taking fieldnotes have been proposed in the literature. To these, I confess, I did not attempt strictly to adhere, though, with hindsight, I would not question their merit where such notes are to be the principal data of a particular research effort. Wolcott's (1973) proposal, that researchers should never resume observation until the notes from previous observations are completed, seemed to me likely to be impractical under the circumstances of quality week. In the event, however, it was possible to get close to this ideal by focusing on out-of-the-ordinary occurrences day by day, and deeming repeated detailed accounts of what was quite normal in a Management classroom at Maktab Duli to be unnecessary. The conventionalised framework for field note gathering proposed by Kirk and Miller (1986, p.57) seemed too elaborate for what was being attempted in this research situation, though some of the distinctions it provides for, especially that between *emic* and *etic* concepts, were incorporated into the coding of the written quality week data by means of loose networks (see Chapter 6). However, the real problem was that 'observation' itself, as I found myself practising it in my classroom during

quality week, seemed a very poor and frail relation of the 'observation' described in such muscular terms by educational ethnographers. For example, King (1979) refers to filling thirty-two notebooks with half a million words of notes. There were days when I hardly felt the need to write anything at all.

The poor fit between what I was actually doing, and what the literature seemed to say I should be doing, led me to ask myself whether 'taking field notes' was, in fact, an appropriate activity. Elliott (1991) associates 'field notes' firmly with the practice of ethnography and the production of "thick description" (Elliott, 1991, p.138, see also; Geertz, 1973; Guba and Lincoln, 1981). He writes:

> Anthropologists and naturalistic sociologists engaged in ethnographic inquiries tend to call written records of their observations 'field notes'. They are outsider researchers attempting to understand human conduct in particular societies and groups in terms of the cultural values, norms, and beliefs which underpin them.
> (Elliott, 1991, p.138)

This appeared to be of no help in accounting for my own inability to produce observation-based notes of sufficient bulk and richness. As noted in Chapter Four, the methodology of this research owed much to anthropology. My own status as outsider has been asserted above. Elliott continues:

> Insiders tend to record their activities in the form of logs, journals and diaries...the log largely contains 'surface' descriptions...is not an inferior record to field notes...It just satisfies the different purposes of people operating in different roles. The journal...[serves] as a source of stories about the author's experience...The diary is primarily a private and personal

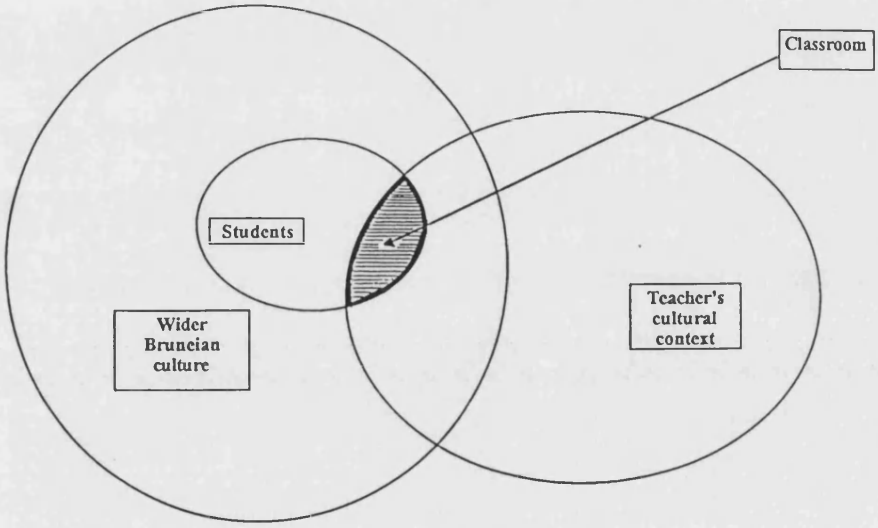
> document in which the author not only documents life events and experiences but reflects upon their emotional
> responses to them.
> (Elliott, 1991, pp. 138-139)

If this is what an insider does then I was an insider, yet it seemed absurd to conclude that I was *not* an outsider. The resolution I propose to this paradox is illustrated in Figure 5. It is that a distinction be made between my role inside my own classroom and my role in relation to Brunei society as a whole. In the context of Brunei society I was clearly an outsider. The quality week exercise was an innovation bearing on Brunei society through formal channels. The written data it produced should therefore properly be classified as essentially ethnographic in nature because they resulted from prompting students to consider their own views of their own place in their own (not my) society. However, in normal classroom interaction I was an insider, engaged in an ongoing, shared project, based on mutual trust, to help a small group of individuals caught, at a particular time, at a confluence of Eastern and Western ideas and ways. This was *our* social situation. As noted above, I was also an insider in the Management staff office.

If this argument provides an explanation of my experience of 'field notes', it does not obviate the need for at least a modicum of 'thick description' to carry my insider's view to the outside. Guba and Lincoln (1981) have written:

> Thick description involves literal description of the entity being evaluated, the circumstances under which it is used, the characteristics of the people involved in it, the nature of the community in which it is located and the like...But thick description also involves interpreting the meaning of such demographic and descriptive data in terms of cultural norms and mores, community values, deep-seated attitudes and motives, and the like.
> (Guba and Lincoln, 1981, p.119)

Figure 5: The teacher-researcher as an 'outsider inside' in Maktab Duli classrooms



It was noticeable during quality week that punctuality and attendance were generally better than usual, though within the total sample a small number of low performing students did avoid completing the tasks. Necessary activities such as rearranging tables and chairs were performed immediately and without prompting by students in my own class. Work began in all groups whether I had arrived or not. This is more remarkable than it would seem in a British institution. Very hierarchical structures of authority and knowledge [25] in Bruneian society militate strongly against young people, and especially young girls, acting on their own initiative.

Anecdotal evidence from other teachers suggested very strongly that most Bruneian students' experience in secondary school, before coming to Maktab Duli, was of formal, teacher-led, non-participatory lessons. I spoke to one teacher, from New Zealand, who, having being discovered by his school principal (on that very day) helping students with their English comprehension of the content of a History lesson, was instructed (by his own account) to abandon this project in favour of copying from a textbook onto a whiteboard so that students could, in their turn, copy. Other conversations of this kind convinced me that this sort of approach to teaching was common at secondary level. Completed, copied work was rubber-stamped once each week. At Maktab Duli, certainly, the most common form of lesson was also the lecture. This being so, it was disappointing that signs of obvious enjoyment on the part of students attempting the more participatory tasks of quality week were, in my own class, restricted to Group 1, Group 3, Malini in Group 4, and Teck King in Group 5.

As already noted above members of Group 1 had better access to inside information on Bruneian environmental matters than the other students because of the family relationship of one of them, Mu'izzah, to the Head of the Environment Unit at the Ministry of Development. These well-connected girls had clear assumptions about their likely futures in good Government jobs [26], to some extent regardless of academic success at A-level [27]. The Shafiite school of Islam practised in Brunei

permits women to hold such senior posts. The position with regard to employment of women has been expressed as follows by Pehin Dato Hj. Abdul Aziz, the Minister of Education.

> A woman can rise to every level except a few...she can't become a Sultan, of course, or a judge, or a Cabinet minister. In fact, the rule is really quite simple here - if the position is one in which the final decision is made, it cannot be held by a woman.
> (quoted in Weaver, 1991, p.82)

Roslina took charge of the allocation of tasks, to the extent that these were shared. She also became a competitive champion of the group, in particular defending the extra information obtained by Mu'izzah from Group 5, the boys. On one occasion I entered the room unnoticed to find her delivering a violent diatribe (in Malay) against Zulikeram and Teck King, who had 'borrowed' some item by stealth. Like all the Bruneian students these girls responded very positively to the local quality standard documents produced by the Ministry of Development, and to the incentive of being among those attending the promised function there.

Ministry of Development documents are produced in Standard Malay (*Bahasa Melayu*), the official language. The variant Brunei Malay is the language of everyday communication, and a source of pride and solidarity to its users (Martin, 1989, p.7). Research has established the existence of a distinct code named, "Brunei Colloquial English" (Ozog, 1991, p.151), which is widely used, even by those Brunei residents who have access to Standard English. Ozog (1991, pp.151-161) also describes a pattern of frequent switching between these four codes. I would speculate that the existence of formal documents in Standard Malay, relating to the subject matter of quality week, gave Malay students a sense of ownership of their studies which may normally be absent in externally-prescribed and evaluated English-language syllabuses. For JoJo, for example, whose tangled English was her central academic

problem, it may have been a source of release that the transformation of her thoughts into English was necessary, in this case, mostly for my convenience only. Malay was the *original* language of much of the material that was important to her study. This localisation of issues also tended to mean that students developed a clear sense that it was *their* environment, rather than *the* environment that was under discussion. Whether this is an entirely good thing in a country dependent on oil and gas exports, or even makes sense given the inter-connectedness of things, are, perhaps, open questions. However, the environmental education literature overwhelmingly supports a focus by students on local issues (for an illustrative selection see Fien and Spork, 1993).

Zulinah, in Group 2, might with hindsight have found it more productive to work with her friends in Group 1. Marinah, as already noted, was elusive and reluctant to contribute, though she did complete the tasks. This was a group in which silence was most likely to be broken by Zulinah exchanging words with Group 1 members, or by almost inaudible Malay-language exchanges between Norkhalifah and Bibyzuraini. I was asked questions only on points of detail, such as the meanings of English words, unless I imposed my presence on the group by sitting with them. After a time this would sometimes produce an enquiry, usually by Bibyzuraini, on whose ocean of shyness the tide sometimes went out a little. Such enquiries concerned, for example, the meaning of Task Three (which they found difficult, or perhaps obscure), the format required for answers to Task Two, and an explanation of the questionnaire's purpose in that same task. They did not ask about the scenario-writing problem in Task Four and neither did anyone else, a fact which I found surprising at the time. They did, however, as I have already noted, commit a tremendous amount of effort to this work, compared even to their normal high standards of endeavour. For girls such as Norkhalifah and Bibyzuraini the future seemed to hold the likelihood of, at best, repetitive clerical work for the Government, as well as many children, perhaps by a husband shared with other wives [28]. Though it may be wishful thinking on my part, or even cultural arrogance, to

suppose that in this case they saw education in general, and management education focused on locally-significant issues in particular, as a possible route to something preferable, there is some limited evidence from other developing countries that commercial education may be significant in changing the directions women's lives tend to take (Opondo, 1980, p.140).

Group Three was quite different from all the others because neither of its members were Brunei citizens. Their interest was far more in the international, rather than the local, aspects of quality and the environment. They worked hard in an extremely focused way, and tended to appeal to me for information only after all recourse to reference materials had failed. Yick Wei sought (and obtained) my silence about the fact that she chose, on one occasion, to work on her quality week project rather than attend a Muslim religious function which was officially compulsory for all students (though not for non-Muslim staff). Bhavaani, a Hindu, was absent from College on that day.

Yick Wei clearly had academic ambitions in the field of business, and saw the quality week project as being about 'real knowledge', where 'real' is to be understood as the opposite of 'textbook'. Her father was a moderately successful small businessman, anxious to give me his card and an offer of preferential service. She subsequently won a place at UMIST to read Management, and took it up after some hesitation prompted by her worries, which she shared with me, that her father could not really afford the quite enormous expense involved.

Group Four was lit up by Malini, a girl who found it impossible not to be happy. Her colleagues, Mahnun and Marianah, though thrown into the shadows by her personality, did a lot of work that was absolutely serviceable, though unspectacular. Malini, smiling, confided to me that she herself did not really understand the work at all, and we worked through a response to Task One together. The problem seemed to be one of awe of official documents. Once it was established in her mind that

perfectly straightforward statements were likely to be entirely appropriate she seemed to be happy as well as smiling, and the group became so self-absorbed that it sometimes required an effort of will not to overlook them.

Of Group Five something has already been said. It cannot be easy to be of a race and a gender officially held up as superior, and at the same time be an academically-weak young man afflicted with adolescence. This was the situation of Saifullizan, Noorshah and Fadzillah, who were grateful, therefore, to be able to lean on the quick-witted Teck King. He, in turn, appeared to enjoy this situation. In addition, Noorshah and Saifullizan were from poorer families. All these four boys were keen, for their different reasons, to succeed during quality week. Zulikeram, the fifth, appeared unconcerned with academic success, and subsequently unnecessarily failed his A-level exam, but he nevertheless produced interesting material for quality week. This he chose to prepare almost entirely at home, and without assistance from me. Finally, this group was the only one to draw significantly on materials obtained from the World Wide Web, to which access had only recently become available in Brunei.

The monthly test

At Maktab Duli all students took a monthly test, and received a monthly report to parents, in all their subjects. Students tended to take these tests, and the grades they produce, very seriously **[29]**. A test was set on quality in order to embed the quality week study as fully as possible in the normal procedures of the Department and the College. The chosen test instrument (time allowed = 45 minutes) was a previous examination essay question which was specifically on quality but did not mention the environment:

(a) Why should firms be concerned with the quality of their products?

(b) As a production manager, how would you ensure the quality of your firm's products?

In examining students' responses for evidence of environmental learning it would be easy to hope for too much. As already noted, quality week constituted only a part of quality-related teaching. Local business culture owed more to *kiasu* **[30]** than Adam Smith, while the great significance attached to tests and grades in local educational culture meant that anything deemed of marginal significance was likely to be excluded. In short, this research aimed to introduce environmental education into settings in which its concerns were not usually evident, and this was such a setting.

Nevertheless, 43.1% of students included environmental factors in their answers. The most common reasons given for emphasising environmental quality concerns were Ministry of Development support for environmental management system standard ISO 14000 in Brunei, potential commercial benefits of improved environmental performance, and the need to avoid pollution and waste. Five students mentioned a need to achieve sustainable development, a further five raised questions of the social responsibility of firms. If I hoped for more, I was accustomed to less. A final point here was that owing to the policy of accepting academically-weak students into Maktab Duli in general, and into the Management course in particular, a number of those responses which were silent on environmental questions were equally silent on other potentially relevant matters **[31]**.

The ISO Seminar

Writers on environmental education from many methodological positions have emphasised the importance of students' action (Hungerford and Volk, 1990; Volk, 1990; Robottom and Hart, 1993; Stapp and Wals, 1993; Greenall Gough and Robottom, 1993). It has rarely been asked whether such calls for action are appropriate in non-liberal-democratic cultures. This has been true even when

socially-critical writers, who explicitly condemn the liberal democratic (and relatively action-tolerant) conditions under which they themselves work, have applied their analyses to other cultures (see, for example, Greenall Gough, 1993b). However, from an action-competence perspective, Jensen and Schnack (1997, p.165) do question whether pupils should be involved in social action which has principally environmental rather than educational purposes, and this is a point of emphasis with which some critical theorists, at least, would appear to agree (Robottom, 1987a, p.112; Robottom and Hart, 1993, pp. 65-66). Further, Menter (1996) has questioned the extent to which action research is "a culturally-specific creation, in particular how much it is a modern Western concept?" (Menter, 1996, p.375).

This research took place in an autocratic society in which media are censored, opposition to established authority is not tolerated, and political imprisonment without trial is a fact. Student action of the kind promoted in Australia by Greenall Gough and Robottom (1993), which made a series of challenges to the management of a State-owned utility would, though admirable in its own context, have been inappropriate in Brunei. Some aspects of that project, such as the enlisting of printed news media to argue the case against that utility, would have been impossible. However, it was found possible in the course of this research to initiate small scale student action which both students and the authorities thought important and valuable.

On 5 June 1996 the Brunei Ministry of Development organised a "Seminar on Introduction to ISO 14000" at the ASEAN-EU Management Centre in Brunei. The seminar was intended for local private sector business leaders. It was addressed by the Minister of Development, the Head of the Environment Unit, and consultants from UK and Singapore. Following an approach to the Ministry of Development by this researcher, funding was made available to produce a booklet, for distribution to all those attending the seminar, which described the work the students had been doing on ISO 14000 and included small samples of it. Ten students were invited to attend.

Participating teachers, who were also invited to attend, each nominated students from their own classes whom they felt to be particularly deserving. The seminar merited a substantial slot on that day's local television news. The Minister made specific positive reference to the students' work in his address. The Head of the Environment Unit told this researcher, "this is exactly the sort of thing we want to encourage. I think this is a good initiative".

It was unfortunate that more students were not invited. Nevertheless, to have any invited was widely felt to be something of a breakthrough. Maktab Duli's Principal received two faxes about the seminar from the Ministry of Development, along with an invitation to attend. He expressed himself delighted both with these and with the television exposure the College received. Students attending who were not prefects were given special permission to wear prefect's uniform for the day **[32]**.

Once at the seminar, without exception the students switched to a Bruneian-at-an-official-function role, rather than their student-in-college role, which left me feeling like a rather gauche foreign interloper, and made it difficult to communicate with the students about their experiences. I had done my bit, perhaps, but it was their day not mine and they took possession of it. Afterwards, the students were able to mingle with the speakers and business people over a *makan*, or traditional Malay buffet meal. Again, they were really much better at this than I was. Conversation was in Malay except when politeness to myself required a switch to English. All the students received a substantial pack of ISO 14000-related materials, which, of course, included their own work **[33]**.

During the seminar it emerged that notwithstanding both broad official concern and the (more predictable) enthusiasm of the overseas consultants, the environmental responsibilities of business in general, and the adoption of ISO 14000 in particular, remained controversial among the Brunei business community. Certainly, students found themselves informed parties to a real debate in their own country.

This activity was felt to be of value by the teachers involved. Here are some of their comments:

> The M.O.D. seminar exposed students to a professional presentation format and gave others (Govt. officers, members of prof. organisations and others) the opportunity to see how the work of the students linked directly to the activities of the business sector.
> [IF]

> 'Showing off' students' work is always pedagogically suitable and positive for students' reinforcement. Why not, they worked hard and produced good work, then let us spread the news...the link with the Ministry is essential and should be maintained at all costs!
> [AL]

> I think it's very good for audiences outside the College to take note of what our students are trying to accomplish.
> [BH]

Meanwhile, coding of the written quality week data was taking place, and to this I now turn.

ENDNOTES TO CHAPTER FIVE

1. In 1990 the Minister of Education ruled that classes in co-educational institutions should be segregated so that girls always sat at the back of teaching rooms and boys at the front. However, though never officially reversed this ruling was never vigorously applied either. During 1996 I received a visit from this same Minister while teaching a class which I had not so segregated (and which was later involved

in Case Studies Two and Three). I was not made aware of any objection on his part. Nevertheless, students mostly segregated themselves in practice, to right and left rather than back and front.

2. Pollution by plastics had been an issue in Brunei for a number of years, particularly at the heritage site called Kampong Ayer which is opposite the present commercial centre. Reasons for this high degree of concern with waste plastics included: their damaging effect on the appearance of the Brunei River and its traditional stilt-dwellings; an economic effect resulting from the tendency of discarded plastic bags to foul the propellers of 'water-taxis', which are an essential commuter resource; and the personal interest in the issue of the Minister of Development (Soraya, Head of Environment Unit, Ministry of Development, April 1995, personal communication).
3. The weekly letters page of the Borneo Bulletin was at this time the only public forum of debate in Brunei.
4. Shell, at least, do employ a manager in the capacity of 'scenario writer' or, more formally, 'Head of Business Environment Group Planning' (Rainbow, 1995).
5. The College was closed on Friday, the Islamic Day of Prayer, and Sunday of each week.
6. Observation of teachers at Maktab Duli carried a strong association with a national formal appraisal system which underpinned systems of bonus payment and staff contract renewal. It seemed important to avoid any sense, however slight, that successful introduction of this curriculum innovation was linked to these matters.
7. Ian Franklin (IF) had recently joined the Department at this time. He did not teach any of the Case Study One classes, but did participate in Case Studies Two and Three.
8. SE had previously been a Head of Department in Inner London where, he reported to me, the acronym 'FOFO' has been developed to describe approaches to project work which strongly emphasise students' self-reliance.

9. All airconditioners in the Department were old. Ill fitting windows, along with cracked walls and window-frames further reduced their effectiveness. Brunei Ministry of Education regulations require that teachers wear shirt, tie and long trousers. Mid-day temperatures are typically 34 degrees Centigrade. Humidity is extremely high. A particular problem of energetic activity was that one's shirt became sweat-soaked to the point of social embarrassment. Girl students were similarly disposed to keep relatively still in the heat of the day because the upper portion of their College uniform would become transparent when wet.
10. The year 2020 had particular significance in the region because of the public adoption of that date as a development target by the Malaysian Government.
11. SEAMEO operates three centres in the region which are significant in the context of this research. SEAMEO-INNOTECH (Regional Centre for Educational Innovation and Technology) is in Manila. SEAMEO-RELC (Regional Language Centre) is in Singapore. SEAMEO-VOCTECH (Centre for Vocational and Technical Education) is in Bandar Seri Begawan.
12. Teachers being asked to provide data for other peoples' Ph.D.s had a degree of topicality at Maktab Duli during the period of Case Study One. An official of the Ministry of Education, who had been granted a period of paid leave to complete her doctorate with a US university, required all academic staff of the College to complete a computerised teaching-styles questionnaire. Data from this were subsequently used both to inform respondents what kind of teachers they were and indicate how they needed to change. This rather insensitive handling of people who considered themselves to be busy professionals caused a considerable degree of resentment. The introduction I provided to the staff Evaluation Report (Annex 5) is partly an attempt to neutralise the fall-out from this situation.
13. The precise form of words used in this reference is not, "empower people" but "liberate people's intelligence".
14. BIMP-EAGA is the Brunei Indonesia Malaysia Philippines East ASEAN Growth Area. SHuTT is Brunei's official goal of being the Service Hub for Trade and Tourism within BIMP-EAGA.

15. There were no buildings in Brunei meriting the designation 'skyscraper' at the time, no doubt partly because building regulations in the central business district prohibited structures to be higher than the minarets of the Omar Ali Saifuddin Mosque. Very little development has occurred in the interior of Brunei. A number of ancient and prosperous longhouse settlements of Iban and Murut indigenous people still exist. These are often accessible only by river. Much less prosperous, but no less inaccessible, is the longhouse at Sukang into which nomadic Penan have been settled by the Government.
16. Privatisation of the hitherto and, as it has turned out, still dominant public sector was just beginning in Brunei at this time. Its progress formed an important part of the underlying economic context of this research. At the time of writing privatisation has been discontinued, and to some extent reversed, amid rumours of embezzlement by politically well-placed individuals on a truly vast scale.
17. As throughout this report, statements by respondents are reproduced as written, not corrected for spelling, syntax, sense or punctuation.
18. If so, they cannot be wholly blamed for it. Brunei's forests are mostly intact. The surrounding Malaysian State of Sarawak is very extensively logged. Viewed from, say, the upper reaches of the Limbang river the Brunei border is the place where the forest abruptly ends, giving way to a soulless tangle of diesel-tainted scrubland.
19. On present trends Brunei's population will nearly double by 2020.
20. It may have been one of her parents, or an earlier ancestor, who converted. This decision, once made, is irreversible by subsequent generations.
21. There are two Iban squatter camps known to me in Brunei. Both are welcoming to the visitor, but though I am certain that the living conditions of the urban poor hold greater horrors in some other parts of the world, I do not find these settlements easy places to remain for long.
22. Brunei Malays are proud of their traditional crafts. These are celebrated in a Malay Technology Museum in Bandar Seri Begawan. Historically, each individual *kampong* within the larger *Kampong Ayer* or 'Water Village', which lies

at the heart of Brunei's cultural heritage, was home to practitioners of a distinct craft.

23. Some parts of Brunei receive a more-or-less uninterrupted supply of drinkable tap water. Other parts receive sporadic, occasional, or infrequent supply. In some places the supply is often discoloured with sediment and is metallic-tasting. For families living on Sungei Brunei (i.e. in *Kampong Ayer*) pollution of the river by (visible) rubbish and (less visible) storm drain and construction site run-off is a concern. In short, future hopes concerning water are probably much affected by present experience, which can vary sharply over a distance of a kilometre or less.

24. To illustrate, when the first intake of Management students was admitted to Maktab Duli in 1994 the Ministry of Education placed an informal quota on ethnic Chinese admissions, regardless of whether the applicants were citizens or not.

25. Both authority and knowledge come directly from Allah, via the Prophet and, in the present time in Brunei, the Sultan. To suppose that this belief is held anything other than literally is, I suggest, not only wrong but also patronising. A related point is that 'truth', for Brunei Malays, appears to me to be a property derived at least as much from authority as from evidence. However, these are very deep cultural waters.

26. These assumptions proved to be unsafe. Following the East Asian economic crisis and the financial mismanagement mentioned in [16] above, Government spending on new projects was cut by 50% in 1998.

27. University places always seemed to be found somewhere for Bruneian students willing and able to pay high fees.

28. Brunei Malay men may take up to four wives.

29. This may be seen in the present case by the fact that although only 167 students completed the quality week package, 174 completed the test. Aside from sickness the most common reason for absence from lessons was family business of one sort another. Lessons were clearly perceived by some students and their parents as much less important than tests.

30. *Kiasu* is a Hokkien word which does not readily translate into English. Two *kiasu* phrases in Singapore Colloquial English give its flavour. They are: *Everything also I want*, and, *Bigger, faster grab*. The word *kiasu* may refer to specific behaviour, or to a state of mind.

31. Students may be admitted with only one English medium O-level, obtained partly by multiple choice completion. Such students are accepted for the Management course at the Head of Department's discretion because it is hoped that, even if they do not pass the subject, they may learn something useful along the way.

32. This was seen as most significant concession. Brunei is a very status conscious place. The presence of the Minister added hugely to the importance of the event. To be a Minister one must first be a high-ranking Malay (note that for a Malay to *become* high-ranking by becoming a Minister would not be possible. Rank is substantially a question of birth). To be invited to a function addressed by such a person is an honour for a lower-ranking Bruneian. On a related point, my own suggestion that the students should wear business dress rather than College uniform was greeted with frank incredulity by the Principal, the Head of the Environment Unit, and the students. I am still not entirely sure why.

33. There was a surplus of these, which found its way first into my car, and thence into the Department's stock of resources.

CHAPTER SIX

CASE STUDY ONE: CODING THE WRITTEN 'PROGRESSIVE PLASTICS' DATA

The meaning and purpose of 'coding'

Different researchers offer slightly different definitions of the research activity of data coding. Coffey and Atkinson (1996), although they do not condense their thoughts on the subject into any very concise form, do touch upon many of the parameters of establishing such a definition.

> Many analyses of qualitative data begin with the identification of key themes and patterns. This, in turn, often depends on processes of coding data. The segmenting and coding of data are often taken-for-granted parts of the qualitative research process. All researchers need to be able to organize, manage, and retrieve the most meaningful bits of our data. The usual way of going about this is by assigning tags or labels to the data, based on our concepts. Essentially, what we are doing in these instances is condensing the bulk of our data sets into analyzable units by creating categories with and from our data. This process is usually referred to as coding, although that can imply a rather mechanistic process. We prefer to think of generating concepts from and with our data, using coding as a means of achieving this. We stress here that although coding may be part of the process of analysis, it should not be thought of as the analysis in itself.
> (Coffey and Atkinson, 1996, p.26)

A number of questions arise from these ideas. These include:

- what should be the sequence of research activity? Should the coding method be established first ("based on our concepts"), so that the "identification of key themes and patterns" "depends" on it? Should it follow from the data ("generating concepts from...our data")? Or should these somehow co-evolve ("generating concepts...with our data")?
- a related question is: does an appropriate method of coding *depend upon* an understanding of what is "meaningful" in the data, or does such a method *reveal* what might be meaningful?
- what is the relationship between coding and analysis?
- how are functions of coding such as segmenting, organising, managing, retrieving, condensing, generating, tagging and labelling related? Are these necessary and/or sufficient properties of a coding system?
- is it necessarily inappropriate if coding is "mechanistic"?

Coding and the sequence of research activity

Social research of a kind which produces straightforward yes/no answers, or which employs any kind of rating scale, presents few problems from the point of view of coding. Categories are predetermined by the researcher and are normally also clear to the respondent at the outset. Whatever is discovered by the research will be relatively easy to handle, but limits have also been set to discovery, in advance, by the researcher's selection and presentation of questions and response categories. An example of such a research instrument in this research was the questionnaire issued to teachers.

As Cohen and Mannion (1994, p.286) note, even though the situation is more complex where questions are open-ended it may still be possible to pre-code research so that responses may be immediately and directly scored in some way. Unexpected responses may be scored under a category headed 'Other'. This will work provided

the number and variety of responses falling into the 'Other' category is not so great as to render the pre-coding effort marginal.

Pre-coding is likely to be both possible and successful where the research is *etic*, rather than *emic* in nature (Lincoln and Guba, 1985, p.359), that is, where the researcher brings to the research setting an *a priori* construction of the social setting of the research which is considered to be privileged for one reason or another. Where, as in this phase of this research, the intended focus is upon the respondents' constructions of the research setting, it is still inevitably the case that the researcher arrives on the scene with preconceived ideas of some kind (Miles and Huberman, 1994, p.10). However, the attempt should be made to identify, acknowledge and problematise these ideas.

Being meaningful. Analysis

In essence, data may be meaningful to a social researcher for two quite different reasons:

- because they mean something in the researcher's own professional context. In this case it is quite possible for the meanings which the researcher takes away from the research to be disagreeable or even incomprehensible to respondents (see, for example, Greany and Kellaghan, 1996, pp.1-10). Coding is therefore designed to facilitate particular kinds of analysis.
- because they mean something to respondents. In this case establishing the extent to which respondents agree with meanings attributed by the researcher is likely to be a vital test of the credibility of the research (Lincoln and Guba, 1985, pp.373-374; Robinson, 1993a, pp.117-120; Cantrell, 1993, p.100). Coding develops hand-in-hand with analysis.

In the first case categories for data coding are established outside the research setting. This may, and indeed should, be done in advance. In the second case categories for data coding should "emerge" (Wals, 1992, p.48; Cantrell, 1993, pp. 98-99) during the research. As Robinson (1993a, p.125) notes, this process of emergence involves an "interplay between the theorising of outsiders and insiders".

Functions of coding

Bryman and Burgess (1994) have observed that:

> Clearly, there is room for considerable confusion regarding what coding actually is, so that it is doubtful whether writers who employ the term are referring to the same procedure.
> (Bryman and Burgess, 1994, p.218)

It seems likely that the multiplicity of different terms which have been used to describe the activity of coding may usefully be organised under two separate headings. These headings correspond to two substantially different research activities, which have been associated respectively with "techniques of code-and-retrieve" and "techniques of emergence and interrogation of theory from data" (Richards and Richards, 1994, p.168). Interestingly, this dual categorisation emerged from the development of the computer coding software package NUD*IST, which was considered as a potential tool in this research but rejected on the grounds that it was not wholly appropriate. In my own opinion this was a pivotal issue in the theoretical development of this research, and I therefore quote the account given by the developers of the NUD*IST software at some length.

> One of the strongest lessons...is that the two techniques do not easily combine. Code-and-retrieve is not a problem. On the contrary, the facility with which the computer performs this technique is problematic. Compared

> with the grounded theory method of open coding it is very easy, and very easily dominates time...By solving the problem of managing categories, NUD*IST made more coding for retrieval possible...The more vulnerable and tentative ideas emerging from the data are harder to incorporate in ordered categories than are codes describing the characteristics of the data or allocating material to major known topics. So the code-and-retrieve method is to open coding as the root stock is to a grafted exotic plant. It takes over.
> Open coding produces categories whose relationships have to be discovered: most coding for retrieval is done in categories whose relationships are ogically set or logically discoverable. The codes produced by the grounded theory approach thus require constant care and attention. Relationships between categories are explored, while data are interrogated for comparative examples and for distilled meanings. The categories are rarely known in advance of data exploration, and the relationships between categories must always be discovered during data analysis. So prior shaping of index structures is impossible.
> (Richards and Richards, 1994, p.168)

One issue which this passage clearly raises for this research is that of the significance within it of 'grounded theory'. Grounded theory was originated as an approach to qualitative social scientific research by Glaser and Strauss (1967). However a consensus on precisely what 'grounded theory' means has not been fully established even between these two pioneering authors themselves (see, for example, Strauss and Corbin, 1990; Glaser, 1992). As Richards and Richards (1994, p.168) suggest, grounded theory is a method in which categories for the coding of data are derived from that data, and in which emphasis is placed on the discovery and elucidation of links between categories so generated (Turner, 1994, p.196-197). However, the hope of generating generalisable knowledge from a grounded theory approach is not abandoned by its practitioners (Wals and Alblas, 1997, pp. 255-257; Silverman, 1993, p.46). If, as does seem reasonable, it is accepted that the research approach

taken by Problem Based Methodology (Robinson, 1993a, 1993b) displays a significant degree of dependence upon development of grounded theory, then a criterion for the establishment of such generalisability has been suggested as follows:

> Generalisable knowledge is produced, to the extent that the analysis of particular problems links with more abstract theoretical knowledge and principles, known to be applicable across a wider range of similar situations.
> (Robinson, 1993a, p.133)

By addressing the question of external validity, this criterion may go some way to answer criticism that grounded theory approaches show little interest in the testing of hypotheses (Fielding, 1988, p.8). However, the prior question of internal validity still presents difficulties, and grounded theory may still lack a convincing response to Miles' (1979) much-quoted question:

> How can we be sure that an 'earthy', 'undeniable', 'serendipitous' finding is not, in fact, *wrong*?
> (Miles, 1979, p.591, original emphasis)

Within this context, establishing the trustworthiness of data arising from this phase of this research was considered particulary important because, as Ball (1990,p.164) has written, "Informants have their own concerns and purposes for being helpful", and because to do so seemed likely to help in shifting "the burden of proof from the investigator to the information itself" (Guba and Lincoln, 1981, p.126). Further, grounded theory was significant in this research only to the extent that the development of a qualitative understanding of its specific context served the wider research aims. As noted in Chapter Five, the development of such an understanding was not itself a *primary* aim of this research, though it was an important secondary aim in the coding of the written Progressive Plastics data. This is consistent with the observation of Bryman and Burgess (1994) that it seems likely that grounded theory

is rarely employed by researchers in its entirety, but more frequently, "refers to a general disposition or to a particular phase or aspect of the approach" (Bryman and Burgess, 1994, p.221).

Must qualitative data coding never be mechanistic?

The notion that there exist two entirely opposed and incompatible ways of thinking about the world, one holistic, organic and qualitative, the other reductionist, mechanistic and quantitative, has been touched upon in Chapter Three. This idea has been developed with particular vigour by Skolimowski (1981) from an ecophilosophical perspective, by Greenall Gough (1993a, pp.34-50) in the context of environmental education, and by Robottom and Hart (1993, pp.47-54) with reference to environmental education research. Two small objections to this analysis are of relevance here. First, if a "mechanistic process" (Coffey and Atkinson, 1996, p.26) is, as seems likely to be at least sometimes the case, the same thing as a procedure, then procedures play an important part in qualitative analysis by forcing researchers to consider data that might otherwise be overlooked (Firestone and Dawson, 1988, pp.218-219). Secondly, no matter how holistic a person may aspire to be he or she cannot think about everything or know everything. If adaptive concepts are to help introduce environmental education into programmes of management education then ultimately they will have to be used by teachers who have other specific, delimited, non-environmental priorities of their own. This suggests a need for an approach based on simple rules, procedures and tools which produce acceptable results when applied mechanically but intelligently. Such an approach is, in fact, characteristic of some existing approaches to both environmental and development education which cross disciplinary boundaries (for example, WWF, 1994; Fountain, 1994).

Ideal characteristics of a coding method for the Case Study One written Progressive Plastics data in this research

Desired ideal characteristics of a coding method for the Case Study One Progressive Plastics data were as follows. The method should:

- facilitate both 'looking in' and 'looking out', that is, it should re-present data in ways meaningful both to respondents and to this researcher's professional peers, so promoting the identification and elucidation of links both within the data, and between the data and more abstract theoretical knowledge and principles
- facilitate analysis
- permit the derivation of theory
- facilitate data retrieval
- facilitate the ongoing generation of coding categories
- permit the separation and problematisation of this researcher's own preconceptions about the research setting
- permit testing of internal validity
- be based upon simple-to-use rules and procedures

Loose networks

Attempts to develop a satisfactory coding procedure in the light of these considerations began from a consideration of network analysis. A 'network' is defined by Miles and Huberman (1994, p.94) simply as, "a collection of 'nodes' or points connected by lines". The uses of networks in the analysis of qualitative data have been extended and refined by Bliss, Monk and Ogborn (1983), who write:

> Networks can usefully be regarded as an extension of the familiar business of putting things into categories. To categorise is to attach a label to things; in

> effect to place them in boxes. A network can be seen as a map of the set of boxes one has chosen to use, which shows how they relate to one another. (Bliss *et al*, 1983, p.8)

These authors propose that networks may be used to promote analysis of any qualitative data which fall in the middle range of a continuum between two extremes. These extremes are, on the one hand, data which are clearly idiosyncratic and unique (such as a description of a particular event), and, on the other hand, data which fall uncontroversially into simple groupings (such as solutions to problems which are either correct, incorrect, or incomplete) (Bliss *et al*, 1983, p.8). It seemed likely that, in the case of the written Progressive Plastics data, students' responses would have some features which were common in a greater or lesser number of cases, and other features which were unique to individual cases (so that their absence was a common feature of the rest). This seemed consistent with the view that:

> To use a network involves mainly holding that the data can and should be describable from some point of view, in terms more general and less particular than the data itself.
> (Bliss *et al*, 1983, p.184)

However, the requirement in this research was to record and display ideas which students had thought sufficiently important to include in their written submissions, and the links between these. It was never intended that this researcher would himself, as is normal in network analysis, originate categories to which data would subsequently be allocated. It should be noted that this avoided many of the problems associated with the development of categories (Bliss *et al*, 1983, pp.184-186), though some of these subsequently resurfaced in slightly different forms. For example, where categories of 'interactive' and 'non-interactive' have been pre-designated, the act of a student in writing something on a piece of paper can be hard to code with certainty (Bliss *et al*, 1983, pp.185-186). The student may be

interacting in part, or be likely to interact later. He or she may be doing other, non-interactive things as well. Where, as in this research, categories have not been so pre-designated, the sentence 'Brunei will have diversified', written by a student in response to Task Four, might be coded using the category *diversification*. In relation to the statement of another student, 'Government plans to overcome dependency on oil and gas by encouraging the development of new industries will have taken effect', the category *diversification* would also seem relevant, but is inadequate by itself for two reasons. First, the student has not used the word *diversification* as such. Replacing the student's own words with words chosen by this researcher would constitute a small but definite step in the direction of prescribed rather than emergent categories. Secondly, *diversification* would be too limited a vessel to contain what the student has written. Ideas about central planning, development, and the merits or otherwise of oil and gas production would be lost. In this case also, therefore, the data may belong partly within, and partly without, a particular category.

In addressing the question of what makes a good network Bliss *et al* (1983) offer the following point of view:

> a network is to be judged within the terms set by the mode of research in which it is embedded.
>
> a network gives a description of data intended by the analyst, and is to be judged by how well in fulfils the analyst's intentions, not (for our purpose) by what one may think of them.
>
> we have too little experience of using networks, and their uses range too widely, for it to be reasonable to offer more than suggestive guidelines, as opposed to prescriptions.
> (Bliss *et al*, 1983, p.189)

However, though these comments by the originators of network analysis might well be taken as a licence to improvise on the theme of networks, the decision to identify categories directly from the data seemed a large enough, and a significant enough, difference from their own description of the technique of network analysis to merit special signalling in some way. For this reason the term 'loose networks' was adopted to refer to the research artefacts produced during coding in this part of this research.

These loose networks seemed to offer, in principle at least, the possibility of progress towards meeting the coding requirements outlined above, in the following ways:

Network analysis is established in the literature of qualitative research, and by composing the networks of categories derived directly from the data one might hope to preserve the students' own meanings. The goal of simultaneously 'looking in' and 'looking out' might, therefore, be achieved. Similarly, links between students' ideas might be preserved, while at the same time links to wider theoretical knowledge could be sought.

The construction of networks would itself be a form of analysis, and would facilitate further analysis, up to a point, through the comparison of students' loose networks. However:

> If one wants to use a network analysis to count features, the task of constructing the network is then to construct countable features.
> (Bliss *et al*, 1983, p.188)

No such 'countable features' were constructed in advance, and the questions of whether, when, and how analysis of the written Progressive Plastics data could or should develop a quantitative dimension necessarily remained open, at least until

such time as the application of other techniques of analysis might make this possible (see Chapter 7).

Theory might be derived both through the "careful and exhaustive dialogue between category and data, inspected as carefully for misfit as for fit" (Bliss *et al*, 1983, p.197-199) which is associated with the grounded theory approach, and through "linking...analyses (through challenge or confirmation) to already accepted generalised knowledge claims" (Robinson, 1993a, p.131).

The ongoing generation of data categories seemed likely to occur until all available data had, in fact, been coded, because locating such categories, and building networks from their inter-relationships, were the purposes of the coding activity. The resulting reduction of 1082 pages of written data to 167 networks seemed likely to facilitate data retrieval.

It might reasonably be hoped that both the finished networks and the processes of drawing them up, examining them, and comparing them, might present challenges to this researcher's preconceptions (Bliss *et al*, 1983, p.197). A system of rules could be drawn up for the construction of networks. Finally, the internal validity of the finished networks might be tested by means of member checking (Lincoln and Guba, 1985, p.314; Robinson, 1993a, p.117-120; Cantrell, 1993, p.100). With these hopes in view, the coding of the written Progressive Plastics data proceeded.

Coding written Progressive Plastics data using loose networks: Rules

The four Progressive Plastics tasks were coded using a single sheet of A4 paper for each student. Each task was coded using a different colour. Details of this arrangement, and an alternative convention used for its presentation in this report, are given below. The particular uses of bold, italic and underlined script described apply in loose network diagrams only.

- Task One responses were coded in red (shown in all loose network diagrams which appear in this report in *italic* black script)
- Task Two responses were coded in green (shown in all loose network diagrams which appear in this report in **bold** black script)
- Task Three responses were coded in blue (shown in all loose network diagrams which appear in this report in <u>underlined</u> black script)
- Task Four responses were coded in black (shown in all loose network diagrams which appear in this report in standard black script)

Task Four responses were coded first because, as already noted, these were, on the whole, the most extensive and detailed. Coding of tasks one, two and three followed in that order for no other reason than their sequencing in the Progressive Plastics exercise. Each completed coding sheet was marked with a reference number which made possible identification of the student to whom it related by this researcher.

Categories were signified, wherever possible, by a word or words the student had actually used. Where, exceptionally, a student's own words were compressed into a category signified by a word supplied by this researcher, care was taken to:

- ensure the appropriateness of the chosen signifier (by, for example, comparing that student's words with those used by other students who *had* employed the chosen signifier)
- employ as many other categories as seemed necessary to convey the full content of that student's words
- ensure consistency in the making of such decisions by critical self-examination

Hence, in the example discussed previously, the category *diversification* would have been judged adequate for the student who wrote, 'Brunei will have diversified', but for the student who wrote, 'Government plans to overcome dependency on oil and

gas by encouraging the development of new industries will have taken effect' the additional categories *Govt. plans*, *reduce oil/gas dependency*, and *new industries* would be used in addition to *diversification*. To omit the use of the category *diversification* on the grounds that it was not specifically mentioned by the student would not promote the research aims, since there seems very good reason to suppose that this term does capture at least a part of the student's meaning. On the other hand, it was taken as axiomatic that everything the student had written should be referred to in the coded loose network, regardless of whether it seemed significant to this researcher. Finally, had more than one researcher been involved in the coding process, consistency between them might have been achieved by "intersubjective techniques" (Firestone and Dawson, 1988, pp.218-219). These might have included joint discussion of particular, difficult examples, and the independent coding of a random sample of responses by all researchers, with the results being subsequently compared and differences discussed with a view to standardisation.

The perspective taken on questions of validity and reliability by this researcher during this coding process, was consistent with those of Hammersley (1992), and of Silverman (1993), who has written:

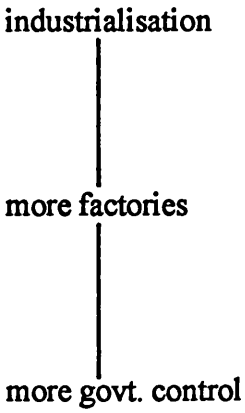
> It simply will not do to accept any account simply on the basis of the researcher's claims to 'an intensive personal involvement'.
> (Silverman, 1993, p.153)

The dangers identified by Fielding and Fielding (1986, p.32) of favouring data which either fit the researcher's preconceptions or appear attractively exotic were reduced by the rule that everything written be coded. This did not, of course, rule out the possibility (or even likelihood) that important data simply were not written by the students in some (or many) cases; but if that were so the problem was one of insufficient investigation, not inadequate coding. The overall view taken of the

relationship between the coding process and the reality of the setting of this research accorded with the following summary:

> 1. Validity is identified with confidence in our knowledge but not certainty
> 2. Reality is assumed to be independent of the claims that researchers make about it.
> 3.Reality is always viewed through particular perspectives; hence our accounts *represent* reality they do *not* reproduce it.
> (Hammersley, 1992, pp.50-51, original emphasis)

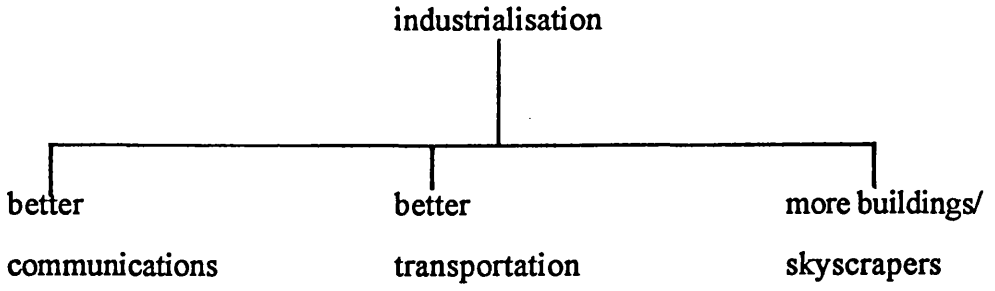
Where students' statements gave rise to categories connected *serially*, these categories were normally connected with a vertical straight line. Hence the statement: "Because of industrialisation there will be more factories. This will increase the need for government control" would be coded:



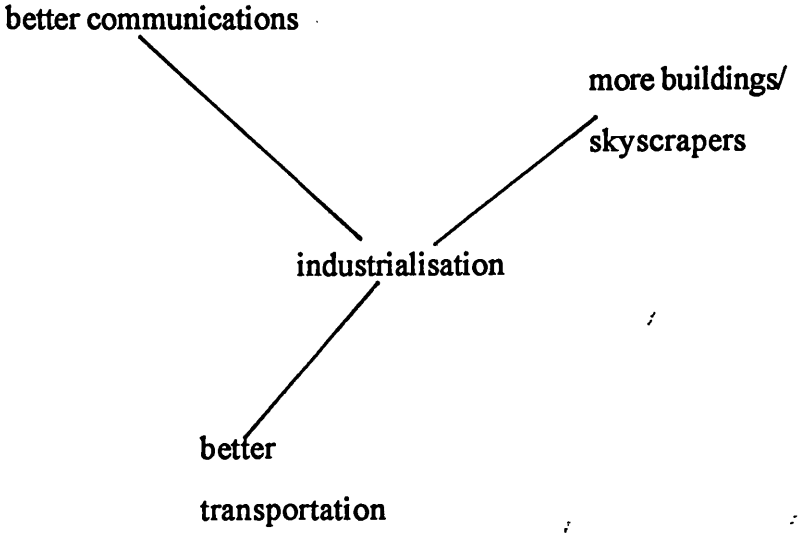
Exceptionally, where this form of representation might lead to loss of clarity through the cluttering of the loose network, the same sentence might be coded horizontally from left to right thus:

industrialisation —— more factories ——— more govt. control

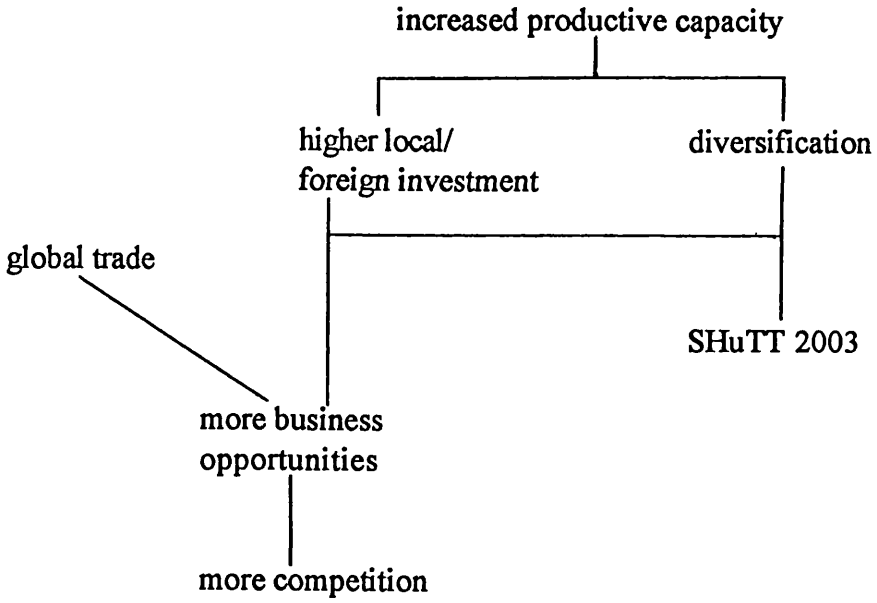
Where students' statements gave rise to categories which were linked *in parallel* this were shown as points on a single straight line. This was normally drawn horizontally. Hence the statement, "because of industrialisation there will be better communications, improved transportation and more buildings and skyscrapers" was coded:



Note that simplification through the incorporation of 'transportation' into the category 'communications', or of 'skyscrapers' into the category 'buildings' was avoided. If the serial progression from *industrialisation* had been drawn horizontally for the reason mentioned above, then the line denoting parallel statements would be drawn vertically to maintain contrast and clarity. Parallel statements were also sometimes coded in a 'star' if this seemed to help clarity on the page.



Where students specifically identified a relationship between two categories in any other way, or where more than one serial connection was identified as leading on from a category, a diagonal joining line was used. For example, a student identified *diversification* as one of several consequences of *increased productive capacity* which was in turn expected to promote the goals of *SHuTT* (see Chapter 5, endnote 14). Another consequence of *increased productive capacity* was expected to be *higher foreign/local investment*, and both this and *diversification* were expected to promote *more business opportunities*. Later in the response, *global trade* was separately identified as leading to *more business opportunities*. *More business opportunities* were expected to lead to *more competition*. The coding of this was:



Where it appeared to help the loose network to capture the sense of a student's response, joining words such as BUT, THOUGH, or EVEN SO were added alongside linking lines. Block capitals were used, to distinguish these additions from the categories themselves. Direct quotations from the students' responses were included on the loose network wherever they either helped to convey the sense of the response, or seemed in need of a further effort of understanding on the part of this researcher. Where, as occasionally happened, a student drew together many points in order to pursue a further, singular line of argument, the contributing points were bracketed together:

{.....}

Where the same point was made, in the same way, more than once by an individual student in his or her responses to the different tasks, this was indicated by a tick next to the original category entry in the colour of the task currently being coded. Hence, if a student raised waste reduction (black coding) as an issue for private firms during Task Four, and also, without additional elaboration, as a questionnaire item during Task Two, this would appear on the loose network as a green tick next to the category *waste reduction* written in black. Further, it seemed reasonable and potentially useful to identify links which this researcher felt existed between each student's responses to *different* tasks, and to record these on the loose networks according to the notation described above. As such links always joined categories recorded in different colours, there was no danger of confusing them with those links made by students themselves within a task, since the latter were always represented in a single colour.

Coding written Progressive Plastics data using loose networks: Outcomes

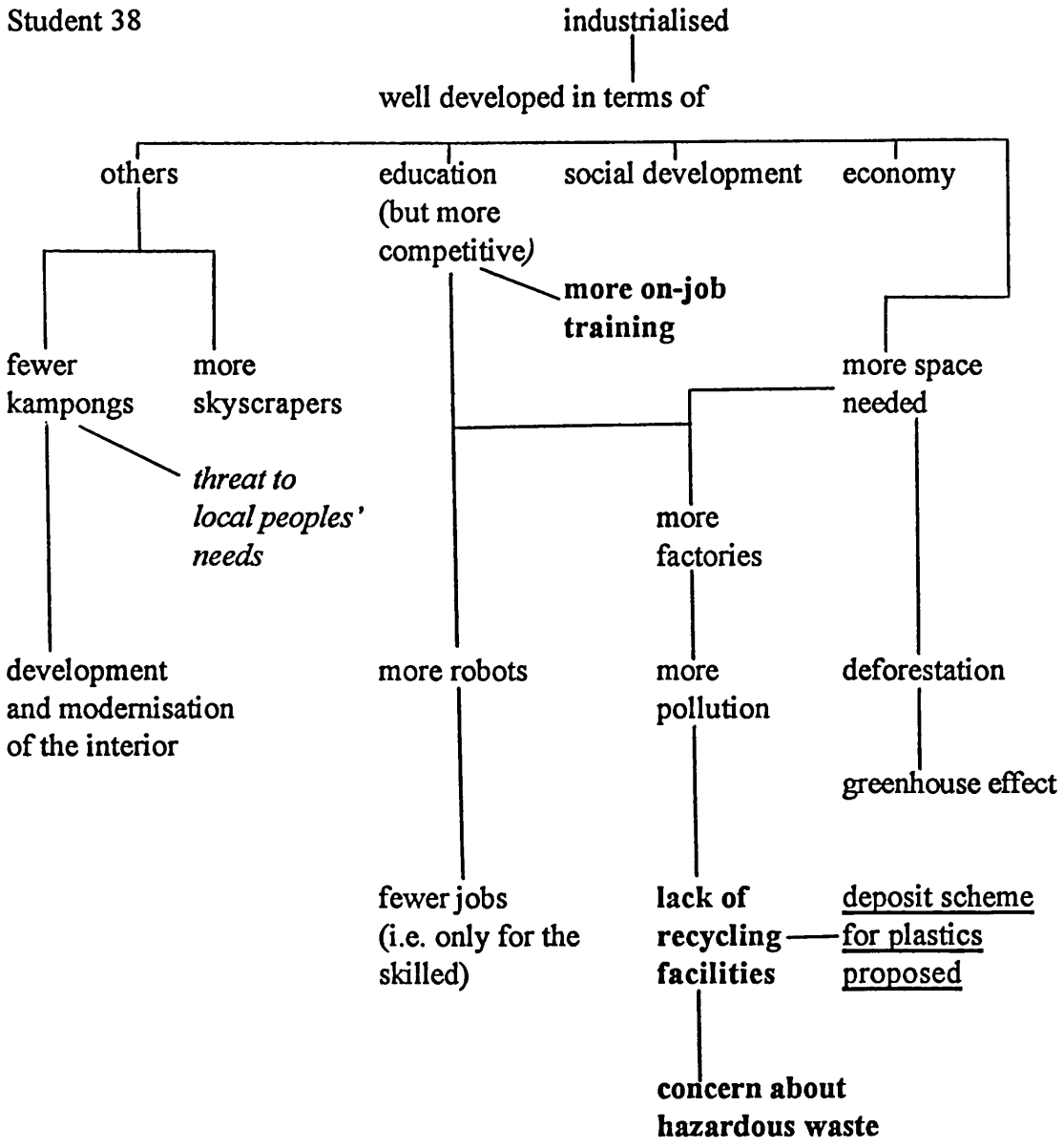
As already noted, the students' written Progressive Plastics data were coded into loose networks between 18 March and 22 July 1996. The resulting coded pages appeared to provide a readily accessible summary both of the main ideas developed by individual students, and of the links they had made between these ideas. The loose networks provided evidence, or perhaps rather made manageable existing evidence, of the value of the Progressive Plastics exercise in enhancing the effectiveness of teaching and learning (Research Aim 2). More generally, they contributed initial evidence regarding the overall usefulness of adaptive concepts in curriculum innovation of this kind (Research Aim 3). However, consistent with the observation of Coffey and Atkinson (1996, p.26) cited above, that coding may be part of the process of analysis but should not be thought of as analysis in itself, the loose networks by themselves provided at best an opaque view of any overall picture, if indeed such a picture existed. They enabled this researcher straightforwardly to retrieve data pertaining to a particular student, but not to offer

any but the most general observations about the perceptions of the sample as a whole. In terms of either assisting in the development of a process for identifying further adaptive concepts (Research Aim 1), or promoting qualitative understanding of the research setting, they seemed likely to be helpful but in need of much more precise focusing. These points are now discussed in turn.

Links:

A feature which appeared to be common to many of the 167 completed loose networks was a tendency to develop parallel strands of argument from a single original category which were, to a greater or a lesser degree, in some sort of tension with each other. The following extracts from individual loose networks illustrate this:

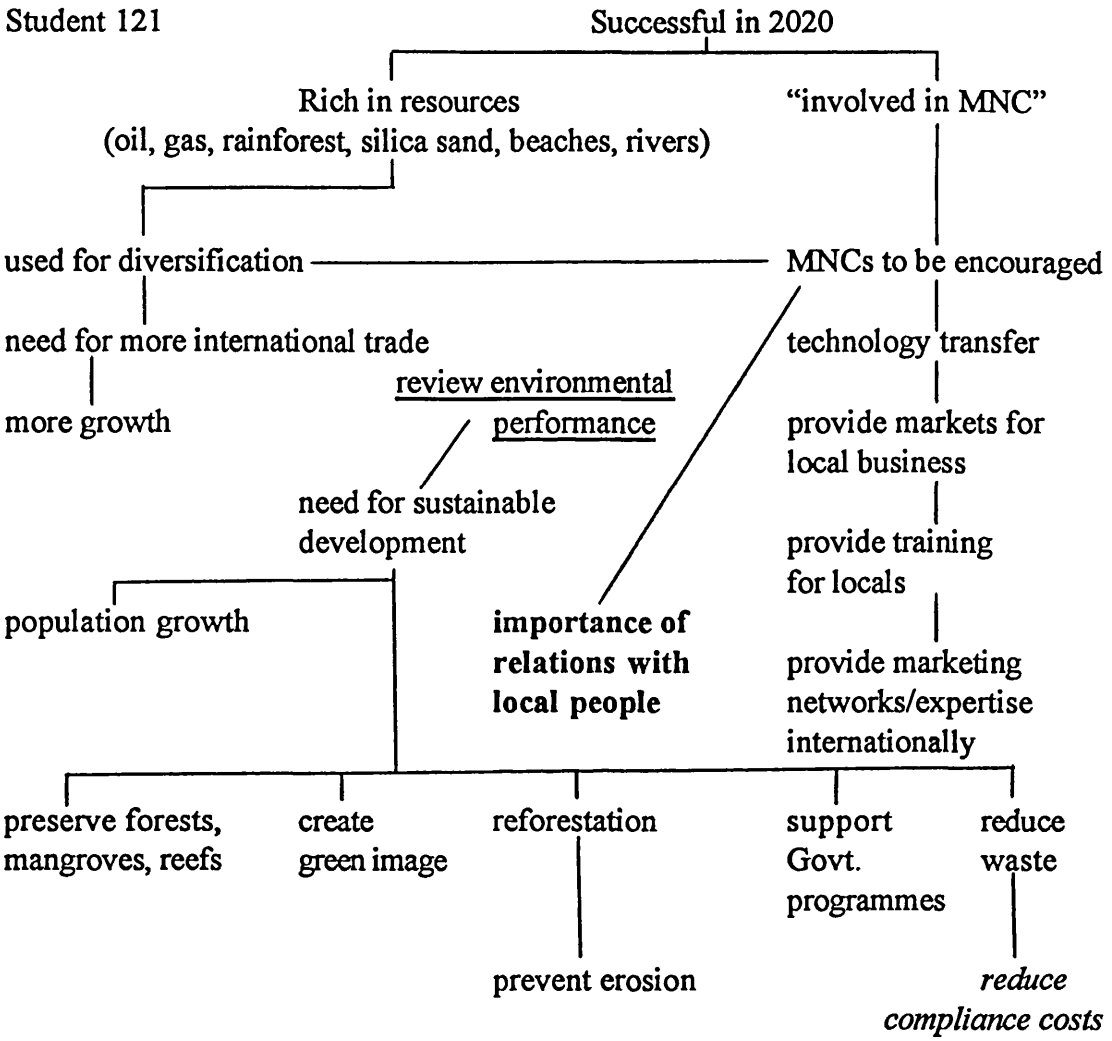
Student 38


industrialised
well developed in terms of
others
education (but more competitive)
social development
economy
more on-job training
fewer kampongs
more skyscrapers
more space needed
threat to local peoples' needs
more factories
development and modernisation of the interior
more robots
more pollution
deforestation
greenhouse effect
fewer jobs (i.e. only for the skilled)
lack of recycling facilities
deposit scheme for plastics proposed
concern about hazardous waste

Discussion of student 38's loose network

Considering, to begin with only those links made by the student himself in response to Task Four (i.e. those between categories shown in black) I found myself wanting to ask whether this Malay boy was looking forward to the changes he expected to see in his lifetime or not. On the one hand, he appeared to be positive about both social and industrial development. On the other hand, his train of thought about those trends led him in directions about which he appeared to feel negative. This could not be firmly concluded, however. It was possible that he regarded both a reduction in the number of traditional villages (*kampongs*), and a reduction in the number of necessary unskilled jobs, as desirable. The strength of his concern about pollution and the greenhouse effect, relative to his feelings about Brunei being well developed in social and economic spheres, could not be ascertained. The addition of categories arising from Tasks 1-3 to the loose network tended to reinforce the sense that this student experienced mixed feelings. However, it should be remembered that links between categories from different tasks are this researcher's invention, and were not explicitly made by the student.

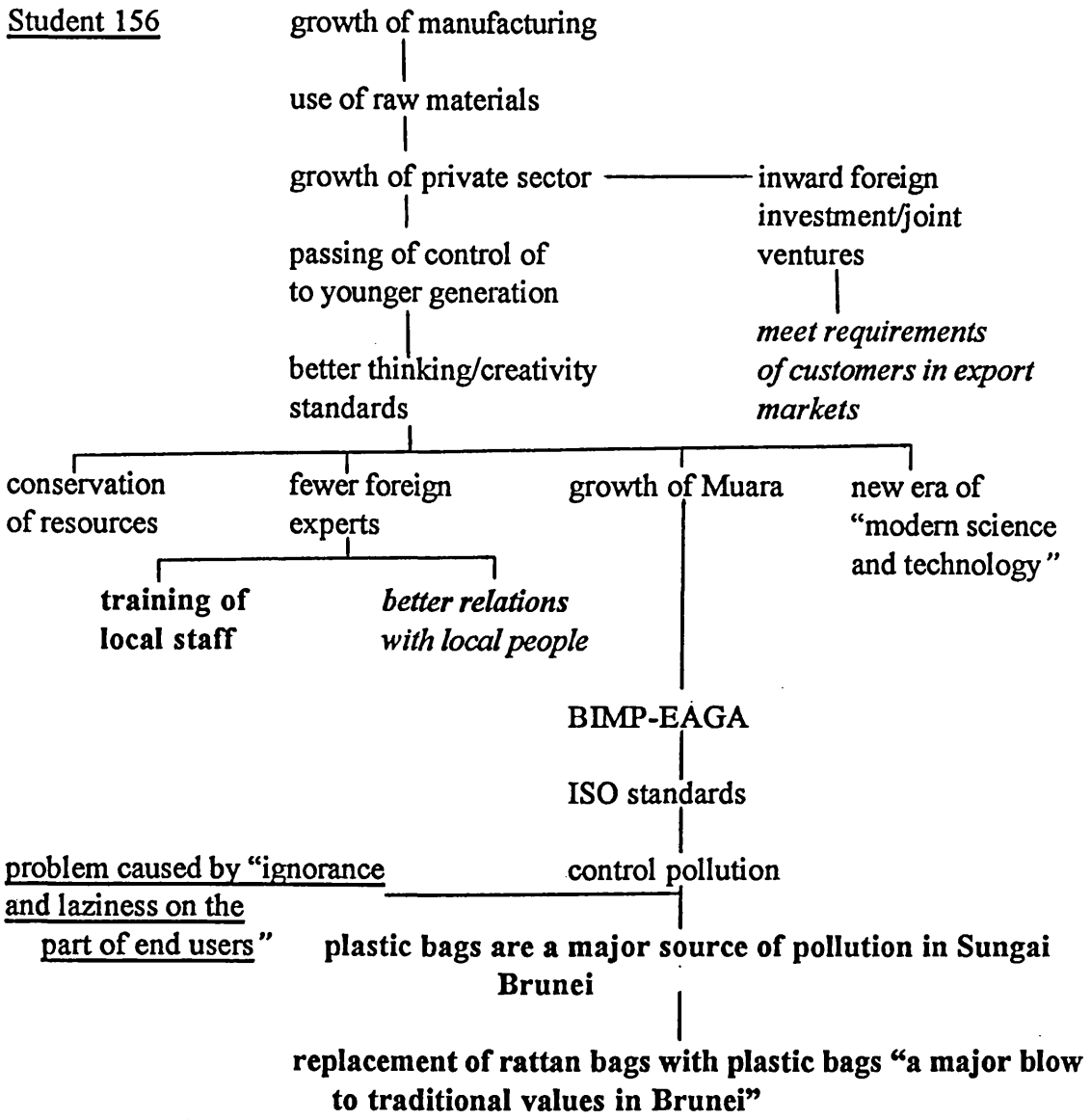
Student 121


Successful in 2020
Rich in resources
(oil, gas, rainforest, silica sand, beaches, rivers)
"involved in MNC"
used for diversification
MNCs to be encouraged
need for more international trade
technology transfer
review environmental
more growth
performance
provide markets for
local business
need for sustainable
development
provide training
for locals
population growth
importance of
relations with
local people
provide marketing
networks/expertise
internationally
preserve forests,
mangroves, reefs
create
green image
reforestation
support
Govt.
programmes
reduce
waste
prevent erosion
reduce
compliance costs

Discussion of student 121's loose network

At the most general level this Malay girl appeared to experience a tension between, on the one hand, seeing the natural world as a resource, and on the other hand seeing it as something to conserve and protect. Pivotal to this tension were the roles of multi-national corporations and the notion of sustainable development. This interpretation, if correct, would be evidence that the Progressive Plastics intervention held the potential to promote engagement by local people in a debate which is not only of active significance in Brunei, but also in many of the world's less developed countries, in the academy, and within multi-national corporations themselves (Moser and Miller, 1997, pp.44-47). The loose network made visible some of the elements which she considered important within this issue. However, there was no indication of the relative significance she attached to different aspects (such as, say, preservation of mangroves, or provision of markets) and, of course, no ready way of establishing how widely her concerns were shared by other students.

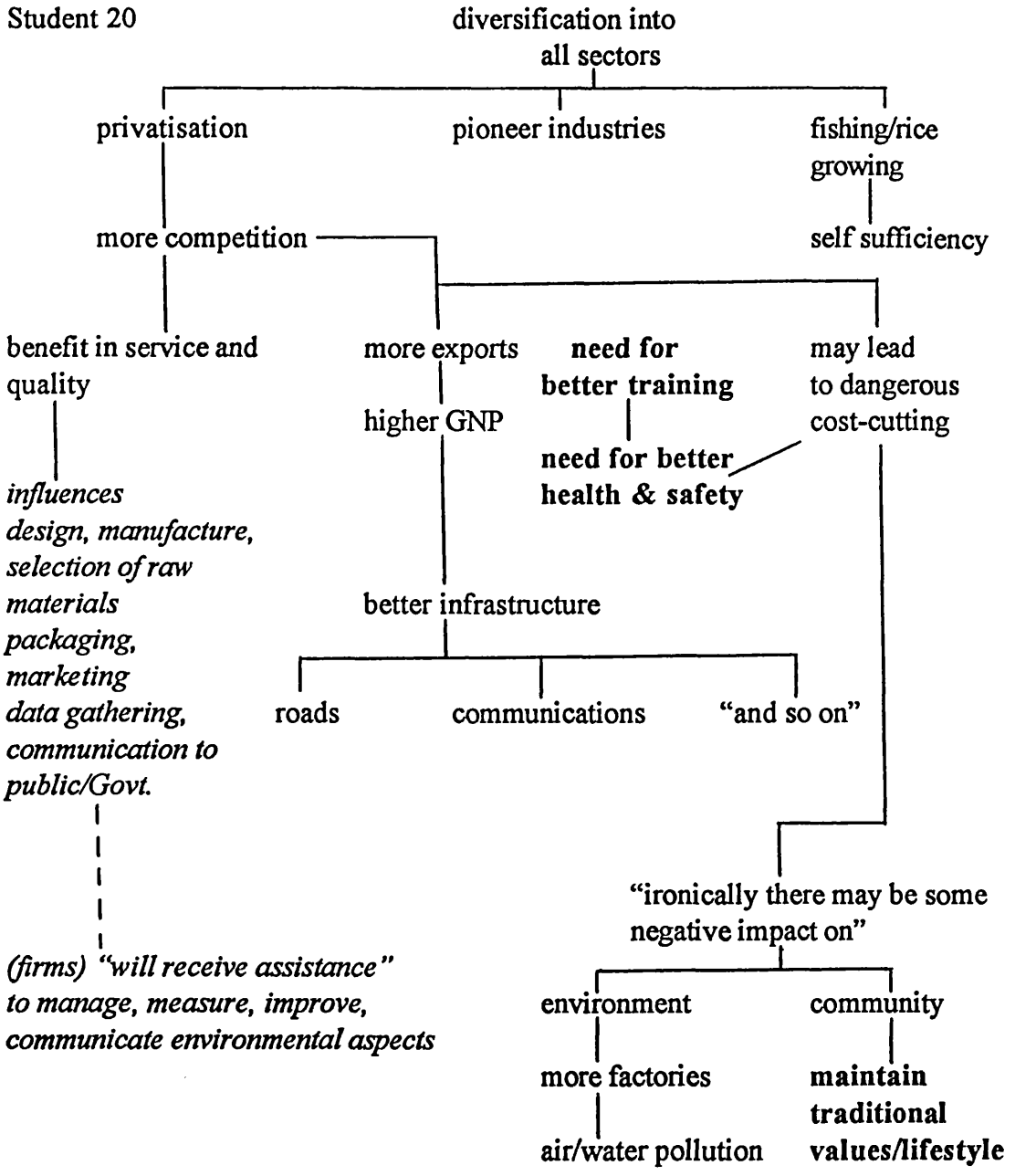
Student 156


growth of manufacturing
use of raw materials
growth of private sector
inward foreign investment/joint ventures
passing of control of to younger generation
meet requirements of customers in export markets
better thinking/creativity standards
conservation of resources
fewer foreign experts
growth of Muara
new era of "modern science and technology"
training of local staff
better relations with local people
BIMP-EAGA
ISO standards
problem caused by "ignorance and laziness on the part of end users"
control pollution
plastic bags are a major source of pollution in Sungai Brunei
replacement of rattan bags with plastic bags "a major blow to traditional values in Brunei"

Discussion of student 156's loose network

This student was a Malay boy. There was a tension within the Task Four responses between, on the one hand, the 'use of raw materials', which appeared to be a causal factor in the achievement of 'better thinking' and the 'new era', and on the other hand the 'conservation of resources' which was expected to result from this thinking. If the connections made by this researcher between different tasks are admitted, then there was a further tension between the new era of "modern science and technology" and the "traditional values" which are specifically recognised by the student to be damaged by a particular application of that technology. This loose network suggested to this researcher the question, 'are the ideas which the student has described really in conflict, or are they rather alternatives appropriate to different social contexts (such as, say, college and mosque) which are usually kept separate?'. A further issue, given the emphasis placed by some writers upon the pursuit of social justice as an essential corollary of the achievement of environmental education goals (e.g. Trainer, 1990; Huckle, 1991; Young, 1991; Fien, 1993), is where exactly social justice might lie in the resolution of tension between the desires for environmental conservation, a modern lifestyle, and traditional values.

Student 20


diversification into all sectors
privatisation
pioneer industries
fishing/rice growing
more competition
self sufficiency
benefit in service and quality
more exports
need for better training
may lead to dangerous cost-cutting
higher GNP
need for better health & safety
influences design, manufacture, selection of raw materials packaging, marketing data gathering, communication to public/Govt.
better infrastructure
roads
communications
"and so on"
"ironically there may be some negative impact on"
(firms) "will receive assistance" to manage, measure, improve, communicate environmental aspects
environment
community
more factories
maintain traditional values/lifestyle
air/water pollution

Discussion of student 20's loose network

For this Chinese girl there appeared to be a tension between the benefits expected and apparently desired from privatisation and increased competition on the one hand, and community values and lifestyles on the other. The student appeared to be aware of this tension when she used the word "ironically". She also appeared to have identified ISO standards as a potential means of resolving this tension, making the suggestion that it might be a vehicle through which Government, having handed control to the private sector, could offer wise advice and assistance. The dotted connection indicates that a number of intervening steps have been omitted to aid clarity. Speculating on possible tensions between competition and paternalism in the mind of teenage 'overseas Chinese' girls is a fascinating but extremely fraught exercise, given limited evidence that these incompatible characteristics are likely to be dominate in their working and family environments respectively (Greenhalgh, 1988).

Consideration of links students had made in their loose networks, and, to a lesser degree, of links made between their statements by this researcher, placed the following matters on the immediate agenda of this research:

- checking the validity of these analyses, and the analyses of other loose networks, which suggested that tensions of various kinds were present in the thinking of students
- questioning whether any tensions were felt particularly strongly by individual students
- questioning how widespread was the occurrence of each particular form of tension among the whole sample of students

Effectiveness of teaching and learning:

In keeping with the intention of this research to facilitate discourse between disparate, or even opposed groups, the success of the intervention in enhancing the

effectiveness of teaching and learning was judged against criteria from more than one environmental education perspective. Although such judgements went well beyond the basic process of coding data into loose networks, they are discussed here because:

- they were based on analyses of which the loose networks formed an integral part
- the extent of the ability of loose networks to contribute to identification of changes in the effectiveness of teaching and learning is an important aspect of their overall usefulness

A further assessment of the impact of the intervention on teaching and learning was made on the basis of the written evaluations provided by participating teachers. Finally, the intervention was evaluated from the (educational, but non-environmental) perspectives of the literatures of school effectiveness and school improvement. These further viewpoints were adopted in order to obtain triangulated findings with regard to Research Aim 2 and check, in the process, on the likely accuracy of conclusions drawn from the students' loose networks. Two kinds of triangulation were represented:

- investigator triangulation (Smith, 1975; Cohen and Mannion, 1994, pp.236-237). Identification of improvements in teaching and learning by this researcher were supplemented by comments from participating teachers
- theoretical triangulation (Smith, 1975; Cohen and Mannion, 1994, pp.236-237). Identification of such improvements was assessed from the theoretical perspectives of school effectiveness and school improvement, in addition to those of socially-critical environmental education and positivist environmental education

At this stage of this research, the following preliminary evaluations seemed realistic:

Teaching and learning from a positivist perspective

A positivist environmental education perspective on teaching and learning against which the Progressive Plastics innovation could be evaluated was drawn from Hungerford, Peyton and Wilke (1980). These authors identify a "Superordinate Goal" of environmental education:

> to aid citizens in becoming environmentally knowledgeable and, above all, skilled and dedicated citizens who are willing to work, individually and collectively, toward achieving and/or maintaining a dynamic equilibrium between quality of life and quality of the environment.
> Hungerford, Peyton and Wilke (1980, p.72)

These authors classify specific goals of environmental education at four levels:

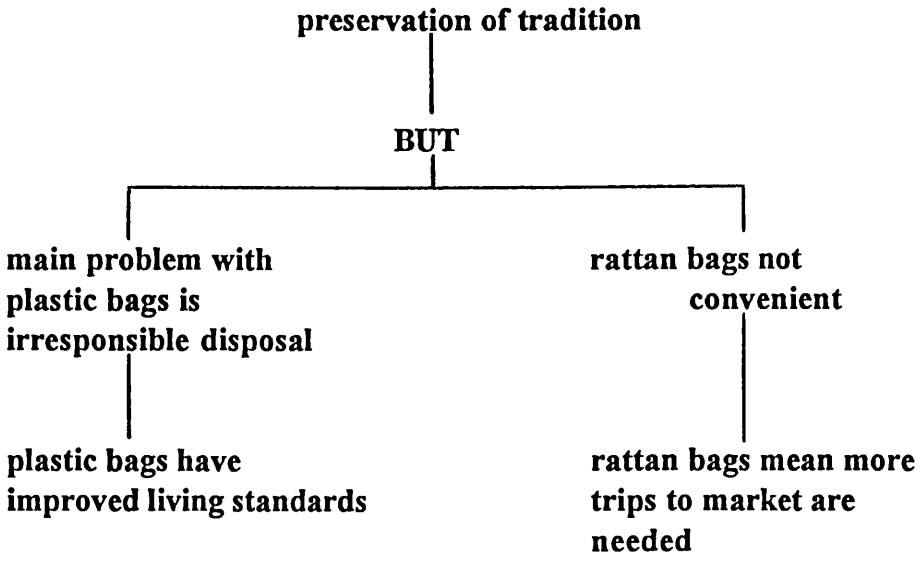
- level 1: ecological foundations
- level 2: conceptual awareness - issues and values
- level 3: investigation and evaluation
- level 4: environmental action skills - training and evaluation

(Hungerford, Peyton and Wilke, 1980, pp.72-74)

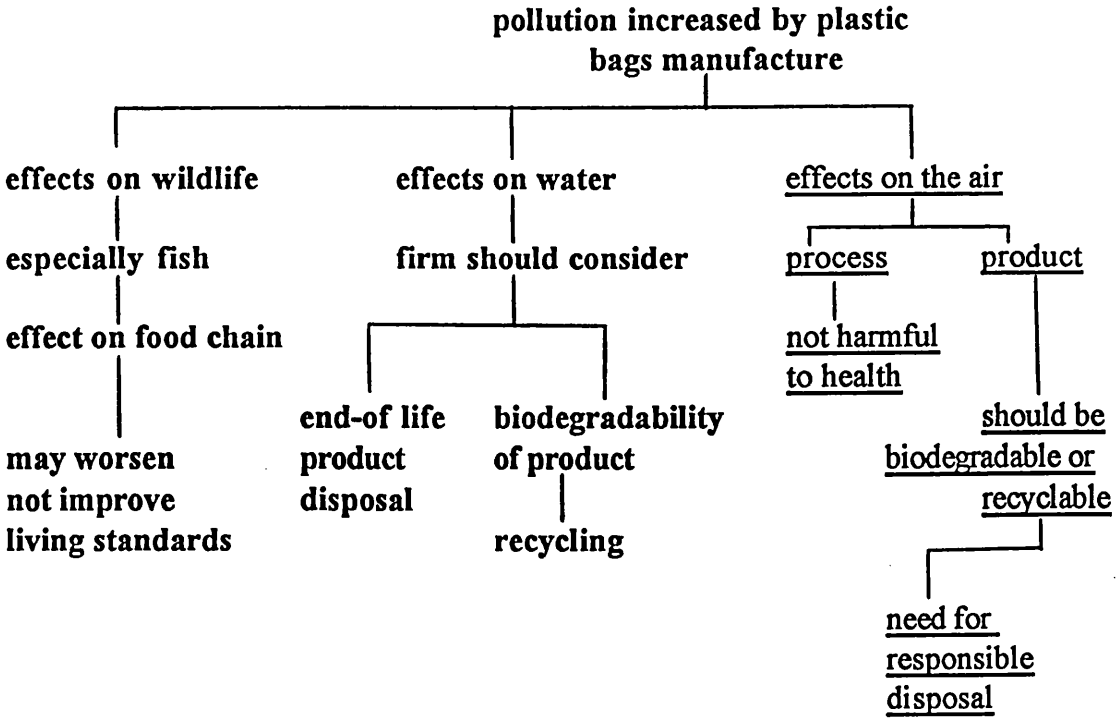
In the specific cultural context of North Borneo the notion of 'citizenship' is problematic (Gough, 1995, p.329). As noted, not all the students who participated in Case Study One were, in fact, citizens of Brunei or any country at all, while their teachers were all citizens of countries located on other continents. Further, even though citizenship of Brunei confers upon an individual a basic right to seek to influence events, the means to such influence are informal, indirect, and accessible in different degrees to different citizens depending on their race, religion, status and wealth. The Progressive Plastics intervention did not address these inequalities, but the students' loose networks did suggest that many individuals had been prompted

to consider the place of the environment in their own lives in a new light. Even the most cursory of responses tended to identify environmental costs (and benefits) resulting from the development process, and to provide a sense of the linking of 'quality of life' and 'quality of environment'. Coding and presentation by means of loose networks made this clear through representation of diverging ideas as diverging network branches.

At level 1, 'ecological foundations', the loose networks appeared to reveal evidence of learning under Hungerford, Peyton and Wilke's (1980, p.72) categories E ('the community and ecosystem concepts'), H ('man [sic] as an ecosystem component'), and I ('the ecological implications of man's [sic] activities and his [sic] communities), particularly with respect to the technology of plastics manufacture, and the relationships between this and different ways of life, different products, and different environmental impacts. This is not to say that all students agreed about these matters, or were able to resolve them. For example, one student's loose network linked categories as follows:



While another student's loose network showed the following:



The point should be made that, in general terms, the issue in relation to teaching and learning is not whether the Progressive Plastics intervention achieved all the goals of environmental education. Even if such goals were universally agreed, that would be far too much to ask of a small (or, in fact, any) educational project. What is at issue is whether the intervention made possible progress towards widely accepted environmental education goals in an educational context in which those goals would otherwise be unlikely to be found at all, or be found only to a marginal extent. That they *would* otherwise be unlikely to be found in the Maktab Duli Management course may be illustrated by the fact that of the two standard textbooks in use by the course during this research, one (Chua *et al*, 1994) made no reference at all to environmental issues while the other (Gorman, 1992) made only three: These were all very brief:

- Shell's donations to environmental projects. "Social aims may be a key promotional aim."
- External diseconomies of scale which, "include pollution, slow transport and shortages of labour and land. These increase firms' costs, such as wages and rent."
- "some people, notably the Green Party and pressure groups such as Friends of the Earth, argue that growth only leads to *external costs* such as pollution, and cannot be sustained indefinitely because it uses up scarce natural resources."

(Gorman, 1992, pp. 4, 8, and 196 respectively, original emphasis)

This is little enough in a two year course particularly if, as a number of environmental educators believe, business and the ways of life that go with it are the primary causes of environmental degradation (see, for example, Trainer, 1990, Huckle, 1983b, 1986, 1988, 1991; Greenall Gough, 1993a; Fien, 1993). However, the students' loose networks showed clear and rich evidence of engagement with goals at level 2, 'conceptual awareness - issues and values', which are stated in terms of providing "opportunities for receivers to conceptualise" (Hungerford, Peyton and Wilke, 1980, pp.72-73) the following:

A the effect of cultural activities on the environment

B the impact of individual behaviours on the environment

C the ecological and cultural implications of a wide variety of environmental issues

D viable alternative solutions to discrete environmental issues: the ecological and cultural implications of these

E the need for environmental issue investigation and evaluation to guide decision making

F the role of values in environmental decision making: values clarification

G the need for responsible citizenship action (e.g. persuasion, consumerism, legal action, political action, ecomanagement)

To illustrate these, in the same order, the students' loose networks commonly recorded concern about:

- the detrimental effects of development on local culture and hence on traditional interactions with the environment
- the impact of individual decisions with regard to lifestyle in general and waste disposal in particular
- the effects on both fish and the activity of fishing of changes in coastal land use
- discussion of possible solutions to the issue of plastic waste in the water-village *Kampong Ayer* (see Chapter 5, endnote 2)
- a perceived need to interrogate business about environmental impacts and create an appropriate regulatory framework
- statements qualifying the desirability of development
- calls for ecomanagement, particularly in the prevention and remediation of problems caused by waste, and in the area of health and safety

In terms of Hungerford, Peyton and Wilke's (1980) level 3 goals, 'investigation and evaluation', there may well have been learning gains by students through their adoption of a range of both competing and complementary social perspectives upon the same, admittedly hypothetical, issue.

Finally, the level 4 goals concerned with 'environmental action skills - training and evaluation' presented a particular difficulty given the non-democratic nature of Brunei society. Given the perceived importance of environmental action in environmental education from many theoretical perspectives (Hungerford, Peyton and Wilke, 1980, p.74; Stapp and Wals, 1993, Robottom and Hart, 1993, pp.52-54; Greenall Gough and Robottom, 1993) this was seen as an important problem. An attempt was made to begin to address it elsewhere in this research, through the ISO Seminar activity, as discussed in Chapter Five.

Teaching and learning from a socially-critical perspective

As noted in Chapter One, the appropriateness of a socially-critical approach to environmental education in the cultural and educational context of this research was questionable. Particular issues were:

- the legality in this context of the central socially-critical concept of 'empowerment'
- the compatibility of a socially-critical approach with any variety of *business* education whatsoever
- the 'orientalism' (Said, 1985) inherent in designating traditional Eastern commercial cultures as examples of 'false consciousness'. Such a designation appears indispensable to socially-critical theory's global, non-competitive, egalitarian project

- the difficulty of transferring the Western concept of 'social disadvantage', which is central to definitions of socially-critical praxis, whole and unaltered to Eastern social traditions and circumstances

(Gough, 1995, p.330)

However, as further argued in Chapter Three, this did not mean that the instructional goals of socially-critical environmental education were abandoned wholesale, and indeed to have denied them any recognition would have been inconsistent with the precepts of cultural theory which informed this research.

Five "defining characteristics of critical pedagogical practice in environmental education" have been identified by Fien (1993, p.12). These are:

1....the development of a critical environmental consciousness based upon:

(a) a holistic view of the environment as a totality of the interdependent relationship between natural and social systems;

(b) a historical perspective on current and future environmental issues; and

(c) the study of the causes and effects of environmental problems, and alternative solutions to them through an examination of:

(i) the relationships between ideology, economy and technology, and

(ii) the linkages between local, regional, national and global economies and governments.

2....the development of critical-thinking and problem-solving skills through a variety of practical and inter-disciplinary learning experiences which focus on real-world problems and involve the study of a wide range of sources and types of information.

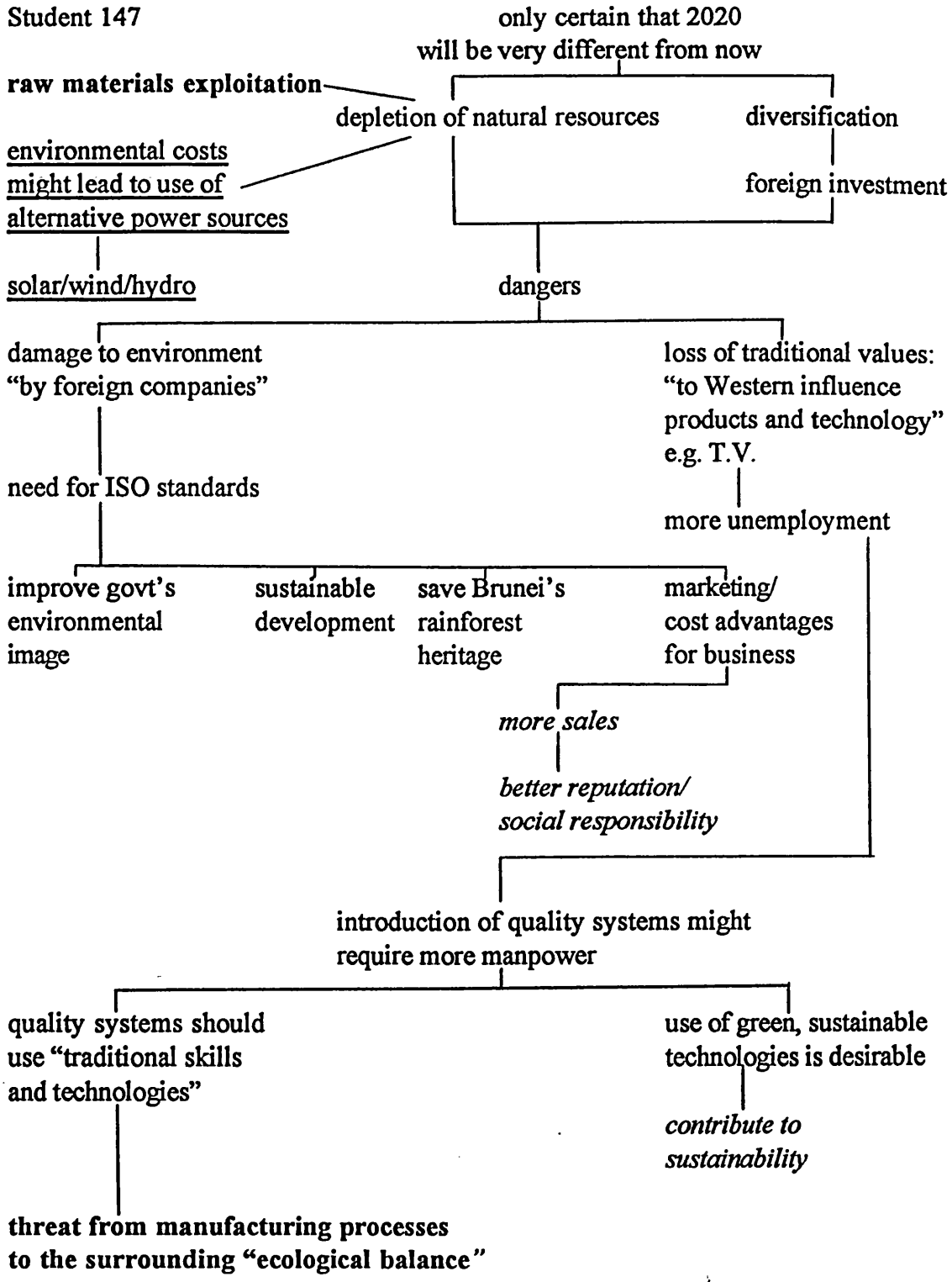
3....the development of an environmental ethic based upon sensitivity and concern for environmental quality.

4....the development of the understandings, attitudes and skills of political literacy which promote participation in a variety of forms of social action to help improve and maintain environmental quality.
5....teaching strategies which are consistent with its goals.
(Adapted from Fien, 1993, p.12)

The extent to which the Progressive Plastics intervention made progress towards these goals, and therefore the extent to which the loose networks might be said to reveal and clarify such progress, depends very much on the meaning attached to the single word 'critical', and specifically whether being critical necessarily involves the adoption of a socialist (or 'ecosocialist') perspective. Socially-critical environmental education theory is itself not entirely clear on this point (Fien, 1993, pp.43-49 and pp.63-68). Further, it may be asked from an environmental education perspective whether ecosocialism is critical *enough*, or critical of the right things, or sufficiently self-critical (Gough, Stables and Scott, 1999). All this being so, the word is here understood in a general sense to imply a questioning, investigative orientation.

The students' loose networks frequently indicated that the Progressive Plastics tasks had provoked simultaneous consideration both of natural and social aspects of the local environment, and of the developing inter-relationships between these over time. There was also evidence that students had considered the interactivity between these factors and changes (or potential changes) in the economy, in technology and in ideology and values. The loose networks showed that while these matters were most frequently considered by students with reference to the ways in which they affected the local environment, discussion of regional and international aspects was not uncommon. The following extract from a student's loose network illustrates some of these points:

Student 147


only certain that 2020
will be very different from now
raw materials exploitation
depletion of natural resources
diversification
environmental costs
might lead to use of
alternative power sources
foreign investment
solar/wind/hydro
dangers
damage to environment
"by foreign companies"
loss of traditional values:
"to Western influence
products and technology"
e.g. T.V.
need for ISO standards
more unemployment
improve govt's
environmental
image
sustainable
development
save Brunei's
rainforest
heritage
marketing/
cost advantages
for business
more sales
better reputation/
social responsibility
introduction of quality systems might
require more manpower
quality systems should
use "traditional skills
and technologies"
use of green, sustainable
technologies is desirable
contribute to
sustainability
threat from manufacturing processes
to the surrounding "ecological balance"

Discussion of student 147's loose network

Both a consideration of the relationship between natural and social systems, and an international perspective on local problems, are evident in this student's identification of external social and economic influences on the Bruneian environment. Also immediately apparent is the student's use of a long time frame to link the traditional past with an uncertain future. This Malay boy was the son of a *Pehin*, or Malay nobleman.

In considering the extent to which the students' loose networks were able to reveal evidence of Fien's (1993, p.12) other (i.e. points 2-5 above) characteristics of socially-critical environmental education, the following limited claims appeared justified:

- though the problem considered by students was not, in fact, 'real', it was credible and related to a real, and locally-significant setting.
- the Progressive Plastics intervention was in some degree interdisciplinary, in that it combined environmental education with management education, and further included aspects of science education, for example in relation to the chemical properties of plastics
- students were encouraged to consider environmental-ethical issues from a variety of perspectives, including those of multinational corporations, Government, and local villagers. Conflicts and congruencies between perspectives were often apparent from examination of the loose networks
- the loose networks revealed thought processes on the part of many students which were unquestionably political in nature. That said, no propensity to 'social action' of the kind envisaged by socially-critical theorists (see, for example, Greenall Gough and Robottom, 1993) was so revealed (but see Chapter 12). However, it is perhaps worth noting here that the Progressive Plastics intervention was directly instrumental in the setting up of a recycling initiative

within Maktab Duli. This was organised by the General Paper Department (the Head of which, as was recorded in Chapter 4, had expressed interest in the project in early January), with technical assistance from Brunei Shell Petroleum

- It is possible that some professional development of teachers occurred through the action of curriculum innovation (Robottom, 1987a) but, if so, it certainly did not correspond very closely with the detailed and ambitious prospectus of professional development described from a socially-critical perspective by Robottom (1987a, pp.114-115). In part this may have been inevitable, given the mismatch in this research between the cultural backgrounds of teachers on the one hand and students on the other. For example, Robottom (1987a, p.114) believes that professional development in environmental education should be community-based, which was clearly problematical for the expatriate teachers of the Progressive Plastics intervention

Against this, however, Fien (1993, p.93) associates socially-critical environmental education specifically with the notion of teachers as "transformative intellectuals" (Giroux, 1985). Such teachers are expected to join with students in a political "struggle over power relations" (Giroux, 1985, p.379). This was a highly problematic goal in the context of this research for cultural, legal and practical reasons.

Teaching and learning: the views of participating teachers

Teachers were asked to complete an "Evaluation Report" of the Progressive Plastics intervention. The report pro-forma was accompanied by a preface which has already been a subject of discussion in Chapter Five. Teachers were asked to comment at length under the following headings:

- Business and the environment. Please comment on your personal view of the relationship between business activity, business education and the natural

environment, both globally and in the context of Brunei. What *are* the likely scenarios?

- Appropriateness to our own syllabus and institution. Was the quality exercise useful in the context of our Management of Business course? Did it extend students' knowledge and competencies in appropriate directions? Was it a fitting innovation within Maktab Duli?
- The materials and their delivery. Were the materials, both information and tasks, of a suitable standard (linguistically, intellectually, or according to any other criterion you feel is important)? Could the presentation be improved? Was the exercise too long? Did it need more follow-up? Was it appropriate to grade each of the four tasks? Did the group-work format function to your satisfaction?
- The Ministry of Development seminar. Was this an appropriate follow up in principle and in practice? If we develop this exercise next year should we look for more extensive opportunities for students to present their work to outside audiences in this way? Or in some other way? Is the link with the Ministry of Development worth cultivating?
- What next? What else?

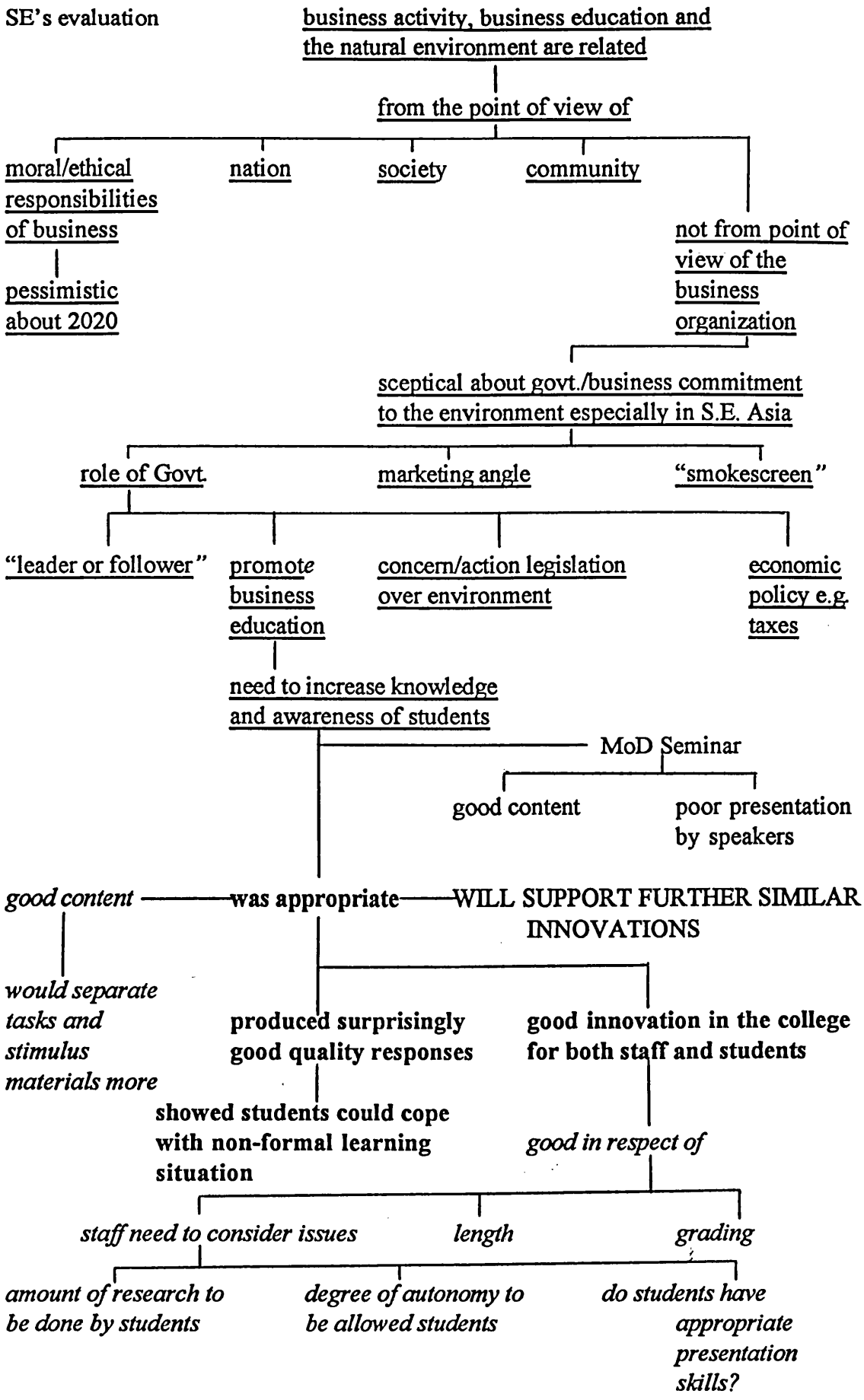
Responses were coded using loose networks to display the links made by teachers between the categories and ideas they themselves generated in their responses. The rules followed in drawing up these loose networks were the same as those used in coding the students' written data. A particular colour was allocated for the coding of responses under each of the five headings, as follows:

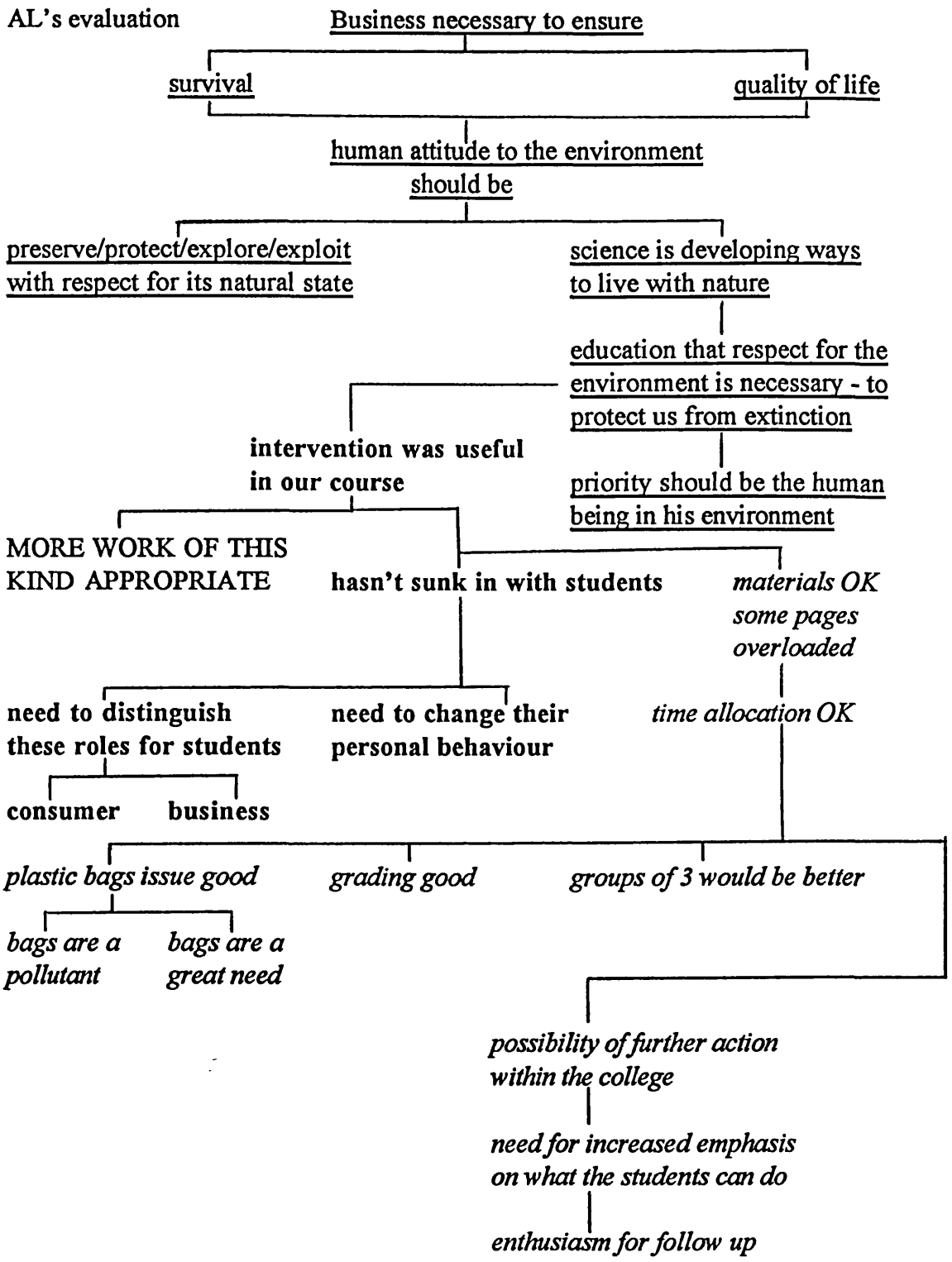
- business and the environment = *blue* (underlined in the diagrams reproduced here)
- appropriatness to syllabus = *green* (**bold**, in the diagrams reproduced here)
- materials/delivery = *red* (*italic* in the diagrams reproduced here)
- Ministry of Development seminar = *black* (unenhanced in the diagrams reproduced here)

- What else? What next? = *purple* (CAPITALS in the diagrams reproduced here)

As with the students' loose networks, all links between items of the same colour were made by the teacher himself (all were men). All links between items of different colours were inferred by this researcher.

All teachers indicated that they felt the intervention had enhanced teaching and learning within the Department in some respect. Teachers were found to have made statements relating to the effectiveness of teaching and learning under all five headings. The use of loose networks enabled such statements to be viewed in the context of their author's wider views. The following extracts illustrate these points:


SE's evaluation
business activity, business education and the natural environment are related
from the point of view of
moral/ethical responsibilities of business
nation
society
community
not from point of view of the business organization
pessimistic about 2020
sceptical about govt./business commitment to the environment especially in S.E. Asia
role of Govt.
marketing angle
"smokescreen"
"leader or follower"
promote business education
concern/action legislation over environment
economic policy e.g. taxes
need to increase knowledge and awareness of students
MoD Seminar
good content
poor presentation by speakers
good content
was appropriate
WILL SUPPORT FURTHER SIMILAR INNOVATIONS
would separate tasks and stimulus materials more
produced surprisingly good quality responses
good innovation in the college for both staff and students
showed students could cope with non-formal learning situation
good in respect of
staff need to consider issues
length
grading
amount of research to be done by students
degree of autonomy to be allowed students
do students have appropriate presentation skills?


AL's evaluation
Business necessary to ensure
survival
quality of life
human attitude to the environment should be
preserve/protect/explore/exploit with respect for its natural state
science is developing ways to live with nature
education that respect for the environment is necessary - to protect us from extinction
priority should be the human being in his environment
intervention was useful in our course
MORE WORK OF THIS KIND APPROPRIATE
hasn't sunk in with students
materials OK
some pages overloaded
need to distinguish these roles for students
need to change their personal behaviour
time allocation OK
consumer
business
plastic bags issue good
grading good
groups of 3 would be better
bags are a pollutant
bags are a great need
possibility of further action within the college
need for increased emphasis on what the students can do
enthusiasm for follow up

Discussion of SE's and AL's evaluations

SE's and AL's evaluation loose networks have been chosen because these two teachers represented opposed extremes in terms of the degree of optimism they evinced about the environmental future. While both supported the intervention, and expressed themselves willing to support future similar interventions, SE admitted cynicism about the extent to which any real difference was likely to be made to environmental outcomes. By contrast, AL was relatively cornucopian about the future, and positive about the potential role of education. The criticism that the materials were too cluttered was common, and was expressed strongly also by RS. BH also commented that the materials were "too dense linguistically". Approval of the grading of the students' submissions was unanimous. There was also unanimous approval of the processes of teaching and learning engendered. This was considered to provide opportunities to work with students in ways not typical of the course. BH commented that the method of instruction was "the way I wish the entire subject was taught".

Two separate points arose from this analysis of the teachers' evaluation reports. First, these tended to confirm *in themselves* that teaching and learning had been enhanced by the Progressive Plastics intervention, thus supporting the conclusions indicated by the students' loose networks. Second, the further use of loose networks to code the teachers' evaluations had advantages in terms of:

- identifying connections between ideas made by teachers
- identifying other possible connections between ideas in the thinking of teachers
- facilitating comparison between the ideas of different teachers

Data reduction and retrieval were in this case relatively unimportant. The total evaluation data collected from teachers were fairly manageable before coding. This contrasts with the use of loose networks to code students' written data, in which data reduction and retrieval were significant factors.

Teaching and learning: school effectiveness and school improvement

As noted above, it was decided to question whether the conclusions regarding enhanced teaching and learning indicated by the students' (and teachers') loose networks seemed credible from an entirely different theoretical perspective.

'School effectiveness' and 'school improvement', while apparently necessarily closely related (Reynolds, 1993) are aspects of educational enquiry which have evolved from very different intellectual traditions (Reynolds *et al*, 1997, pp.130-131). Attempts to link or even merge them are a relatively recent (Reynolds *et al*, 1997, p.132; Hargreaves, 1997) and not uncontroversial phenomenon (Brown *et al*, 1995; Gray *et al*, 1996). A focus of such attempts has been the substantially shared ground that:

> School improvement is a process that focuses on enhancing the *quality of students' learning*.
> (Hopkins, Ainscow and West, 1997, p.261, original emphasis)

and:

> Central in educational effectiveness...are the teaching and learning processes going on at the classroom level.
> (Creemers, 1997, p.120)

Hence, a study carried out by the Centre for School Improvement of the University of Bath (Harris, Jamieson and Russ, 1995) was able to present part of its conclusions in terms of effectiveness, as follows:

> at the individual classroom level, the research finding was that effective teaching and learning was stimulated and strengthened when there was: first,

> an attempt to involve all pupils in the learning process by providing a variety of tasks which deal with individual small-group and large-group situations; second, where teachers encouraged cooperative learning with pupils working together as part of a team sharing experiences, being given different roles and developing their own self esteem; thirdly, where pupils were actively involved in review and reflection of the learning-process and where they were given the opportunity of engaging in some form of action-planning process which contributed to their learning; fourthly, where teachers developed meaningful, formative, developmental and motivational forms of assessment which reinforced and built confidence.
> (Harris, Jamieson and Russ, 1995, p. 157)

The Progressive Plastics intervention appeared to meet the first two of these four requirements. There was also some limited involvement of students in "action-planning", particularly with regard to the Ministry of Development Seminar. Finally, teachers considered the assessment method used for all students to be positive, and appeared to have been engaged in at least a degree of formative discussion with their own groups. It seems reasonable, therefore, cautiously to link the claimed benefits for teaching and learning identified from the students' and teachers' loose networks to the wider, established knowledge claims of school improvement and school effectiveness research. This is consistent with a criterion for generalisability identified earlier in this chapter (Robinson 1993a, p.133).

Teaching and learning: conclusion

It appeared to be possible to support the claim that the Progressive Plastics innovation led to improvements in the effectiveness of teaching and learning from both socially-critical and positivist environmental education perspectives, by reference to the students' loose networks. This claim gained additional credibility to the extent that it was also supported from the perspectives of participating teachers,

and seemed broadly consistent with theoretical expectations derived from the literature of school improvement and effectiveness.

The usefulness of adaptive concepts:

The adaptive concept 'quality' appeared to have been useful in this case as a way of introducing environmental education into this management education programme. Data coding by means of loose networks assisted in establishing that this was so. However, whether 'quality' proved an appropriate tool because of its properties as an 'adaptive concept', or because of some other properties unique to itself, remained impossible to say at this stage.

Shortcomings:

As already noted, coding Progressive Plastics data using loose networks did not address all the requirements for data processing and analysis envisioned by this research. Outstanding issues included:

- the need to check the validity of analysis, particularly with regard to the frequency and strength of the tensions identified within students' loose networks
- the need to obtain an overview of the data as a whole
- the need to improve understanding of the research setting
- the need to determine whether the Progressive Plastics data was a possible source of further adaptive concepts, and if so to establish a means for identifying these

Consideration of these matters gave rise to a further process of data analysis and collection. This is described in the next chapter.

CHAPTER SEVEN

CASE STUDY ONE: A QUANTITATIVE DIMENSION

Mixing qualitative and quantitative approaches to data analysis

The outstanding issues within Case Study One which were noted at the end of Chapter Six referred to at least two potentially measurable quantities. These were:

- the frequency with which tensions identified from the students' loose networks were present in the total student sample
- the relative strengths of those tensions

In addition it seemed likely to be the case that improvements in overall comprehension of both the data and the research setting itself might result from access to quantitative information about the distribution of previously identified qualitative characteristics among the sample. Finally, progress towards the development of standard procedures for the identification of adaptive concepts seemed more likely the more such procedures depended to some extent upon measurement, rather than purely upon interpretation.

It was argued in Chapter Three that the divide between qualitative and quantitative approaches to environmental education research represents but one dimension of research methodology. Further, a case was made that a particular choice in that dimension does not necessarily commit a researcher to particular choices in other methodological dimensions. This is not an uncontroversial view, particularly in environmental education research methodology which authors such as Robottom and Hart (1993, pp.44-54) and Greenall Gough (1993a, pp.38-44) have conceptualised in terms of 'worldviews' and 'paradigms'. These writers present the methodological

menu facing researchers as a choice between two or perhaps three set meals, rather than the smorgasbord set out in Chapter Three (see also, Gough and Scott [submitted]). However, although the view that educational researchers face a choice between dichotomous views of measuring social reality may continue to be, at the very least, an essential early discussion point for standard research texts (for example, Cohen and Mannion, 1994, p.6), it appears to be increasingly the case in practice that researchers are finding it helpful to mix qualitative and quantitative approaches (Bryman, 1992). This is for a number of reasons which have a direct bearing on this research.

1. Quantitative analysis facilitates both researchers (Miles and Huberman, 1994, p.253) and their research audience (Silverman, 1993, p.163) in obtaining an overview, or flavour, of densely-packed qualitative data
2. If generalisation is to be possible from a specific social situation to a class of social situations (Adelman, Jenkins and Kemmis, 1980, p.59) this will involve a process of aggregation of instances (Stake, 1995, p.74). Aggregation is an inherently quantitative process
3. Quantitative analysis may provide the means to verify hypotheses derived from qualitative research (Miles and Huberman, 1994, p.253)
4. Quantitative analysis of qualitative data helps to avoid bias (Miles and Huberman, 1994, pp.253-254)

It should be noted, however, that if there is a trend towards integration of qualitative and quantitative methods its progress has not been smooth (Bryman and Burgess, 1994, pp.222-223). Mason (1994, pp107-109) describes a number of challenges which researchers undertaking such integration must face. Specifically these are:

- the need to develop the necessary range of technical competencies to deal with data which have different underlying logical principles

- the need to exploit the potential of computers while at the same time (and equally importantly) recognising their limitations
- the need to avoid offering differing, partial analyses to different audiences which may have a preference for one kind of data over another
- the need to develop mechanisms to ensure that different data sets are appropriately interrogated

Starting from the students' loose networks, an approach was developed in this research which linked qualitative to quantitative data through a series of connected stages. Each stage used a specific research instrument. These instruments, and the relationships between them, are set out in Table 3.

INSTRUMENT	FORM OF INSTRUMENT	CONTENT OF INSTRUMENT	USE OF INSTRUMENT	TOTAL NUMBER OF THIS INSTRUMENT IN CASE STUDY ONE
loose network	diagram	linked student statements and categories	organise data	167
tension-statement	pair of statements or categories identified from loose networks	some apparent tension between the two statements in the pair	confront students with this tension	103
perspective document	questionnaire	103 tension statements	establish for each student: • agreement or not with both statements in the pair • indication of the strength of such agreement	167 i.e. every student was asked to respond to every tension statement
spreadsheet	Microsoft excel table	aggregated results from 148 perspective documents (N.B. there were 19 nil returns)	establish: • total agreements with each tension-statement • indication of strength of agreements	One, showing aggregated responses to each of the 103 tension-statements

TABLE 3

A SUMMARY OF SOME INSTRUMENTS IN CASE STUDY 1 SHOWING THEIR INTER-RELATIONSHIPS

Dilemma analysis

Dilemma analysis (Winter, 1982) was identified as a possible basis for an approach which would address the research shortcomings identified in Chapter Six. This technique was originally developed in response to the perceived lack of an established approach within the traditions of action research and case study to the interpretation, as opposed to the creation, of data (Winter, 1982, p.162). Its particular concern, which the foregoing discussion suggests also to be very significant in the methodological context of this research, is that:

> analysis must in some way demonstrate sufficient validity to seem a plausible basis for decision-making...the question of the *validity* of an interpretation cannot be ducked by saying that contexts are unique: of course they are, but interpretations of the specific event are always made and evaluated in the light of relatively generalizeable categories...The only way of avoiding the issue of validity is by asserting that the major value of the research process has been the stimulation and sensitization of the researcher, which may appear engagingly modest, but also carries an implication that the other parties to the research have been exploited.
> (Winter, 1982, p.163, original emphasis)

Dilemma analysis sets out to provide a procedural check on the ways in which themes, or 'classes of interest' (Robinson, 1993a) emerge from qualitative data. Hence, it seemed a potentially appropriate vehicle in this research through which to confirm or challenge the categories identified in the students' loose networks, and the links identified between such categories. Following Hammersley (1980), Winter (1982, pp.167-168) argues that such a procedural check can only be effective if it is based upon 'formal' as opposed to 'substantive' theory, that is, upon a consideration of the most general characteristics of social reality. These characteristics, as understood in dilemma analysis, are based upon the sociological

conception of 'contradiction', and are broadly consistent with the notion of 'contradictory certainties' (Thompson, 1990) developed within the cultural theory approach and fundamental to this research. Winter writes:

> Social organizations at all levels...are constellations of (actual or potential) conflicts of interest...personality structures are split and convoluted...the individual's conceptualization is systematically ambivalent or dislocated...motives are mixed, purposes are contradictory, and relationships are ambiguous.
> (Winter, 1982, p.168).

Following the sequence of activity proposed by Winter (1982, pp. 168-170), the students' loose networks were searched for instances in which there appeared to be tension between statements students had made. 'Tension' was defined initially in the widest possible terms, that is, statements did not have to pass any particular test in order to be included, but merely to appear to suggest a possibility, however slight, of tension. In this respect this research took a wider, more inclusive view of what might count as 'tension' or 'a dilemma' than Winter's (1982) original work, because the lack of a common cultural context between researcher and respondents in this research meant that there could be less confidence about the grounds for excluding anything. However, the system of classification of tensions (or dilemmas, or contradictions) into three broad categories by developed by Winter (1982, pp.168-169) was found initially useful in identifying possible tensions. The three categories are:

- 'Ambiguities': These are "background awarenesses" (Winter, 1982, p.169) of the complexities of the research setting which do not, however, directly refer to any required course of action on the part of the respondent
- 'Judgements': Tension exists in a context which requires the respondent to select a course of action. However, achievement of a satisfactory outcome is perceived

to be possible provided the difficulties of the situation are handled with sufficient skill

- 'Problems': Possible or required courses of action appear to be undermined or rendered invalid by the tensions inherent in the situation

Tensions identified from the students' loose networks were condensed into a 'Perspective Document', using three of the four stages of the technique proposed by Winter (1982, p.169). Winter's fourth stage was deemed inapplicable as it responded to the existence of several discrete sources of data in his research, whereas in this research the relevant data originated from a single group, the students. The three stages used were:

1. Formulating the tensions or dilemmas at roughly the same level of abstraction at which they were originally presented in the students' written Progressive Plastics responses
2. Choosing as a starting point the most elaborated formulation of any given tension, or aspect of a tension, from among the various statements in those responses
3. Formulating each tension so that it balanced, non-controversially, between the potentially opposed points of view.

The Perspective Document

The result of this process was a 'Perspective Document' of 103 tension-statements or dilemmas (Annex 6). Though the term "Perspective Document' was taken from Winter (1982), and though the analysis which gave rise to it was very similar in many respects to Winter's own, it should be noted that the Perspective Document derived in this research differed in one very important respect from those used by Winter. In this research tensions were to be checked with students on an item-by-item basis. No grounds were perceived, therefore, to exclude *any* potential item from the Perspective Document itself. Winter, on the other hand, was seeking to devise a

coherent document with which a particular group of his respondents might identify *in its entirety*. This difference was a consequence of the fact that in this research much less confidence was possible both about the basis for the identification of tensions, and about the overall homogeneity of the student group.

The Perspective Document was issued to all participating students during timetabled class time by their normal teachers on, or during the week following, Saturday 17 August 1996. Students were asked to respond anonymously to both parts of each tension statement under the headings: 'Strongly Agree'; 'Agree'; 'Don't Know'; 'Disagree'; 'Strongly Disagree'. It was emphasised that statements had originated with students themselves. This exercise was justified to students, teachers and the College administration on the grounds that it would be used in departmental curriculum planning and development. As such it was specifically included as an item in the annual departmental Development Plan, and reported to the Ministry of Education. I did not feel, however, that these grounds offered any justification for asking students to reveal their identities on their responses. Indeed, to have asked them to do so might well have prompted some to conceal their true views. In a society where informal sanctions can be applied to individuals who express controversial views, putting one's name on a piece of syllabus-related writing for a familiar teacher (as with the Progressive Plastics exercise) may be one thing, but owning to a completed questionnaire required for official planning processes (as with the Perspective Document) held the potential to be something else entirely. Completed Perspective Documents were collected and analysed with the following aims in mind:

- to investigate the validity of the Progressive Plastics/loose networks analysis by means of a 'member check' (Winter, 1982, p.169; Lincoln and Guba, 1985, p.314; Robinson, 1993a, pp.117-120). A member check has been defined as: "the process of negotiating research accounts with participants" (Robinson, 1993a, p.117)

- to establish the frequency with which a particular tension was felt among the sample of students. The more students who indicated agreement with *both* parts of a tension-statement item, the greater the frequency. This was consistent with Winter's (1982, p.169) view that the Perspective Document (or in this case, individual items within it) should gain assent as what any individual 'might well' articulate. Students were given the opportunity to express their agreement or disagreement with statements which others had spontaneously articulated, though they themselves had not done so
- to establish a rough measure of the strength with which a particular tension was felt. Where a student expressed strong agreement with both parts of an item, the tension was deemed to be felt most strongly
- to contribute to improved understanding of the overall research setting through the subsequent identification of possible patterns within the responses
- to advance understanding of processes for the identification of further adaptive concepts. A working hypothesis at this stage was that new adaptive concepts appropriate to the context of this research might profitably be sought in the substance of those items which seemed to be:
  1. objects of strongly-felt tension for a large proportion of the students
  2. classifiable as 'problems', rather than as 'ambiguities' or 'judgements'

Perspective Document responses: analysis

Responses were counted using a tally sheet and aggregated and presented using the spreadsheet software package, *Microsoft Excel 5.0*, (Annex 7). The following data were included for each item:

- total responses of each kind (i.e. 'strongly agree'; 'agree'; 'don't know'; disagree'; 'strongly disagree') for each of the statements in the pair
- total combined responses to the pair of statements of each of the following kinds: 'strongly agree' + 'strongly agree'; 'strongly agree' + 'agree'; 'agree + strongly

agree'; 'agree' + 'agree'; 'strongly agree' + 'don't know'; 'agree' + 'don't know'; 'don't know' + 'strongly agree'; 'don't know' + 'agree' **[1]**

- the aggregated total of responses to each statement in the pair
- total responses expressing strong agreement, or agreement, with both statements in the pair. These were now designated '*dilemmas*' for the remainder of the analysis
- total dilemmas, thus defined, *plus* total responses expressing strong agreement or agreement with one statement in the pair and answering 'don't know' to the other. The sum of these was now referred to as total '*tensions*' for the remainder of the analysis.

The full results of this exercise appear in Annex 7. Among them, the following seemed of particular significance in terms of the aims listed above.

Item 3

Companies should be responsible for any damage their product may cause in the future

Consumers are responsible for the safe disposal of unwanted items and packaging

dilemma = 85 per cent of those responding

tension = 91 per cent

Item 55

Local people expect firms to show respect for the environment

Firms should offer financial incentives to local people to encourage them to recycle their products

dilemma = 75.5 per cent

tension = 88 per cent

Item 89

Packaging is essential to promote products

Packaging is often inessential and wasteful

dilemma = 32.9 per cent

tension = 44 per cent

Here 87.7 per cent felt that packaging was essential to promote products, with a majority of these dismissing concerns about wastefulness.

Item 34

The public are responsible for pollution by plastic bags

Retail outlets are responsible for pollution by plastic bags

dilemma = 54 percent

tension = 71 per cent

It appeared that retailers were regarded with more tolerance than the manufacturers of goods. Just under 54 per cent of respondents (dilemmas) agreed that both the public *and* retail outlets were responsible for pollution by plastic bags **[2]**. Responses blaming the public were both more numerous and stronger, however.

Item 12

Firms should design products which do not harm the environment

Firms should design products which consumers want to buy

dilemma = 87 per cent

tension = 93 per cent

This is a rather confusing set of responses. One possible explanation for this is that students' responses to particular items depended upon the role in which they cast themselves in relation to the focus of those items. For example, finding fault with 'the public' may have been more attractive where students' tended to identify themselves with 'business' and much less attractive where they tended to identify themselves as 'citizens'. This explanation is consistent with the cultural-theory-

based view that individuals' views depend upon their currently active institutional loyalty. Among these issues, that concerned with the design of products produced the highest proportion of dilemmas and tensions, and was clearly a 'problem' in Winter's (1982) terminology since it related to choices between courses of action which students might subsequently face both as consumers (buy or not buy) and entrepreneurs (make or not make). 'Design' was therefore tentatively identified as a possible further adaptive concept. Rather later in this research (see Chapter 13) 'responsibility' also emerged as a possible adaptive concept.

On a wider theoretical note, much of the environmental education literature seeks to advance the cause of 'holism'. Sterling (1993) has written:

> A truly holistic environmental education requires that we transform and broaden the narrowly-drawn 'reductionist' approaches of academic education (learning for its own sake), and vocational education (learning for the economy), by infusing them with and building on the child-centred tradition (learning for the whole person) and the newer 'adjectival' educations (education for society and the environment, i.e. environmental education, development education, human rights education, peace education, personal and social education and so on)
> (Sterling, 1993, p.87)

It does seem reasonable to ask in this context whether putting together all the bits you can find necessarily makes a 'whole' anything, and whether, specifically, the confusing responses detailed above might not be the result of thinking about too many things at once, rather than too few. At least two 'reductionist' techniques suggested themselves as possible vehicles for use within this business management course in focusing on the issues underlying the responses and, perhaps, further enhancing the learning of these students in terms of the criteria described in Chapter 6. The first of these was Life Cycle Assessment (Welford, 1996, pp.140-149),

which seeks to establish the nature and extent of every environmental impact of a product from raw materials extraction to end disposal. The second was the Contingent Valuation Method (Bateman and Kerry Turner, 1993), which requires individuals to express preferences for environmental resources, or changes in resource status. It was resolved to pursue these possibilities in further stages of this research (see Chapter 12).

Item 39

Rapid scientific and technological development is desirable

Traditional technologies and ways of living should be maintained

dilemma = 73 per cent

tension = 86.2

[3]

However, students were rather more optimistic when asked specifically about new agricultural technologies:

Item 44

New technology leads to better crops and breeds of livestock

New technology causes wastes which are harmful to crops and livestock

dilemma = 27 per cent

tension = 51 per cent

Nearly 67 per cent indicated positive views of the effects of such technologies. Against this one might set the responses to:

Item 45

Technology makes life easier

Technology makes us lazy

dilemma = 71.4 per cent

tension = 75 per cent

A small majority of students were confident that new technologies would create jobs rather than unemployment:

Item 40

New technologies will create new jobs

New technologies will cause more unemployment

dilemma = 35.8 per cent

tension = 50 per cent

When students were asked about new technology and 'progress' the following results were obtained:

Item 47

Progress depends on new technology

Progress can be made by not wasting natural materials (eg. prawn skins) which can be useful

dilemma = 36.7 per cent

tension = 58.5 per cent

The finding on this item that nearly one quarter of respondents firmly *rejected* the idea that progress depended upon new technology was interesting, not least because to do so is contrary to a message long promoted by General Electric. GE, at the time of Case Study One, was the world's largest corporation, and was the basis of study material viewed by all management students at Maktab Duli.

The finding that these students place a high value on traditional technologies is one which would be predicted from much of the environmental education literature. Some writers who trace the links between changing technologies and changing views of the environment, for example Huckle (1988, pp.50-51) and Sterling (1996, p.29), would clearly nevertheless be unsurprised by the high value the students in this case

study also placed on modern technology. This might be less true of other environmental educators (see, for example, Greenall Gough, 1993b) who express a specific allegiance to the ideas of deep ecologists such as Devall and Sessions (1985). The deep ecologist's view of primal peoples is that a:

> richness of ends was achieved with material technology that was elegant, sophisticated, appropriate, and controlled within the context of a traditional society.
> (Devall and Sessions, 1985, p.97)

No doubt this may have been so at certain places and times, but as Luke (1988, pp. 86-87) notes, such a view is highly idealised. Modern technologies are very useful, not least to deep ecologists who freely advocate, as means to ecological awareness, a wide range of outdoor pursuits requiring sophisticated equipment (Devall and Sessions, 1985, p.70) [4]. Clearly there is a 'problem' here, relating to how students choose to live their lives, and the impacts and interactions which technology, and therefore business, might have on and with those lives. For this reason 'technology' suggested itself as a potential further adaptive concept in this research.

Turning to another set of responses, the following results were obtained:

Item 57

development requires hard work and competitive business activity

the purpose of development is to make life more comfortable and easier

dilemma = 77.4 percent

tension = 85 per cent

It should be noted that this was an issue of some topicality in Brunei at the time as the country had established a paternalistic tradition of state provision since the oil price rises of 1973 and, perhaps even more so, since independence in 1984. Development was until recently state-initiated and petrodollar-funded. By 1996,

however, there were clear signs that this could no longer be sustained. Government pronouncements increasingly sought to encourage entrepreneurial behaviour, not least through the establishment of this management course [5].

Item 21

It is important that businesses are truthful

Businesses may need to conceal information for competitive reasons

dilemma = 58.5 per cent

tension = 81.6 per cent

Only 12 students did not think it important for businesses to be truthful, while only 9 thought businesses should not conceal information.

Item 64

Privatisation is necessary to encourage competition

Private firms should respect and preserve community values

dilemma = 63 per cent

tension = 80 per cent

74.6 per cent of respondents agreed that privatisation was necessary to encourage competition. Community values in Brunei, as they are stated in documents relating to *Melayu Islam Beraja* for example, envisage society as an harmonious, organic whole (Brunei Government, 1985, pp.35-37) strongly integrated with its natural environment (Borneo Bulletin Brunei Yearbook, 1994, 1997; Brunei Tourism Unit, 1996).

Item 93

Free trade will lead to competition which will drive local firms out of business

Free trade will act as a spur to make Bruneian firms efficient and successful

dilemma = 30 per cent

tension = 55 per cent

Item 102

Business needs to develop a spirit of cooperation and teamwork among the workforce

Business needs to develop a spirit of competition among the workforce

dilemma = 66 per cent

tension = 77.5 per cent

The question of whether competition or co-operation is a better organising principle for societies, the question of whether competition or co-operation is a better metaphor for the workings of the biosphere, and the issue of whether the answer to the former depends in any way upon the answer to the latter are, so to speak, sets of tracks along which a great deal of Western thought has run. It is not surprising, therefore, that they are also big questions in the literatures of environmentalism (see, for example, O'Riordan, 1989; 1990) and environmental education (see, for example, Sterling, 1993, pp.82-94). Whether these matters have always been focal concerns in Bruneian society is open to question, but it does appear that they were substantive issues for the students in this case study. Both *co-operation* and *competition* therefore seemed to merit consideration, either separately or as a complementary pair, as potential adaptive concepts in this context.

A number of interesting responses were obtained with regard to questions of development and living standards:

Item 85

More cars on the roads is a sign of better living standards

Building railways would improve living standards by reducing car use

dilemma = 33 per cent

tension = 48 per cent

The result that the first statement in the pair was explicitly rejected by as many students as accepted it, certainly ran contrary to my own preconceptions about the

attitudes of Bruneian young people. A large majority expressed agreement with the second statement in the pair. There were at the time of this research no railways in Brunei. Even at peak times traffic congestion in the capital, Bandar Seri Begawan, was trivial compared to other regional centres such as Bangkok, Jakarta or Manila. Outside the capital there was essentially only one major trunk road, along which reasonably rapid progress could usually be made. This evidence of less than total enthusiasm for motor transport was not, therefore, a product of the worse kind of urban transportation nightmare, and may suggest the strength of attachment of many of these students to traditional living and transportation which was (and is) by 'water taxi'.

Although many students had mentioned increasing urbanisation, and in particular the building of skyscrapers, as part of their expectation for the future, 70 per cent explicitly rejected the second statement of:

Item 75

a good environment has lots of tall trees

A good environment has lots of tall buildings

dilemma = 6 per cent

tension = 18.5 per cent

67 percent expressed agreement with the first statement in this pair. This is interesting in the light of responses to:

Item 76

Uses should be found for every part of the land

Natural resources should be preserved for the sake of future generations

dilemma = 40.6 per cent

tension = 75.9 per cent

45.5 per cent were in agreement with the first statement in this pair. A related item was:

Item 60

People should treat the Earth with respect

The Earth is there for people to make use of

dilemma = 74 per cent

tension = 85.6 per cent

Another result which came as a surprise to this researcher was:

Item 77

Growth will mean more tall buildings

Growth will mean more squatter settlements

dilemma = 13.6 per cent

tension = 26 per cent

49 per cent of students expected more tall buildings as a result of growth, while only 42.8 per cent explicitly rejected the idea that growth would also be accompanied by an expansion of squatter settlements, even though such expansion was quite contrary to the predictions of official propaganda.

Finally items relating the quality of life to the cost of living, and the expectation of increased consumer spending to the need to avoid materialism, both produced relatively high numbers of dilemmas.

Item 78

Growth will improve the quality of life

Growth will increase the cost of living

dilemma = 66.7 per cent

tension = 77.5 per cent

Item 79

Consumer spending will increase

It is important to avoid materialism

dilemma = 64.6 per cent

tension = 85.7 per cent

The possibilities of developing a tourism industry in Brunei had been mentioned by a number of students in their Progressive Plastics submissions.

Item 65

The development of tourism requires rapid expansion of infrastructure, such as roads and buildings

Tourists will come because they are fascinated by Brunei's history, wildlife and forests

dilemma = 75.5 per cent

tension = 83.7 per cent

Item 66

Tourism can be beneficial, bringing profits to the country

Tourism can be harmful, introducing undesirable foreign habits

dilemma = 67.3 per cent

tension = 75.5 per cent

As will be seen in subsequent chapters, it proved possible to link the issue of tourism [6] to the newly-identified adaptive concept 'design'.

The above is a highly selective account of the quantitative data derived from the perspective document, focusing particularly on those issues which seemed likely to provide a basis for further work to introduce environmental education into this management education programme. Used in this way, the perspective document was a progressive instrument which moved the research process towards

conceptualisation of possible further stages. However, the quantitative data also enhanced, retrospectively, understanding of the students' loose networks. Perspective document items were identified at their point of origin on the loose networks by means of the item number written inside a circle. Hence it became possible, when reading a loose network, quickly to obtain an estimate of the frequency and strength with which particular views were held among the students. An observer new to the research setting might obtain an overview of the concerns and opinions of students participating in Case Study One by examining the students' loose networks in conjunction with the perspective document spreadsheet data.

A number of pointers for the continuing research were derived from Case Study One, and it is to these that I now turn in the next chapter.

ENDNOTES TO CHAPTER SEVEN

1. Other combined responses were not recorded or aggregated at this stage, as the broad purpose of this analytic exercise was to narrow the research focus onto issues which attracted widespread agreement with both statements in a pair. Nothing was lost by this decision, as data concerning, for example, the number of responses to a particular item of the form 'strongly disagree + strongly disagree' could still be calculated from the raw data if subsequently required. However, responses of this kind, while perhaps also indicative of tension in students' thinking, did *not* constitute confirmation of evidence that had emerged during the Progressive Plastics intervention and the subsequent coding into loose networks.
2. In Brunei plastic bags are provided free with any and every purchase.
3. There is considerable pride in traditional Malay (and indigenous) technologies. There is a Malay Technology Museum in Bandar Seri Begawan. In neighbouring Sabah there is an impressive Kadazan cultural centre with many technology-themed displays.

4. Anecdotally, in Brunei and in North Borneo in general, where much social and commercial intercourse continues to pass along waterways, I have never encountered the slightest nostalgia for the days before the invention of the outboard motor. When water levels over upstream rapids are too low for the use of an outboard the traditional technology - standing in the water and pushing the boat - continues to be found indispensable.
5. However, haste and hurry continue to be thought poor social and professional form, while a leisurely approach indicates high standing. One does not come straight to the point when discussing business with Brunei Malays. To do so is considered bad manners, and rather comical.
6. In 1996 the numbers of tourism arrivals in Brunei annually was minimal, and very few facilities for tourists existed. However, first signs had already appeared of a reversal of previous government policy, which had been to actively discourage tourism. What later became apparent was that the debate within the ruling elite about the desirability or otherwise of tourists was one aspect of a power struggle between Islamic conservatives and self-styled 'modernisers'. These events are further discussed in Chapter Eight.

CHAPTER EIGHT

PHASE TWO: FIRST STEPS

Lessons and pointers from Case Study One

An assessment was made of the progress of this research at the conclusion of Case Study One in terms of the overall research aims, as follows:

research aim 1: to identify adaptive concepts within the shared context of environmental education, environmental management and economic development: Some progress appeared to have been made, in respect both of identifying adaptive concepts from the academic literature, and, more tentatively, discovering further potential adaptive concepts during the process of an intervention. It seemed desirable to test in practice the workability of an adaptive concept derived from the written submissions - loose networks - perspective document sequence of activity and analysis. As noted in Chapter Seven, 'design' had suggested itself as possibly suitable for this purpose. If an adaptive concept derived from a process of curriculum development could be used to stimulate and inform further curriculum development, this would appear to meet the requirements for successful professional development in environmental education through an action research spiral proposed by Robottom (1987a, p.110). To this it might perhaps be objected that my own leadership role in this intervention rendered it insufficiently participative to meet Robottom's (1987a, p.114) criteria. However, Robottom's own words appear to provide sufficient grounds to dismiss such a claim when he writes:

> Environmental education practices are shaped (guided or constrained) by the theories of practitioners themselves, *and by the theories of* others built into the structures and relationships of the institutions

within which practitioners work.

(Robottom, 1987a, p.114, emphasis added)

A qualification would be that, as Louis and Miles (1990, p.214) have noted, where the planning of educational change is dominated in its early stages by a leader, there is a need to shift in later stages towards shared control with teachers and others. The achievement through this research intervention of professional development consistent with success criteria developed within the field of environmental education would be a contribution to the achievement of:

research aim 2: to evaluate, in terms of the effectiveness of teaching and learning, the use of two such adaptive concepts to develop environmental education interventions in a management education programme in Brunei, a developing country: Within the initial scope set for this research it was therefore now decided that the adaptive concepts used would be 'quality' and 'design'. It also seemed likely to be instructive to repeat the quality intervention with a different cohort of students.

By the end of 1996 the students who had participated in Case Study One had completed their final examinations (in November) and left the College. They were replaced by a new cohort, following the same management syllabus, which provided a natural choice of research subjects for a second phase of research consisting of two case study interventions based on the adaptive concepts 'design' and 'quality' respectively. In this way it was hoped to establish whether the improvements in teaching and learning identified from the Case Study One 'quality' intervention could be repeated, and whether further, or similar, improvements were possible using 'design'. Thus it would be possible:

research aim 3: to make a preliminary evaluation of the usefulness of adaptive concepts as a way of introducing environmental education into such

management education programmes: Quite clearly, the generalisability (or lack of it) of qualitative, case study research findings is a major educational research issue in itself. Some social researchers have treated issues of generalisability as if they were of no consequence (see Bryman, 1988, p.77) while others, such as Silverman (1993, *ix*) believe that generalisability is unproblematically achievable in qualitative research. This matter has been discussed in Chapter 6, and will be further discussed in Chapter 14. However, whatever view is taken of this matter in principle, generalisability in the present instance seemed only likely to be improved by a move from one to three case study accounts.

Advice was also taken at this stage of this research (December 1996) from this researcher's supervising department at the University of Bath, following presentation of a submission for transfer from M.Phil. to Ph.D. research status.

Case Study Two: context

'Design': The Collins Dictionary's definition of 'design' includes the following:

1. To work out the structure or form of (something), as by making a sketch or plans.
2. to plan and make (something) artistically or skilfully.
3. (tr.) to invent.

Though it is usually possible to distinguish the functions of design and design management within a business, these are increasingly seen as integral to corporate strategic planning (Warner, 1993) as is the creation of a "value proposition" which "is the total promise that the company makes to its customers in a given market segment" (Webster, 1994, p.142). In short, the design of a product is increasingly regarded as inseparable from its marketing. The following quotation from Jack Welch, Chief Executive of General Electric, suggests that such thinking is not merely the stuff of management theory, divorced from practice.

> In a boundaryless company, internal functions begin to blur. Engineering doesn't design a product and then 'hand it off' to manufacturing. They form a team, along with marketing and sales, finance and the rest. Customer service? It's not somebody's job. It's everybody's job!
> (Welch, 1990)

In the management syllabus used at Maktab Duli 'the marketing mix' featured as the largest component of the major subsection 'marketing'. Syllabus contents included reference to product design as part of the wider design of a 'marketing mix'. Further elements of the mix included product promotion, distribution, pricing, and positioning. Hence, it seemed appropriate to ask students to design a marketing mix for a product which would, minimally, include reference to product design and some of these other matters. The product chosen for this purpose would ideally be one capable of illustrating of a variety of aspects of contemporary business conditions and issues in Brunei, since ability to provide such illustration was specified as a course requirement by the examiners.

In outlining the significance of design in the literatures of environmental education, environmental management and economic development it may be useful first to briefly discuss the various possible meanings of the word 'efficiency', as well as some of the assumptions which underpin its use.

Efficiency, or lack of it, is a property of processes of production. It is an assumption of this research that production of goods and services at some scale by human beings is a necessary and desirable activity in principle. Such an assumption involves a value judgement, since *no* production is possible without impacts upon nature of some sort, and human survival is inseparable from human productive activity. To condone production is therefore to collude in the causation of environmental impacts for the benefit of human beings. To accept this value

judgement is problematic for those environmental thinkers who would grant equality to all living things (for example, Devall and Sessions, 1985, pp.67-69) because it is very difficult to produce on any very substantial scale without (at least) inconveniencing other creatures and, indeed, plants. This issue, and the attempts of deep ecologists to confront it, is critically examined by Luke (1988, especially pp.81-83). The value judgement implicit in production is also problematic, for reasons I shall examine in more detail shortly, for environmental educators such as Fien and Trainer (1993a, p.19) who wish to maintain the availability of some industrial products (often at a reduced or enhanced scale) while simultaneously dispensing with others. However, if production is to take place then the extent of environmental impacts caused depends very much on the design both of products themselves, and of the various processes associated with their production, use and disposal.

Fundamental to an understanding of efficiency is a distinction first made by Farrell (1957) between *technical* efficiency and *allocative* efficiency. A process of production is technically efficient if maximum output is obtained from a given set of inputs. Technical efficiency says nothing whatsoever about the merit of this output. Allocative efficiency occurs where, given input prices, factors are used in proportions which maximise producer profits. *Economic efficiency* occurs where production is both technically and allocatively efficient. In a world of perfect markets firms would maximise profits by producing, in a technically efficient manner, that combination of goods and services which maximised consumer satisfaction. Since environmental costs and benefits of different products would be a major element in the determination of 'consumer satisfaction' their value would be captured within market prices, and an environmentally optimum result would be achieved. As a description of human reality, however, this account is open to more objections that can possibly be summarised here, both from the perspective of environmentalism (Jacobs, 1991, pp.22-38) and from more general economic perspectives (see, for example, Colman and Young, 1989, pp.52-53). Some, (e.g. Rizzo, 1979) have suggested therefore that the concept of efficiency should simply be abandoned.

However, as Colman and Young (1989, p.53) note, the concept of technical efficiency, at least, seems likely to be useful. To illustrate, while it would be perfectly possible, while fully meeting criteria of technical efficiency, to produce outputs which *everyone* would agree to be environmentally undesirable, it is much harder to imagine an environmentally satisfactory production process which was *not* technically efficient, since more resources than necessary would be used by such a process or, if one prefers to avoid a terminology of 'resource use', more environmental impacts than necessary would be caused. Hence, the proposal for wholesale restructuring of global production made by Fien and Trainer (1993a, p.19) would be likely to have unforeseen environmental costs, because it neglects the interconnectedness of 'desirable' and 'undesirable' industries and products, and the implications for the technical efficiency of production of changes in productive scale. This point also illustrates that reductionist concepts ('technical efficiency') can sometimes contribute to holistic deliberations ("answers to the present global predicament", Fien and Trainer, 1993a, p.21), a point apparently endorsed by Sterling (1993, p.91).

Across the fields of environmental education, environmental management and economic development two broad alternative responses to these issues may be discerned. They are:

1. Work to promote the more efficient functioning of markets so that relative prices reflect the 'true' value of the environment. In terms of factors bearing upon the design of products this would point towards, for example:
   - using environmental education to improve environmental knowledge in the market place, both for consumers and producers (Hungerford and Volk, 1990; Joseph and Mansell, 1996). It might be argued that recent actual and proposed changes in the design of motor vehicles have resulted, at least in part, from this kind of approach

- using economic valuation techniques such as contingent valuation (Bateman and Turner, 1993), economic management techniques such as marketable pollution permits (Pearce and Kerry Turner, 1990, pp. 110-119) and development strategies favouring private over public ownership of 'environmental assets' (for example, Alderman, 1994) to improve the performance of markets and/or change market place behaviour. For example, the existence of a system of marketable pollution permits is likely to be a spur to the design of cleaner production processes
- using management techniques such as Life Cycle Assessment (Welford, 1996, pp. 140-149) to inform both producer and consumer choices. For example, Powell *et al* (1996) describe the use of lifecycle assessment, coupled with economic valuation techniques, to inform the design of urban recycling schemes, waste management programmes and manufacturing processes

2. Reject the marketization of the environment and advance alternative conceptions of value as the basis for the design of both products and their associated (non-market) processes. A number of very different positions are possible within this broad view. They include:
   - from the perspective of environmental education, those of Trainer (1990); Bowers (1991); Fien and Trainer (1993a, 1993b); Huckle (1993); Sterling, (1993); Greenall Gough (1993a)
   - from the perspective of environmental management, those of Webb (1990); Charlesworth (1990); Redclift (1987); Sharp, (1992)
   - from the perspective of economic development, those of Goldsmith (1985); Redclift (1987), Sachs (1991)
   - from the perspective of the peoples of North Borneo, those of Sahabat Alam Malaysia (1985); Hong (1987); Colchester (1992)

As a minimum this second group have in common the belief that (at least some) human beings should (for a variety of reasons) consistently refrain from the pursuit of their own immediate, apparent, individual economic interests.

On the face of it these two approaches are wholly incompatible. The first view, crucially, tends to hold that it is impossible and/or pointless satisfactorily to separate 'human needs' from 'human wants'. It puts its faith in the pursuit, by humans, of their wants, arguing that if only markets can be made to work properly they will summarise information completely enough for this to produce environmentally and ecologically optimum outcomes - or at least something closer to this than is likely to be achieved by any other means. Importantly, this approach puts its faith in people as they are, not as they might be or should be. The second view, on the other hand, tends to hold that needs are one thing and wants quite another. Environmental salvation therefore lies in clearly distinguishing between needs and wants, and in eschewing (some) wants [1] either through changes in individual behaviour or through social mechanisms. For example Sachs (1991, p.257) appeals for "intelligent self-limitation", while Fien and Trainer (1993a,p.19) favour "considerable planning and control", though they attempt to reassure their readers that those responsible for this would be "unpaid". This second group of writers tend either to argue that people need to be changed according to some pre-determined agenda (e.g. Linke, 1976), or that they have, in effect, already been adversely changed and are suffering from 'false consciousness' (Fay, 1987, pp.31-32) which they should be helped to correct.

The view taken in this research, to recap, is a 'clumsy' one. All camps are likely to be at least partly wrong; any of them may well be partly right. It is a strength of the approach from cultural theory that the apparent incompatibility of views presents no unexpected theoretical problem.

Tourism in Case Study Two

The product chosen for the proposed design-based exercise at Maktab Duli was tourism. This appeared to offer potential to engage with conceptions of 'design' from all the perspectives discussed above.

Political and economic context of tourism in Brunei: Attempts to develop a tourism industry in Brunei were in their infancy in early 1997. Until as late as the end of 1995 official policy had been to discourage tourism, apparently on the grounds that it was both economically unnecessary and likely to be a threat to traditional cultural and religious observance. This policy was sharply reversed in early 1996 with the appointment of a very senior Bruneian official, Sheikh Jamaluddin bin Sheikh Mohamed **[2]** to head a new Tourism Unit at the Ministry of Industry and Primary Resources. The precise reasons for this change were unclear at the time. It may well have been a response to falling oil prices, a rapidly increasing population, or over-employment in the government sector. As Lawrence (1994) has noted, tourism has often been seen by developing countries as:

> the smokeless industry that could raise foreign exchange earnings, the gross national product, and tax revenue, and increase employment
> (Lawrence, 1994, p.264)

However, there seems little doubt, at least with the benefit of hindsight, that the development of a tourism industry was also part of the explicitly political agenda of a faction within the Brunei ruling elite. Further, it was quite possibly, an ostensible *raison d'être* for a variety of construction projects under cover of which government funds were siphoned into private pockets **[3]**.

However, in early 1997 there seemed every reason to hope that encouraging students to think about the design of an appropriate tourism product for their own country

might be a route to introducing environmental education into the management education programme of Maktab Duli, while simultaneously satisfying its multiple stakeholders (Gough and Scott, 1999). The following gives a flavour of the officially approved emphasis to tourism marketing in the country:

> We are rich in culture and tradition. Our rain forest is in pristine condition and full of wildlife. Our tourism products are unrivalled and of the highest quality. Our diving spots have yet to be experienced. One can have total relaxation in a surrounding of total peace and quiet with no air pollution to even bear a thought about. We believe that Brunei Darussalam can play a pivotal role in enhancing South East Asia as a single destination.
> (Sheikh Jamaluddin bin Sheikh Mohamed, 1997, p.150)

General environmental context of tourism: The nature of the relationship between tourism and the environment is complex and contested. Global tourism is the world's biggest and fastest growing industry. (Filion *et al.*, 1994).

For some forms of tourism, including much of that officially envisaged for Brunei, the environment is the attraction. 'Ecotourism' has been estimated to account for between 40-60 per cent of international tourism and at least 25 per cent of domestic tourism. Annual economic impacts from ecotourism may be as much as US$ 1.2 trillion (Filion *et al.*, 1994). Doubts about these figures arise not only from problems of data collection and processing, but also from the lack of any universal definition of ecotourism. In particular, there is a tendency for definitions to widen as the perception grows among host governments and tour operators that an ecotourism label can aid marketing. From an academic perspective, the term has been defined simply in terms of what the tourist sees and does (Filion *et al.*, 1994; Croall, 1995) and with additional references to the environmental and cultural impacts the tourist has (Tickell, 1993). The Ecotourism Society, based in Virginia, USA, includes in its definition a requirement that the well-being of local people be sustained (Johnson,

1998, p.9; Roberts, 1998, p.16). Sustaining well-being is not necessarily the same thing as conserving culture, though the two could go hand in hand.

Ecotourism appears to be a highly segmented market, in which the following categories may be found: rough ecotourists, smooth ecotourists, specialist ecotourists, scientific tourists, cottage tourists, wildlife tourists, wilderness tourists, safari tourists, designer tourists, risk tourists, adventure tourists, alternative tourists, sensitive tourists and post-industrial tourists (Mowforth, 1993; Cater and Goodall, 1992). The important point, however, is that all such tourists are participants in a global, multi-billion dollar business which, to a greater or lesser extent, both shapes the environment and consumes it (Goodall, 1995). There is no such thing as zero-impact tourism (Lawrence, 1994).

Of course, attempts may be made to control the impacts tourism has, but even if the contribution made to global environmental change by tourism transport services is ignored concepts such as 'tourism carrying capacity' are extremely difficult to operationalise. The attempt to satisfy the yearning of many who consider themselves ecotourists for pristine or traditional environments may be self-defeating and lead to progressive encroachment into remote areas, since once a place is easy to visit much of its appeal may be lost (Cater and Goodall, 1992; King, 1993). Ecotourist excursions of a few days duration or less are often mounted from bases in luxury hotels, and constitute a only a fraction of total holiday time. For all these reasons it may not, in the end, be very helpful to distinguish ecotourism from the mainstream. This is not to say that environmentally responsible tourism is impossible. However, very little is accomplished by establishing definitional criteria for 'ecotourism' if these are widely ignored, or if activities denied an ecotourism designation continue anyway. In this context it is interesting to note that at least one developing country Tourism Board, that of Sarawak in East Malaysia, now aims for tourism development that protects the Borneo rainforests, but deliberately avoids the term 'ecotourism' in its marketing effort (Johnson, 1998). Further, the essential

requirement for the achievement of a goal of sustainable development (however defined) is that all tourism be made as sustainable as possible, not that more tourists spend their time marvelling at nature. A respectable case can even be made that sustainability may sometimes be better promoted by the construction of *artificial* destinations (Roberts, 1998), rather than by facilitating visits to the real thing. One may say, in any case, that from an environmental point of view the design of tourism offerings matters.

Among the more obvious environmental impacts of tourism are waste generation and pollution, damage to coral reefs, mangroves, dunes, historic buildings and monuments, erosion, deforestation, and so on. Less obvious effects include contributions to ozone depletion and global warming, the economic marginalization of traditional users of protected areas, destruction or trivialisation of traditional lifestyles (Hong, 1985; Croall, 1995), and increases in crime and prostitution. Additionally, many of tourism's advantages come with strings attached. For example, a large proportion of hard currency spending in developing countries finds its way back to the developed world as payment for imported goods and services. Management jobs in tourism in developing countries are often held by foreign nationals, while those tourism employment opportunities which are created for locals are frequently seasonal, and may alter the labour economics of the domestic agricultural sector (Lawrence, 1994). Finally, evaluations of sustainability are complicated by issues of scale. For example, what is judged to be acceptable and appropriate as a sustainable initiative nationally, may prove disastrous for a particular locality. Cost and revenue effects of changes in the environmental behaviour of tourism firms vary across different time-scales, and energy savings or emission reductions per tourist may still mean increased energy use and pollution as total tourist volumes rise (Goodall, 1995).

General environmental education context of tourism: There is quite wide agreement that education is important to the achievement of sustainable tourism

(Ham *et al*, 1991; Cater and Goodall, 1992; Johnson, 1998) and sustainable development (UNESCO-UNEP, 1996). Unfortunately, there is much less agreement about who should learn what, from whom, and how. This is perhaps unsurprising, given that tourism probably touches, at all levels, upon a wider range of social interests and economic sectors than any other industry (Cater, 1995), and that most academic disciplines have a bearing of some sort on the question of how to make tourism sustainable.

Ham *et al* (1991) identify four key audiences for environmental *interpretation* in developing countries; subsistence-level locals, upper and middle-class nationals, influential nationals, and foreign tourists. They make the point that the environmental learning needs of each of these groups are different. Taking a broader view of tourism, a number of other target groups for sustainable tourism education and training suggest themselves, including employees and managers in the hospitality, travel and construction industries, government officials in host countries, potential tourists at their point of origin and, of course, children at school who may assume these or other roles in the future. Each of these groups is likely to have a different perspective on the environment and sustainability, and a different expectation of what education might offer them. Many are likely to believe that they have more to teach than to learn. However, different groups have different access to the power and resources to enable them to put their own analysis forward, and are likely to marshal definitions of terms, moral arguments and scientific evidence in ways which support their existing view of the problems and priorities. Environmental educators and trainers, therefore, must address an heterogeneous audience among which a variety of preconceived ideas relating to tourism and tourism development are likely to be held. Further, it seems clear that uncertainty and contestation, even about the meaning of 'sustainable tourism', are likely to persist for the foreseeable future. Equally clearly, environmental education which helps to create and support sustainable tourism is needed now.

Environment, environmental education and tourism in Brunei: Groups with a direct interest in the progress of Case Study Two all or some of its stages were:

- the management students
- the management teachers
- non-management students and teachers
- parents
- college administrators
- government officials in the Ministry of Education and the Ministry of Industry and Primary Resources
- the business community

Environmental education had an implicit presence in the 'Brunei Tourism Masterplan' (Brunei Tourism Unit, 1996) with respect to:

- educational opportunities to be provided for tourists
- education of tourism providers and local people

Neither, it should be said, was articulated with much clarity or consistency. Brunei's history and culture were emphasised as attractions, though simultaneously linked to a claimed "great shopping experience" (Brunei Tourism Unit, 1996, p.5). The need to develop "attitudes towards taking care of the environment" among Bruneians was stated without further elaboration (Brunei Tourism Unit, 1996, p.7). However, Sheikh Jamaluddin expressed himself enthusiastic about the proposed educational intervention when it was described to him, and accepted an invitation to meet with, address, and review the work of the students.

It was clear that the environment itself, as distinct from environmental education, was officially perceived as a major factor in the design of a tourism product in Brunei. For example, the 'Masterplan' recorded being "free from air pollution"

among the 'strengths' of a Brunei tourism SWOT [4] analysis, along with "untouched rain forests (eco-tourism)" (Brunei Tourism Unit, 1996, p.9). This document was still in use, and these claims were still being publicly made in May 1998 when, as noted earlier, much of the rainforest was being cleared by burning and air quality was officially classified as "Very Hazardous". Both the lack of official attention to environmental education processes, and the somewhat unrealistic assessment of the state of the local environment, illustrate the importance of identifying local functionaries as necessary recipients of environmental education, though they themselves might find this designation difficult to accept.

The college: The overall structure and infrastructure of Maktab Duli remained as it had been during Case Study One in 1996.

As noted a new cohort of students entered the upper sixth in January 1997, and these were to be the subjects of the design intervention, and also of the second quality intervention. The design intervention preceded the second quality intervention because the syllabus section with which it was associated, 'marketing' preceded that associated with 'quality' in the department's normal scheme of work.

The circumstances of Case Study Two differed from those of Case Study One in that it could not be assumed that students had no previous experience of interventions of this type. They had been management students in the college, though in the lower sixth, during Case Study One. It seemed highly likely that many of them would have had friends or siblings [5] who were participants in Case Study One, and that they might, therefore, have been exposed to it in one way or another. The idea of trying to establish the extent of any such prior influence was considered, but rejected on the grounds that:

- it would involve an intervention in normal departmental teaching and learning processes which was not in any sense 'natural'. This would be contrary to the spirit of the research design
- it would not be best use of one of what must necessarily be a limited number of interventions in such teaching and learning
- it would be difficult to devise a valid instrument. Students might have been exposed to Case Study One, with either cognitive or affective influence resulting, but not remember the exposure as such: or, they might remember such exposure, but not have been influenced in any way

In short, the continuing research had become, at least to some extent, an established part of its own context. The simultaneous desirability and undesirability of such situations has fuelled a methodological debate in social research which has already been discussed in Chapter Three (but see Gage, 1989, for an overview).

Further, the need to develop a local tourism industry had been strongly promoted through officially-controlled media, with a particular emphasis on Brunei's perceived environmental and 'eco-tourism' benefits. Also Brunei Shell Petroleum had become involved in the development of tourism in Brunei at this time, both through the production of educational materials such as the "Treasures of Brunei Darussalam" video package mentioned in Chapter Four, and also through construction work. In particular an outward bound centre was commissioned and built, at Shell's expense, at a remote jungle location near to the Universiti Brunei Darussalam's Field Studies Centre in the Temburong district. This project also involved the construction of an overnight 'staging-post', for parties on their way to and from the outward bound centre, at the *kampong* of Batang Duri, and the upgrading of the road linking the district 'capital' Bangar [6], to Batang Duri. These undertakings considerably raised the profile inside the country both of tourism and of the remoter parts of Brunei's rainforest [7].

Hence, while the Case Study One pre-test was felt to be necessary in order to introduce the idea of quality and its relevance for management and environmental issues in Brunei to students, no such need seemed to exist for Case Study Two.

Within the department four teachers who had been directly involved in Case Study One continued into Case Study Two. They were SE, RS, AL and BH. IF, who joined the department just before Case Study One began, and who took close interest in it without actually teaching any of the classes, was also a direct participant in Case Study Two. I myself took one class, as I had in Case Study One. Two classes were taught by a new teacher, AF, who happened to have special expertise in tourism marketing.

As with Case Study One, the timing of major Case Study Two interventions was announced in advance and organised around the normal functioning rhythms of departmental and college operation. It would be a mistake, however, to assume that this announcement was 'the same thing' in each of the two cases, in the sense of being perceived identically by teachers. To use a theoretical idea to illustrate this point, the announcement of a series of stages of an innovation which was synchronised with the departmental scheme of work in Case Study One was very much part of a process of organisational 'unfreezing' (Lewin, 1951). Unfreezing involves preparing for change in a way which is not so threatening to organisation members as to cause them to deny the existence of a problem which justifies change (Schein, 1992; Fidler, 1997). Promoting the innovation as linked to the existing departmental scheme of work may have made it less threatening and more acceptable to department members in Case Study One. In Case Study Two, however, this same linkage may well have been seen by teachers as 'refreezing' (Lewin, 1951), that is, embedding innovations of this type in normal departmental practice, particularly since it was known to all teachers at this time that the 'quality' innovation was to be repeated later in the year as well. This means that it would be wrong to think of Case Study Two as a simply repetition of a technique developed in Case Study One

but with additional benefits of learning-by-doing. Though aspects of a technique *were* re-used and developed, Case Study Two represented a continuation of a *single* process of change. Further, this process was potentially open-ended. As Crandall *et al.* (1986) have written, a successful process of innovation quite possibly begins:

> with the individual user not even interested in attending to the innovation, but ends with the user so proficient that he or she is riding new winds, modifying the original innovation so that it in fact works better, or even looking for a practice that represents an improvement over the one just mastered (Crandall *et al*, 1986, p.44)

This would appear to have implications both for the form and for the evaluation of the second case study as compared to the first. Its form might properly be adapted to suit the developing situation. In particular, the 'staff questionnaire' and 'pre-test' both now appeared to have served purposes which were specific to the context of Case Study One. Neither, therefore, had an equivalent in Case Study Two. Evaluation might focus less on aspects of the innovation which teachers welcomed, and look instead for evidence of aspects with which they were now showing impatience and a desire for further change.

ENDNOTES TO CHAPTER 8

1. The examples chosen to illustrate the difference between 'wants' and 'needs' are interesting. Fien and Trainer (1993a, p.19) are specifically in favour of refrigerators and public transport, but strongly against "racing cars, armaments and the like". Devall and Sessions (1985, p.70) are in favour of hang-gliders, kayaks, sailing boats and (p.71) snowmobiles. They are against nuclear power (p.75) and population growth (p.72).

2. Sheikh Jamaluddin had previously been head of the Brunei Investment Agency in London, with responsibility for managing the Brunei Government's considerable investment portfolio.
3. Nothing is very clear. However, apart from many smaller projects a very large pleasure garden and playground, and a 500 suite luxury (6-star) hotel plus marina were constructed. Neither has ever, as yet, received a paying customer. The moving force behind both, Prince Jefri Bolkiah, fled Brunei in 1998. He later returned, though his status remained unclear. His assets were seized and his son placed under house arrest. His company, Amedeo, went into liquidation. The Brunei Government admitted substantial though unspecified losses in 1998 after employing the accountancy firm Arthur Andersen, as well as an investigator from the British Foreign and Commonwealth Office, to examine the national finances. In November 1998 Sheikh Jamaluddin bin Sheikh Mohamed was moved to be managing director of Royal Brunei Airlines, the national flag carrier. At the same time it was publicly admitted that this airline had lost very large, though unspecified, sums of money. No mention was made by official sources of a replacement at the Tourism Unit, and the tourism initiative may well have been ended. Sheikh Jamaluddin's role in all this is particularly unclear. He told me when I interviewed him on 29 January 1997 that he had accepted the post of Head of the Tourism Unit at Prince Jefri's personal invitation.
4. SWOT analysis is a simple management technique in which one writes down the strengths, weaknesses, opportunities and threats inherent in a business position or proposal.
5. The latter is particularly likely given the widespread existence of polygamy in Brunei Malay society. A further curious (to a Westerner) consequence of this is the occasional occurrence of siblings in the same class with different mothers.
6. Bangar is a small settlement normally reached from the rest of Brunei by boat through the complex of mangroves which fringe Brunei Bay. A curiosity is that the territory of Brunei is split in two by the Limbang district of Sarawak, Malaysia. Therefore it is impossible to reach Bangar from Bandar Seri Begawan

without first leaving Brunei. This is still technically the case if one travels by boat, but the need for a passport is obviated.

7. The outward bound centre was designed for Shell by an Australian architect who took the 'environmental' aspect of his commission seriously. His design avoided the need to fell trees. It was a remarkable effort. For example, the Warden's (first-floor) bedroom wardrobe had a tree growing up through the middle of it. When I visited the site with the architect he was mortified to find that though the Bangladeshi labourers, brought to this remote spot by Shell to carry out the work, had left alone all the trees in the plan, they had also passed some of the long hours of darkness by felling other trees along the riverbank. No one had thought to tell them not to.

CHAPTER NINE

CASE STUDY TWO: DESIGNING A MARKETING MIX FOR THE TOURISM INDUSTRY IN BRUNEI DARUSSALAM

Design week

Central to Case Study Two was a week long unit of work based on the adaptive concept 'design'. The work was undertaken by all upper sixth students in the department, with their usual teachers, during six college days beginning Saturday 25 January 1997, and as departmental homework. As with Case Study One, all students were provided with a resource booklet (Annex 8) designed by this researcher and circulated to participating teachers in advance. A total of 183 students took part, taught in ten groups. This meant that at any time during the college day two classes and their teachers were working on the project.

As with Case Study One students were required to work in small groups. Once again, teachers preferred to allow students to choose the composition of these groups themselves. There seemed little positive reason to oppose this arrangement, and a strong negative reason to accept it since, as noted earlier, teachers could not expect fully to comprehend the dynamics of classroom relations across race and gender divides. In short, allowing students to choose their own working companions had few obvious pedagogical implications, and avoided an otherwise strong possibility of unforeseen pitfalls.

It was announced to students that there would be an opportunity for some of them to present work at a function organised by the Ministry of Industry and Primary Resources and attended by Sheikh Jamaluddin bin Sheikh Mohamed.

The design week resource booklet

The booklet consisted of nine pages. The current national context of the development of a tourism industry in Brunei was briefly outlined. Students were required to complete two extended tasks, taking the role of local managing director of a joint-venture marketing consultancy **[1]**.

The first task involved preparation of a detailed projection of the most appropriate use of Brunei's coastline in the year 2003 **[2]** in order to achieve the following officially declared national objectives:

- economic development and industrial diversification·
- success of the regional economic cooperation zone known as SHuTT
- preservation of the natural environment
- preservation of traditional culture and values
- reduction of unemployment

This task might be seen, therefore, as involving the design of a key environmental component of a tourism product for the country. Its theoretical legitimacy in the context of this research rests very much upon the notion, outlined in Chapter Two, of a co-evolutionary relationship between society and the environment (Norgaard, 1984). An example of how this co-evolutionary approach can inform thinking about the design of human environments is provided by Redclift (1987) who specifically acknowledges the influence of Norgaard's work upon his own (pp.32-33). He contrasts (Redclift, 1987, pp.107-109) the condition of the Valley of Mexico in 1984 with its condition in 1519 **[3]**. At both these dates the Valley was extensively used by humans, and was the site of a city. However, Diaz's sixteenth-century account, which emphasises the extraordinary natural beauty *and* functionality of the site, contrasts sharply with that of the twentieth-century Mexican Government's Office

for Urban Development and Ecology, which describes an actual, rather than an impending, ecological catastrophe. That the Aztec city first replaced pre-human nature, and the modern city then came to replace both, are seen by Redclift (1987) as the results of a complex series of interactions between human decision-makers and their environments. The first design week task was intended to confront students with similar, specific problems of decision-making in a contemporary, local context. Consistent with cultural theory, it was also intended to raise awareness of the different perspectives and sets of assumptions which different groups might bring to such decision making. This approach is in keeping with more recent work on the ecological economics of coastal zones. Kerry Turner *et al.* (1998) write:

> An attutude of openness is advocated because of the existence of irreducible ignorance and the related concepts of surprise and novelty. In other words, some system changes may not, in principle, be predictable but a proper recognition of that unpredictability will still be important and useful for policy responses. Given contexts in which combinations of irreversibility effects, surprise outcomes and irreducible ignorance exist, the appropriate policy response should be a flexible one...Coastal management by contrast has in the past been dominated by a more closed attitude which has sought to buffer socio-economic activities and assets from natural hazards and risks, via hard engineering.
>
> (Kerry Turner *et al.*, 1998, pp.269-271)

The idea of 'designing' an environment, however, is quite consistent, in itself, with a wide range of views on the relationships between humans and nature. Of course, proponents of different views would be likely to have quite different ideas about what 'designing' precisely entails. To illustrate, from an 'interventionist' (O'Riordan, 1989) or 'blue' (Dunkley, 1992, pp.57-77) perspective, at one extreme, there is in principle no problem. One uses scientific and technological knowledge to design and construct whatever is desired, by means of the 'hard engineering'

mentioned above. This process is mediated by markets to ensure efficiency and maximisation of benefits. There is no doubt that this view has been losing ground among academics for several years (Kerry Turner, 1993). Even among developers there has, in some countries at least, been a move towards 'soft' engineeering options in coastal management (Leafe, Pethick and Townend, 1998), but whether at the time of this research this process of intellectual retreat had any equivalent in the thinking of government officials or construction company managers in Brunei is more open to question. At the same time, most 'ecocentric' viewpoints recognise, "the full range of human interests in the non-human world" (Eckersley, 1992, p.46). Both deep ecology (Devall and Sessions, 1985; Tyler Miller Jr. 1990) and ecofeminism (Spretnak, 1990) achieve this by accepting a human right to satisfy 'vital needs'. As noted in Chapter 8, this formulation is not without problems, but it seems likely to permit some degree of premeditated modification to the received environment. Between the extremes, an outline of an approach to coastal management consistent with sustainable development which draws on both natural and social scientific techniques has been outlined by Leafe, Pethick and Townend (1998, p.289), and specifically employs the concept of 'design'.

The second design week task was to design a marketing mix for Brunei's tourism industry to the year 2003. Students were encouraged to organise this around the 4 'P's of marketing, 'product', 'price', 'promotion' and 'place' **[4]**.

A small amount of initial guidance, presented in terms of questions students might ask themselves, was provided for each task. The booklet also included the following:

- information on Brunei's tourism plans drawn from the Brunei Yearbook (1997)
- news cuttings from the Borneo Bulletin
- extracts from writings on Brunei's coastal ecosystems (Michael, 1996)
- extracts, and adapted extracts, from the literature of tourism and environment (Cater and Goodall, 1992; Cater, 1995; Goodall, 1995)

- extracts from writings on coastal wetland ecosystems (IUCN/UNEP/WWF, 1991)
- tourism-related extracts from 'The Ecologist' magazine (Pleumarom, 1994)
- extracts from a booklet co-written by this researcher for the Brunei Ministry of Development (Brunei Government, 1995). These dealt with the environmental impacts of development
- extracts from a Brunei Government commissioned lecture on sustainable development (Bapak, 1995)
- quotations from statements made by Brunei Shell Petroleum's Head of Environmental Affairs
- an extract from a coastal development plan prepared by a private sector firm of environmental engineers in Brunei
- an extract from the promotional material of a local cement company
- information about environmental auditing, extracted from Goodall (1995)

To support the booklet, copies of the following materials were made available in all classrooms:

- *Bersihkanlah Brunei Darussalam* or, 'Clean Up Brunei Darussalam' (Brunei Ministry of Development, 1995), a set of resources for schools relating to sustainable development in Brunei. Extracts from some of these had also appeared in the quality week booklet
- *Tourism in Focus*, 9, Autumn 1993, a magazine produced by the organisation Tourism Concern **[5]**. This particular issue was concerned with ecotourism
- *Treasures of Brunei Darussalam*, a booklet produced by Brunei Shell Petroleum in 1995 in conjunction with 'ASEAN Year of the Environment'
- an interview given by the head of the Brunei Tourism Unit, Sheikh Jamaluddin bin Sheikh Mohamed (McGuinness, 1996)
- the Brunei Yearbook (1997)
- the 'Tourism Masterplan Overview' (Brunei Tourism Unit, 1996)

- a paper (Brunei Ministry of Development, undated), *Brunei Darussalam Environmental Management Information Paper*
- a lecture (Eaton, 1994) given at the Universiti Brunei Darussalam on the environmental implications of development for Brunei
- the paper (Soraya, 1996) presented by the head of Brunei's environment unit at the management seminar which followed the quality intervention with the previous cohort of students in 1996
- a selection of newspaper clippings from the *Borneo Bulletin* **[6]** relating to the development of tourism in Brunei

These materials were intended to support and stimulate both students and teachers in working together on the tasks by:

- creating awareness of the tendency of tourism to "destroy its resource base" (Cater and Goodall, 1992, p.309). A simple conceptualisation of this in terms of the marketing mix might be that if the 'promotion' element is pursued too successfully the 'product' may cease to exist
- facilitating the development of this issue in classrooms as it related to the locality. In particular, helping students and teachers to explore the tension between the perceived need to design and develop an industry around Brunei's cultural and environmental attractions, and students' concern for the preservation of those attractions
- creating awareness of the continuity between local, regional and global issues relating to tourism and environment
- identifying tensions between 'tourism', 'ecotourism' and sustainable development
- identifying how tensions between tourism development and sustainable development were reflected in Brunei Government policy statements
- identifying impacts of tourism development at specific local sites

- making clear the centrality of the tendency of tourism to 'destroy its resource base' to mainstream tourism marketing thinking, and therefore to management education
- raising students' awareness both of their environmental heritage and likely developmental impacts upon it, and assisting them in giving an account of these in the English language
- facilitating classroom discussion of the segmentation of the tourism market, and of the implications of this for the design of tourism products
- raising the issue of the trades-off (Cater, 1995) between outcomes for environment and development of different tourism initiatives
- introducing environmental auditing as a specific technique of environmental management and facilitating discussion of its relevance to tourism development design

Staff and students during the design week

As already noted, timetabling arrangements for the design week were very similar to those of the 1996 quality week intervention. The principal differences were some changes in teaching personnel, and the existence of ten teaching groups instead of nine. There was no change in teaching accommodation, or in the overall layout of college and departmental administration and other facilities.

During quality week continuous close observation had been possible of only one class, my own. Two factors combined during design week to make wider observation possible, while still retaining the essential naturalness of classroom situations. First, AF suggested that team teaching might be appropriate given the large numbers of areas of expertise upon which the work touched. There was little general enthusiasm for this elsewhere in the department, though some teachers (notably IF) offered to make themselves available on a 'consultancy' basis to all students on matters relating to their own special skills. However, AF's suggestion presented an opportunity for

this researcher to become involved as a participant observer with the two classes she taught. Secondly, departmental arrangements favoured my participation in this way since her teaching and mine were timetabled in different blocks.

One other major difference between the first quality intervention and this design week was the strong preference expressed by all teachers for allowing groups of students to produce a single response collectively, rather than separate individual responses as had been the case in quality week. This had significant implications for subsequent data coding, since it meant that each loose network would be a coding of group rather than individual output. However, as it was perfectly clear that teachers were going to do this whether I liked it or not, it seemed best to like it. In fact, as was noted in Chapter 8, the notion that repetition of a procedure (such as advance announcement of a coordinated timetable, or requiring individual responses to tasks) across the two interventions would enhance reliability within this research could not be sustained, because the first quality week intervention altered the context of the design week intervention. However, even accepting that the quality and design interventions were parts of a single innovation, rather than two separate examples of an innovation of a particular kind, it is still likely that something was lost by this change. Part of the case advanced by Firestone and Dawson (1988, pp. 218-219) for the importance of procedures in qualitative research rests upon the idea that these provide a concrete form for *patterns* which are, in turn, a prerequisite for qualitative knowing. This idea originates with Campbell (1975, 1978), who also gives consideration to the relationship between qualitative and quantitative data:

> Qualitative, common-sense knowing of wholes and patterns provides the enveloping context necessary for the interpretation of particulate quantitative data
> (Campbell, 1978, p.192)

The change from individual to group submissions in design week, and the subsequent maintenance of this change during the second quality intervention, certainly represented a weakening of the 'pattern-context' of this research. On the other hand, Louis and Miles' (1990, p.214) view, that leaders of educational innovations should share control with teachers as an innovation develops, has already been noted and reflects more favourably on this change. Also, Wolcott (1988) emphasises the importance of responding to the developing context of ethnographic research:

> When one is in the field, matters of sequence and sensitivity in using different techniques can be far more important than the choice of them
> (Wolcott, 1988, p.192)

It might, in fact, be argued that this problem had its origins in a fundamental tension within the aims of this research. To the extent that the intention was to test a technique (the use of adaptive concepts), close adherence to the procedures of Case Study One, which would have produced three separate such 'tests', might have been preferable in some ways. However, to the extent that gains in students' learning, and (particularly) professional and institutional development were sought, the more flexible approach which was (necessarily!) adopted made better sense. This second option would, therefore, seem to be particularly supported by theorists of action research, and of an 'action research spiral' (Kemmis and McTaggart, 1982, p.11; Robottom, 1987a, p.110; Stapp and Wals, 1993, pp. 171-172).

Under these arrangements a total of fourteen groups, comprising 55 students were more closely observed by this researcher. The following, briefly, were some of the characteristics of these groups. Each group is represented by its reference number within the total sample.

Group 42: Four Malay girls (Fauziah, Nuzliana, Norsalawati and Masrani). A very contrasting group. Fauziah was in every sense the leader, a friendly, energetic young

woman whose (subsequently realised) ambition was to study law in the UK. Nuzliana, on the other hand made absolutely no bones about the fact that she had no plans to make any real academic effort at all, and no real interest in passing her A levels. She did however appear to enjoy participating in design week. Her 100 per cent attendance record during the six days [7] was something of a novelty, and the class as a whole made rather a joke of this. Norsalawati was a nervous, hard-working, earnest, but rather academically weak student, while Masrani was extremely quiet, apparently rather plodding, but sometimes deeply and mysteriously humorous. They combined very well.

Group 24: Three Malay boys (Rozaimi, Amir, Sukri) and one Eurasian (European/Chinese) boy (Mark). Mark was stateless, highly adept at getting on with his peers and absolutely frank about his perception that his racially mixed origins presented him with problems which education might help alleviate. Rozaimi was a lively and outgoing young man who clearly derived status in his peer group from his exceptionally large size. Both Amir and Sukri were quiet, methodical, and possessed of the self-confidence which often seemed to accompany membership of a rich Bruneian family.

Group 41: Four Chinese girls, whose names were Siew Fung, Caille, Diana, and Kei Cez [8]. They were all very hard working and keen, though borderline candidates in terms of A level success.

Group 43: This was a heterogeneous group even by the standards of Maktab Duli. Kim was a Bruneian citizen by virtue of having a Bruneian Malay father and an English mother. Teene was a Bruneian permanent resident as a result of having a Bruneian mother and an Iraqi father. Kim spoke perfect English, while Teene's was significantly better than the average for the cohort of students. Both girls were particularly engaged at this time in testing the limits of Islamic constraints upon their behaviour and, for the most part, seemed to view their studies as a side-show to this.

Nevertheless, they became quite enthusiastic about this project. The third member of this all-female group, Shela, was a quiet, clever, shy and apparently somewhat disaffected Brunei-Malay citizen.

Group 40: Group 40 consisted of three boys. Vincent (On Wei Sin) was the son of a very successful local businessman, who was also a personal friend of a number of European members of staff (including SE, RS and BH) by virtue of their shared membership of a club. Vincent worked furiously, producing an independently researched annex to the group's report. His anxiety to please his father by succeeding at school was plain and intense, and seemed even mildly to embarrass the father. In fact, Vincent was academically very weak indeed. Kiang Ping, by contrast, produced occasional flashes of brilliance, though these were often masked by bad handwriting and/or adolescent shyness. The group was completed by a calming figure, Amirul, a Malay boy with a sense of humour and good organising skills.

Group 14: During this research several participating teachers commented on the very inclusive attitudes of Maktab Duli students. Weaker students, or students who were in some way untypical, never seemed to have difficulty in finding a group to join. This group was a case in point. It consisted of Sofhia, a Malay girl who was academically weak, painfully shy and physically unprepossessing, along with two very bright Malay boys, a diligent, methodical and popular Chinese girl (Kristy), and a socially successful and charming Malay girl from a well-to-do Bruneian family. Of the boys, Ihsan brought unusual breadth of experience to the group as he had only recently returned to Brunei from Jakarta. There his father had been ambassador, and he himself had attended the International School [9]. Azrin's quick wits, meanwhile, were kept busy trying to conceal his long hair from the Malay discipline staff. It seemed helpful (to him and to us) to declare Management classrooms a safe haven in this respect, and he responded by being unusually original in his thinking. Erana, finally, also had diplomatic family, and was the only student in the college who spoke English with an American accent.

Group 16: Both groups sixteen and fifteen also included a misfit. In group sixteen Gary Thien made it clear that he would rather work alone. AF decided not to allow this. He worked, therefore with three Malay girls. Of these, Rostini was cheerful and able. Masjuana, academically average and with an almost unvarying expression of surprise on her face, was often the first or only student to grasp the meaning of, and respond with a smile to, joking exchanges between AF and myself. She supported Erdiana (who was generally known, for some unknown reason, as 'Molly'), who was quiet, very able, and frequently absent. Molly faced some serious problem at home, the details of which the college administration thought it best to conceal from expatriates.

Group 15: Mohammed Shahrul was a problem for the college administration. He was frequently absent and took little interest in his studies. He was welcomed into a group with four hard working Malay girls, of whom three were also expected to obtain high grades. Their names were Elfy, Nimie, Anyafeina, and Irni.

Group 8: Group eight comprised four academically high-powered Chinese girls (Yee Jueen, Yin Yin, Madeline and Jessica). Two of these (Yee Jueen and Madeline) were taking Management as a fourth A level and were among the most academically able students in the college. Yee Jueen had also travelled widely with her father and had some sense of European business culture. Madeline, by contrast, was keen to emphasise her very specific local origins. She was from Kuala Belait, a small town near the Malaysian border. Yin Yin and Jessica both aimed for places at the local university and were strong candidates to succeed in this ambition.

Group 17: This group of four contained two extremely hard-working students who were handicapped, in their management studies, by poor English. Their names were Atikah and Noralinda. Atikah did eventually pass the subject after repeating her

upper sixth year. Another Malay girl, Farahiya, provided most of the ideas. Finally, Zuraida was often absent and contributed in only a minor way to the group's output.

Group 5: Four Malay boys (Reza, Nazri, Zal and Erwan) made up this group. They were an interesting mix. Reza was easily the brightest of the four, but he was also frequently in trouble with the college authorities for discipline reasons. He was normally difficult to motivate, but became very enthusiastic during design week. Erwan and Zal were highly upstanding and respected prefects. Nazri was a plodding, academically weak student though a pleasant, humorous character. He did his best with tasks passed to him by the others. A feature of this group was the extensive use they made of the internet in researching their project.

Group 9: Ade was a good student who subsequently passed his exams in spite of taking two months off from his studies to perform the *haj* **[10]**. Two other Malay boys, Daud and Suhardi, were weak academically but interested in this work. There was an interesting tension here, to which I return below. The fourth member of this group was David Chan, an able but poorly motivated boy on whose behalf I had to intervene, since the others felt that he should be the one to perform all the manual labour of writing.

Group 18: Leziana and Noorhayati were 'model' Malay young women. They were shy and modest to the point where speaking to them presented, to me, a socially challenging situation, almost as though to do so was itself indecent behaviour. Helpfully (for me) their colleague in the group, Huzzymah, was much more outgoing and approachable. Her father was well-travelled, fluent in English, and (apparently, to me) at least as anxious about extending his daughter's Western knowledge as about her traditional values and deportment.

Group 7: In this group were two girls with a characteristic which (as I interpreted it) I had come across previously in Malay girls, that of fatalistic acceptance of whatever

came their way. For Noradinah and Mardiana there seemed to be no point in proactive behaviour: what would be, would be. I may have been wrong about this, and even if it was an insight I was never able to find a way to put it to good use. The other two girls in this group were a complete contrast. Roslinawati was cheerful, energetic and seemed to love her studies in management. Susilawati was a rare cynic, given to asking difficult questions and presenting a (from my point of view very welcome) challenge.

An outsider inside again: more classroom observations

The difficulties of making adequate fieldnotes and producing 'thick description' in this research were discussed at some length in Chapter Five. In Case Study Two these difficulties were exacerbated by the existence of a larger number of groups of students, and by the need to fulfil an additional role, that of team-teacher. At the same time, I had benefited from a certain amount of learning-by-doing during Case Study One, and had enjoyed an interlude in which to reflect on my experiences in the light of theory.

Fundamental to the theoretical approach taken in this research is the notion of "contradictory knowledges" (Thompson, 1997, p.142) employed by cultural theorists and derived from the theoretical framework outlined in Chapter One. Cultural theorists share an interest in non-Western cultures, such as those present in the groups described above, with post-modernists. The relationship and differences between the cultural theory view on the one hand, and discourses of post-modernism and/or post-structuralism on the other, have already been the subject of limited discussion in Chapter Three. In particular, though both perspectives focus on the existence of a multiplicity of co-existing views of social and physical reality, it was shown that cultural theory seeks to explain this multiplicity, and is therefore, in a sense, itself a kind of metanarrative. Fundamental to post-structuralism is the

rejection of metanarratives (Gough, N. 1991a). As it relates to non-Western cultures such rejection implies that:

> In providing opportunities for indigenous peoples' perspectives to be heard in environmental education the intention is not to denigrate Western or developed world perspectives in favour of indigenous knowledges. Rather, the emphasis should be on how each of us is a part of particular stories and how we need to be aware of other stories...These stories, and the work we do with them, encourage recognition and valuing of both difference and commonality, engendering a celebration of the diversity of our interrelationships with each other and our environments.
> (Gough, A. 1997, p.150)

There is nothing here from which a cultural theorist would dissent, but one can question the usefulness of this formulation as a theoretical tool for understanding the classroom groups outlined in this chapter. First, while this account sits comfortably with the observed behaviour of students in welcoming into their groups individuals who for one reason or another seemed to be misfits, it helps not at all in conceptualising the simultaneous deliberate discrimination against such 'misfits' within the same broad context. For example, if Gary Thien (group 16) preferred to work alone it may have been because of difficulty he encountered obtaining a place at Maktab Duli as a Chinese permanent resident. In the same group, the secrecy surrounding Molly's home problem certainly owed something to unquestioning respect for the rights over her of her father in a Malay Islamic household. In group 43, Kim, with one Bruneian parent, was a citizen but Teene, also with one Bruneian parent, was not. A cultural theory approach explains these differences by distinguishing the organisational rationality of the classroom or group from those of the family and the state.

Secondly, it seems very difficult to circumvent the metanarratives favoured by some of the members of these groups except by means of a metanarrative. To illustrate, Brunei state ideology, *Melayu Islam Beraja*, is a metanarrative. It is explicitly undemocratic, and asserts the primacy of a particular religion and a particular race. It is undeniably both 'traditional' and 'indigenous'. In education it calls for the "Islamisation of Knowledge" (Brunei Government, 1985, pp. 40-43) and the alteration of the content of school and teacher training curricula **[11]** in line with this. It rejects other ideologies including, clearly, post-structuralism. To claim to show that *Melayu Islam Beraja* is one story among many is, in fact, to claim to refute it. To accept it on its own terms is to abandon the post-structuralist case, and all others. In the context of this research, I suggest that this researcher was better served by a metanarrative, cultural theory, which acknowledged uncertainty, and expected to find right and wrong in all perspectives including its own.

Cultural theory distinguishes and classifies 'knowledges', or ways of understanding things, according to its framework of competing organisational rationalities (see Chapter One). However, any particular 'knowledge' will, clearly, have other characteristics *besides* its organisational rationality. In observing groups of students at work during Case Study Two, this researcher found it useful to think in terms of the following, oppositional, qualities of their 'knowledges'. They could sometimes be:

- traditional or iconoclastic
- high status or low status
- female or male

Much has been written within the literatures of environmentalism and environmental education about traditional or indigenous knowledge. This work has been of variable quality, and even those writing from a perspective which is clearly deeply sympathetic to marginalised groups note the dangers of "romanticising the native"

(Gough, A., 1997, p.150) and the extent to which this has, in fact, occurred (Gough, N., 1991b, 1994). At the same time, however, there have been environmental education initiatives which have successfully worked with indigenous peoples and their knowledge (for example, Fien and Corcoran, 1996; Da Silva, 1996).

Indigenous knowledge is often contrasted with 'Western' or 'scientific' knowledge (see, for example, Gough A. 1997, p.140). However, the situation in Maktab Duli classrooms was too complex to be comprehended in terms of this simple dichotomy, for three reasons. First, local indigenous knowledge was dynamic. Local people had *chosen* to incorporate certain aspects of Western knowledge into their own cultural and economic arrangements. For example, the bureaucratic methods of the colonial British had proved in some respects attractive to Brunei Malays, and persisted in Brunei at the time of this research in forms then out of favour in the West **[12]**. Second, Brunei had three major, and many more minor 'indigenous' groups. These not only competed and cooperated in a variety of ways, but also constituted, in part, each others' 'knowledges'. This is to say, for example, that if the overseas Chinese were not there and had never been there, Malays' understandings of their physical and social environments would be likely to be very different. Third, some writers have tended to classify as intrinsically 'Western' certain human activities, particularly trade and commerce (e.g. Huckle, 1988), to associate these with the Western scientific revolution (e.g. Jansen, 1990, p.238), and to contrast them unfavourably with earlier, non-Western, communal, self-sufficient modes of social and economic organisation (Huckle, 1988, pp.50-51). The foundational assumptions of this thinking are questioned by others on empirical grounds, for example North (1995) writes:

> Self-sufficiency, the battle-cry of Green thinking since the 1970s, is not something one can find anywhere in the human record, outside the mythology

> of desert islands and hermitages. Mankind [sic] has a long history of finding security in large networks and in trade.
> (North, 1995, p.202)

Whatever the truth elsewhere, one can say that trade and commerce have been features of life in North Borneo for a long time, perhaps as much as 2,000 years (Colchester, 1992, p.11).

For these reasons I have preferred the term 'iconoclastic' to indicate any 'knowledge' or way of understanding which challenges the traditional, either by contradiction or amendment. The importance of this distinction in the classroom is well illustrated with reference to some of the girls, for example Leziana and Noorhayati in group 18 and Atikah and Noralinda in Group 17. On the one hand these young women were most concerned to maintain proper standards of behaviour according to their traditional Islamic culture. Though I was once approached by Leziana at the end of a class with a request for extra help on a particular point, I almost had to ask the question for her, and received a thankful smile in return for my suggestion that she might like to make an appointment to which she should bring Noorhayati as both fellow-student and chaperone. This behaviour was very deeply rooted. Instruction in Islamic ways permeates a young person's life in Brunei. From age five Malay children attend religious school in the afternoons. Morning school also has a strong religious content which, I am able to say from direct experience, particularly emphasises submission to authority, spirituality and the merits of a reserved, reflective disposition. Friday, of course, is a holy day on which (segregated) attendance at prayers is normal. Malay weddings, with a strong religious content, are held on Sundays. Islamic religious instruction is prescriptive in respect of quite minute details of daily life and behaviour. Female modesty is ensured by customs such as the wearing of the *tudong* and *baju kurong*, the prohibition (apparently weakening, but still strong) on handshakes between members of the opposite sex, and the strict separation of the sexes at social functions. A Malay saying is: *Biar mati*

anak, jangan mati adat or; Better the child should die, rather than the customs (Brunei Yearbook, 1997, p.150).

The Head of the Islamic Religion in Brunei is the Sultan, whose government was also at this time, and on the other hand, the source of legitimacy for quite different, 'iconoclastic' knowledge. This officially promoted Brunei in terms such as these:

> Jerudong Park, one of the countries popular destinations, is a dizzying mixture of excitement and energy with its dazzling display of lights and thrilling rides...one of the top tourist spots in the Borneo region. Michael Jackson, Whitney Huston and Stevie Wonder performed at the Park in 1996 (Brunei Yearbook, 1997, p.228)

In designing Brunei's tourism product these tensions appeared to be strongly felt by these girls. They were reluctant to show their work, and visibly relieved if I was pleased with it. When I asked Atikah to think about the advantages and disadvantages of tourism in Brunei these were her responses:

> Bruneian can show traditional culture to the outsider
> Brunei has a lot of historical things
> Brunei can gain its income (economy) from the flow of money
> from tourism industry
> Bruneian can learn the tourist's different culture
> Improve standard of living of the local people
> Misunderstanding may happen between local people and tourists
> The outsider might bring bad influence to the local people

However, I would certainly hesitate to make any detailed claims at all about these girls' feelings during the design intervention. The extreme complexity of the issues involved has been well captured by Wenner (1990), who writes:

> how important it is to view sex role expectations in a holistic cultural context and not to assume that because arranged marriages exist, or because women seem to be extremely polite and passive, or dress in a certain way that they are necessarily more oppressed than are women in Western society. Imposing Western notions of feminism and liberation may undermine the strength and support these women obtain from their own 'women's culture'. However, this is not to argue that any conflict over sex role issues...is inappropriate. The reluctance to challenge gender relations in cultures other than the dominant culture on the grounds of cultural sanctity reflects a narrow view that cultures are static and homogenous.
> (Wenner, 1990, p.105)

Of course, a further complication in the circumstances of this research was that Malay Islamic culture *was* the 'dominant culture'.

The above example of traditional and iconoclastic knowledges is also, of course, an example of specifically female knowledge. Male students are not constrained by custom in their behaviour in the same ways as girls (this is not to say they are unconstrained), but may still experience tension between the traditional and the iconoclastic. Ade, Daud and Suhardi (Group 8) provided an example which also illustrated the notions of 'high status' and 'low status' knowledge in this context. Though a clever young man, and not unaware with the risk he was taking with his chances of academic success, Ade chose to perform the *haj*. Two months work, in all his subjects, was simply missed. In return, however, he may be said to have obtained significant social capital (Coleman, 1997), and high status knowledge (Apple, 1990; 1997) in those parts of the structure of society in which traditional knowledge was dominant. The characteristics of social capital have been described as follows:

> Social capital is defined by its function. It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors - whether persons or corporate actors -within the structure. Like other forms of capital, social capital is productive, making possible the achievement of certain ends that in its absence would not be possible. Like physical capital and human capital, social capital is not completely fungible, but may be specific to certain activities. A given form of social capital that is valuable in facilitating certain actions may be useless or even harmful for others. (Coleman, 1997, pp.81-82)

In terms of social structure, Ade became a *haji*, so achieving a new status within traditional Malay society. In terms of knowledge, the things he was considered to have learned from his spiritual and physical journey counted as high status knowledge in the Muslim community. Apple (1990) considers that high status knowledge is by definition both scarce and instrumental. He writes:

> Students do not merely take in information, cultural attributes, etc., but rather they also transform (and sometimes reject) these expected dispositions, propensities, skills and facts into biographically significant meanings. (Apple, 1990, p.36)

If Ade (or his parents **[13]**) had chosen a form of social capital, and a form of knowledge, which were significant for a traditional Malay biography, then Suhardi (in the same group) and Reza (in group 5) were inclined to reject these forms to some extent. They favoured the outward appearance of Westernised young men, in the fashion that these were typically presented by Channel V 'Vee-Jays' **[14]** at the time. Both were more enthusiastic than usual about their design week studies. My clear impression was that they saw these as providing knowledge which might be instrumentally useful in the modernising, less traditional future. To illustrate, several

months after the conclusion of design week I was approached by Reza for a personal testimonial. His reason for asking me, he said, was that, "you know a lot about tourism". Both these students (and a number of others) also later made much of their design week efforts, I discovered, in 'personal statements' **[15]** to the college careers department. What they learned represented social capital and high status knowledge to them because they were orientated, at least in part of their lives, towards iconoclastic understanding and away from the traditional. This said, it is an expectation of this research that individuals' behaviour will be governed by different principles in different contexts. No Malay student could completely ignore the demands of traditional structures, and perhaps only boys destined for the Islamic clergy, or girls content with the prospect of a submissive marriage, could turn their backs entirely on iconoclastic influences. Nor were these mutually exclusive. Ade eventually passed his exams anyway, and so succeeded in both traditional and iconoclastic knowledge domains.

Overseas Chinese social understandings and arrangements at Maktab Duli were subordinated to those of Malays and therefore, in many ways, more difficult to infer. Nevertheless, the three dimensions of students' 'knowledges' identified above, traditional/iconoclastic, male/female, and high-status/low status, may also make a contribution to a framework for comprehending (or misunderstanding less badly) the social complexity of Chinese students' lives. In Chapter One an attempt was made to theorise part of this complexity in terms of the different organisational rationalities of (individualistic) overseas Chinese business activity, on the one hand, and the (hierarchical) overseas Chinese family on the other. These organisational perceptions may have implications for what it is thought appropriate for Chinese men and women to think and do in particular circumstances, what is seen as significant or insignificant in particular circumstances, and the relative importance of tradition and change respectively. While it was clearly beyond the scope of this research to pursue these matters to any sort of conclusion, the following extract from an

exchange **[16]** between this researcher and Caille (group 41) gives a flavour of the individual concerns on which they may bear.

SG: Where in Brunei do you live?

Caille: *In Kampong Berangan, near the town area.*

SG: What do you like about it there?

Caille: *The peacefulness. It can be considered a mini Chinatown 'cos more than three-quarters of the population is Chinese.*

SG: What would a tourist like about it?

Caille: *The hills and the waterfalls at the inner part of our village. Our lifestyles. There was a foreigner who was shooting away his camera when one of my aunts was burning offerings to the deities during the Lunar New Year's Eve.*

SG: Is there anything tourists might not like?

Caille: *The lack of hospitality, maybe. But, there was once a lost backpacker from England who came asking direction in the middle of the night. He ended up staying at our place for two or one week* [sic].

SG: Would tourism create any work opportunities for people in your kampong?

Caille: *Yes. If Berangan were to become a tourist attraction, some of the villagers can cater to their needs and wants like bed and breakfast.*

SG: Would tourism add value or subtract value from your kampong?

Caille: *Subtract.*

Caille makes an interesting distinction between 'catering to needs and wants' on the one hand, and 'hospitality' on the other. My tentative interpretation of this exchange is that 'catering to needs and wants' has a price tag attached and belongs to the individualistic world of business. One would expect both Chinese men and women to behave 'rationally' (in the neo-classical economist's sense) in this sphere. Examples of relevant high status knowledge would be accounting skills, bargaining skills, or skills in the manual manipulation of bank notes. 'Hospitality', by contrast, is a duty normally reserved for family members and governed by a set of well-established hierarchical obligations. High status knowledge in this sphere concerns, for example, the type and timing of burnt offerings. Women, especially older women, have a particular role. Both these 'knowledges' are traditional, and so there is tension between, on the one hand, love of the traditional environment of the Chinese village and, on the other, the imperative to exploit potential business opportunities which happen to occur within, and have the potential to modify, that environment. The lucky backpacker, by arriving "lost", and "in the middle of the night", managed to appear to his hosts as a hierarchical obligation rather than a business opportunity.

The theoretical and methodological influences from social anthropology on this research have already been noted. That I was beginning to formulate interpretations of this kind at this stage of this research prompted me to question whether this influence was growing and, if so, whether it was appropriate for it to grow. According to Okely (1994):

> The anthropologist becomes the collector and walking archive, with ever unfolding resources for interpretation.
> (Okely, 1994, p.20)

and:

> The anthropologist-writer draws also on the totality of the experience, parts of which may not, cannot, be cerebrally written down at the time. It is recorded in memory, body and all the senses. Ideas and themes have worked through the whole being throughout the experience of fieldwork. They have gestated in dreams and the subconscious in both sleep and in waking hours, away from the field, at the anthropologist's desk, in libraries and in dialogue with the people on return visits.
> (Okely, 1994, p.21)

To some extent the processes by which I arrived at my interpretation of, for example, Caille's words, may have been like this. However, given that the aims of the research were expressed in terms of developing a technique for curriculum innovation, and of evaluating it in terms of the effectiveness of teaching and learning, I would not have been content to *depend* on personal cultural saturation as a means of either reaching or justifying an understanding of the case. In fact, the interpretative framework developed above is firmly rooted in an explicit theory (cultural theory) which the reader can question or seek to test for her/him self, while the interpretations it generates are open to examination in terms of their usefulness in developing and refining the technique of intervention through the use of adaptive concepts, from a variety of theoretical standpoints. It is within this framework that my interpretations are proposed.

Design week data collected from students: description and first impressions

As with Case Study One written data were collected from students both in the direct pursuit of the research aims, and also for subsidiary purposes which contributed indirectly to the achievement of those aims. To recap, the primary purposes of collecting these written data were:

- to evaluate the intervention using the adaptive concept 'design' in terms of the effectiveness of teaching and learning (research aim 2)
- to contribute to the achievement of research aim 3 by opening an archive of information which might eventually make possible a preliminary evaluation of the usefulness of adaptive concepts as a way of introducing environmental education into management education programmes
- to make possible the refinement of the process of identification of adaptive concepts within the shared context of environmental education, environmental management and economic development (research aim 1)

The subsidiary purposes of data collection concerned the use of the adaptive concept as a focus for social research. They were:

- to begin to develop a qualitative understanding of the specific context of this research
- to make progress towards a preliminary evaluation of adaptive concepts as a focus of qualitative research

55 responses were submitted by groups of students to the design week tasks, indicating an average group size of 3.3. All were read by this researcher, graded, and returned to students. The submission of group, as opposed to individual, responses had at least one clear practical advantage in that it was possible to complete the task of giving students and their teachers feedback more quickly. As with the quality week work, grading was done from the perspective of the management syllabus in hand, and not from any environmental education perspective. Marks were awarded for evidence of an internally-coherent tourism product design which embraced all aspects of the marketing mix and respected the social, economic and environmental context of Brunei.

In the first quality week intervention it was noted that impressions of the data obtained during the grading process had an influence upon the subsequent choice of coding method. In the design week intervention, on the other hand, it is possible that the existence of a coding method established during Case Study One influenced the first impressions I took from the grading process. It was hard not to be 'on the look-out' for classes of interest which had featured strongly in the analysis of the Progressive Plastics data. Indeed, a concern with the development of my overall understanding of the broad context of this research made it, in one sense, essential to be alive to the possibility of similarities emerging between the two cases. On the other hand, I tried remain alert to the danger that I might miss something new by trying to force it into a pre-existing category. Ball's (1990) observation that in ethnography,

> The active, inquiring mind and the insightful and blundering researcher as person come to the fore
> (Ball, 1990, p.169)

was comforting. It may be that, in a particular research context and at a particular time, progress in one dimension is only possible by incurring costs elsewhere which should then, if possible, be identified and remediated. Given, then, that I was looking for insights with one eye and for blunders with the other, these were some of the initial impressions I obtained during the grading of the students' written design week submissions.

Many groups had made use of the internet in their researches, sometimes including pages printed from the World Wide Web with their submissions. These were sometimes employed to good effect within the context of the students' arguments, and sometimes largely decorative in function. The same was true of students' use of publicly available printed resources on Brunei tourism and potential local tourist attractions. Several groups had enlisted the help of parents or other relatives

employed in government ministries to obtain access to (more or less) relevant documents. All in all, it was clear that many students had devoted considerable effort to the project at home. These points suggested that the design week tasks had often been received with some enthusiasm, a point which was borne out by my own observations of classroom behaviour, and by other teachers as follows:

> This was a very popular exercise which complemented current economic developments in Brunei.
> (IF)

> It was wonderful to see the students communicating with each other and having the opportunity to use their initiative. Future leaders began clearly to emerge!
> (AF)

> Super project that deserves all the resources we can put into it. Superb local application for our syllabus. Students aware and involved in one of the Government's priorities - let's continue.
> (AL)

Whether the popularity of the intervention had any bearing on its success from the perspective of environmental education seemed more doubtful. My initial impression of some submissions was that they were overly glossy, and I tended to assume (not always correctly, as it turned out) that glossiness was likely to be inversely related to thoughtfulness.

A key issue for students which emerged repeatedly was whether Brunei should change to accommodate the tastes of tourists, or tourists should adapt to the social, religious and environmental context of Brunei. My first thought in response to this was that the initiative had failed. Students seemed to be starting from the wrong

question, that is, they were asking 'how do we make this work?', not 'do we need this in the first place?'. However, I now feel this judgement to be excessively harsh for three reasons. First, tourism development was a strongly-promoted aspect of government policy at the time of design week. The belief that environmental education should promote citizenship action to bring about changes at the policy level is widespread (see, for example, Hungerford and Volk, 1990; Greenall Gough and Robottom, 1993; Jensen and Schnack, 1997 **[17]**) in the literature and rests, whether one is a socially-critical theorist, a positivist, or something else, on the assumption that citizens can in fact influence policy. By and large, however, in Brunei they cannot influence it. If students began with the expectation that, whether they personally liked it or not, tourism was bound to grow because the government supported it, then that was nothing less, in context, than common sense born of experience. Second, though Task 1 juxtaposed some of Brunei's national goals in a manner calculated to provoke thinking about possible tensions between them, Task 2 specifically required students to assume the continuation of tourism development in the country. They could hardly be blamed for doing so, therefore. In parentheses, this raises the issue, still far from settled, of whether management education and environmental education are, in fact, compatible at all. Huckle (1993), for example, seems to believe otherwise. Further, it might be argued that an assumption implicit in this research, that business and management activities are sure to continue and that environmental education should therefore respond to them, is ultimately hardly less fatalistic than the assumption by some students that policy could not be changed by their actions. In short, this research could not expect entirely to escape the consequences of its own pragmatism **[18]**. Third, it transpired that some students *had*, in fact, questioned whether Brunei should develop for tourism at all.

Most responses to Task 1 showed awareness of the potential conflict between different proposed or existing uses of Brunei's coast along the South China Sea, and of its territorial waters. These uses included the following:

- off-shore oil and gas exploration and exploitation
- conservation of offshore coral reefs
- exploitation of off-shore reefs for tourism **[19]**
- development of Muara port, at the mouth of the Brunei river, as a trans-shipment centre for the BIMP-EAGA project
- traditional fishing at the mouth of the Brunei river
- beach conservation
- beach-focused tourism development
- mining of beach sand for the construction industry
- exploitation of coastal silica sand deposits. Glass manufacturing.
- existing oil industry complexes
- mangrove conservation
- mangrove exploitation for tourism
- mangrove clearance for tourism and/or other uses
- water sports
- traditional coastal *kampong* living
- exploitation of traditional *kampongs* for tourism

The following verbatim extract, quoted at length from the discussion of a group of students taught by IF, illustrates well the basically optimistic approach taken by many students to the task of managing the various trades-off between these uses.

> It is hard to keep the interests of shipping, tourism, industry, fishing, local kampongs and wildlife to be balance. In order to keep them balance, they have to work together under one big roof, that is tourism industry...in shipping we will increase the transport system especially at Muara port...Besides we also have to modify a lot of things such as scenery for sight-seeing and tourists facilities. Brunei must not forget to preserve the traditional culture and values and also the important thing is the natural environment...Tourism helps to provide employment opportunities to Brunei

people. The idea of tourism can motivate the local industrial firms to increase their products so that they can produce more product instead of importing and if possible they can export their goods.

Concerning the local people who are involved in fishing industry, they will be given certain area for fishing. Fortunately the sight of fishing ships do not spoil the beauty of Brunei coastline. So the problem will not be too hard, except that they pollute the sea. Then, the strict punishment will be given to those who are found guilty. The local kampong people must not feel that they are left behind. Local kampongs have their own value in the eyes of the tourists.

A small number of students clearly found it hard to believe that foreign tourists would be interested in such everyday (in Brunei) things as jungle **[20]**, kampongs, and tropical rivers. They preferred to emphasis the attractions of Brunei's only major shopping mall, and of its 'modern' facilities. These things, in Brunei, are still somewhat exotic, particularly to students who have been brought up in the Temburong District, or at *kampongs* along the Belait River in the country's interior. The following extract from the work of group 2 illustrates this minority view.

> In order to make Brunei a tourists attraction, Brunei must have interesting places to visit and a major business sector in each district. Our suggestion is that every district should have its own port. The reason for this is that if there is a port in every district, it will surely attract other industries.

The most common approach was to advocate the use of some kind of zoning policy, so that activities which might adversely affect each other were kept separate. Group 42, for example, proposed five zones. Starting in the north east of the country and moving down the coast to the south west these were:

- Temburong. Fishing and traditional *kampongs*

- Brunei/Muara. 'Port activities'
- Jerudong. 'Resort activities'
- Tutong. Fishing ground
- Kuala Belait. 'Port activities'

In the following extract the students expand on their ideas for two of these zones.

> TUTONG: The coastal area will be preserved along the Tutong coast since there is a vast presence of mangrove and nipah **[21]**. We shall open a forest reserve there to preserve the natural environment as well as job opportunity for locals. The preservation of traditional culture and values will be seen as kampong are close by so fishing can be done.
> KUALA BELAIT: Although we are diversifying our economy we have decided to make another port there, to cater the oil and gas industry. The port will also serve to service ships, tankers as well for the service of import & export.

Turning to Task 2, the marketing mix design, many students gave attention to the elaboration of 'niche' tourism products. These were often focused upon environmentally significant or outstanding characteristics of the country, for example rafflesia flowers, proboscis monkeys or mangroves **[22]** or, alternatively, upon providing opportunities to experience local culture. Many students mentioned the possibility of attracting researchers from overseas in significant numbers to study Brunei's flora and fauna. The following suggestions, drawn from the work of different groups, give a flavour of these ideas:

> develop 'A to B' mangrove board walks

> our niche markets might be...ecologists that wants to do researches on the wildlife system in places such as the coastal mangroves in Brunei Bay

create a water village for tourists above the sea

to make it outstanding fishermen who love their traditional way of life have to be encouraged to build and form attractive fisherman water villages with wooden house made from coconut trees

give opportunities for tourists to by local food (*nasi lemak*, *ambuyat*, *coconut cake*)

There was a good deal of concern among students that tourists, or tourism, might be a bad influence upon local people. One student argued that the establishment of a "cultural centre" would help to combat this tendency, but cautioned that although:

this will keep us in touch with our culture, the reverse may happen in trying to preserve our culture, show-casing it may cause us to see it more of a 'the way we were' thing

Another warned against the misuse of culture, attracting tourists by means of a "culture rip-off". However, a few students thought tourists might provoke improvements. For example, one argued that tourism should be a mass-participation industry in Brunei because in the present:

it causes an eye-sore in the community with the jobless people sitting around shopping centres

A further view was that traditional culture was *already* disappearing, and that tourism development might provide the necessary spur to save it. A particularly detailed and nostalgic expression of this view was the following:

> Traditional dance will be performed, new method of doing things is not really popular in the country as traditional method is emphasised e.g. fishing: moreover from this method people can enjoy the convenience of old style living e.g. *Padian* and lastly through this programme too it can develop the sense of politeness among the people in the country. As a result of this the Brunei river will be full of *Padians*, the traditional farm seller who operates on the river by boats and more people will be fishing through an old style method e.g. *Pukat*. So this indirectly help to reduce the excessive fishing which is done these days

Considerable pride in local crafts, particularly gold and silver-working, boat-building, and the making and playing of musical instruments was evident. These were frequently suggested both as attractions in themselves, and as sources of saleable artefacts. The enthusiasm of students for this part of their heritage of shone through:

> You can witness personally how the Malays used to make a living out of making *layang-layang* (kites), *sampan* (boat), *songkok* (men headpiece), *batik* (hand-woven textile). Their traditional favourite pastime like *gasing* (spinning-top), *congkak*, *regatta*, and so on

Less frequently traditional crafts were proposed as means to "earn the respect" of tourists. "Respect" was also an issue for this student:

> if we lost our values tourist will not respect us and they will not be eager to visit kampongs

That tourists might simply not like Brunei was very much a minority notion, expressed by the (all Chinese) group 9 girls as follows:

> tourists may not like it because they could not get used to living in this hot climate, they cannot wear bikinis and trunks on the beaches and...they cannot drink beers and wine because it is banned here

There was also a relatively small number of groups which were inclined to exaggerate Brunei's potential attractions. However, the following fairly realistic, generally positive appraisal was not untypical of the mainstream:

> What do we tell them? The truth basically. We do not want them to be disappointed with wonderful descriptions of places in Brunei that are not exactly true. Brunei we should say is different, we are not up to the international standard yet but we are developing!...We should tell them Brunei is a quietly green place yet have modern traits in her.

A number of students showed concern for the alternative possible uses of 'tourism' resources such as the rainforest. For example, one suggested, inaccurately as far as I know, but certainly not absurdly:

> it is believed that trees for curing AIDS has been found...in Belalong

A certain amount of concern was evident for local traditional economic arrangements. Indeed, there was sometimes a sense that these were seen as being quite separate from the 'official' economy in which the tourism industry belonged. A example of this was the student who included a plea to:

> leave a few kilometres of the coastline undisturbed so that there will still be fish available for the Brunei market

Most students appeared to feel that tension existed between tourism development and environmental and cultural conservation. One student put it like this:

> some costs can never be paid by money e.g. erosion of local customs, traditions and lifestyles, loss of habitat, endangered species and making the place an eyesore

while another suggested:

> The wildlife should also be left alone as it is not our intention to change Brunei completely that it is all together another country

For others, however, there was clearly no such tension, for example:

> 161 km of sandy beaches, untouched by civilisation, is just the right spot for development

Another proposal was that the preservation of tradition could be achieved by:

> development of new buildings which could be interlaced with an Asian Malay look

In Case Study Two, unlike the first case study, these impressions did not so much precede the process of formal coding as co-evolve with it. The formal coding of design week data is described as part of Chapter Ten.

Written data collected from teachers during design week

As in Case Study One, a written evaluation of the design week intervention was requested and obtained from all participating teachers. Also as with Case Study One, these data were collected with both primary and secondary purposes in mind (see above), and using a form prepared in advance by this researcher. Again, this form

included a short preface. However, I was less concerned about any 'unnaturalness' in the research setting resulting from the use of the staff evaluation instrument than had been the case following quality week. This was because the process of intervention was now well-established and, in fact, continuing. During the first week of February 1997, when teachers were writing their comments on design week, the second quality week intervention was already at an advanced stage of planning and scheduled to begin on 17 March. As noted earlier in this chapter, teachers had established some degree of 'ownership' of the intervention process. Further, although there had been resistance to AF's idea of team teaching during design week, interaction in the management staffroom had throughout been characterised by the exchange of ideas and materials, the showing and reading out of work thought good or interesting, frequent questioning of AF with regard to the minutiae of tourism marketing, and a certain sense, at least as I experienced it, of shared endeavour.

Fullan (1997), writing about planning and implementing change in education notes that:

> changing the culture of institutions is the real agenda, not implementing single innovations.
> (Fullan, 1997, p.213)

Along with the above observations, teachers' written evaluations of design week offered limited evidence of changes in the culture of teaching the Management Department of Maktab Duli. One aspect of this was the readiness of teachers constructively to suggest possible improvements in the design week materials for future use. For example:

> Content and design was alright but more in-depth material would have helped. It's the old problem of lack of resource material specific to Brunei...the topic under consideration was a good choice, very relevant (RS)

> Good and appropriate example for state goals and business goals - impact and application throughout our syllabus...Coastal area information should be more detailed (AL)

> Teachers who used these materials, pointed out additional sources of local information to assist in the project and who guided the students' work as it developed should have quite positive results. Students themselves were rich sources of local information, and when working in groups were able to develop quite sophisticated ideas for the project (IF)

AF and SE both suggested that the benefits of the project would be greater if the department were to switch to a mode of assessment which was less focused on a final examination and more coursework-oriented. All teachers approved of the assessment of the students' work. AF made the additional proposal that a form of 'peer assessment' should be introduced in future. Finally, IF proposed that examples of students' work from this cohort should be included in the resource booklet for the next cohort. After discussion in the Department it was decided to act at once in the spirit of this proposal, by including examples of students' work from the 1996 quality week intervention in the forthcoming, second quality week.

When asked to comment on the question: 'was the tension between development and conservation apparent to students?', teachers offered mixed responses. Three teachers thought the tension had been evident to their students, but they all qualified this in some way. For AF tension was evident "with the better groups", for IF it was evident "in most cases' and for RS it was always evident to all students but;

> whether it was of concern to students was more difficult to gauge. I am of the impression that most of them simply don't care.

This view was echoed by SE:

> students here see no relationship/cannot identify cause and effect stuff. Even in their own lives they fail to understand the impact of their consumerism on the local environment

Both BH and AL were of the view that this tension had not been apparent to students, though BH qualified this by noting that the potential impacts of tourism on "Bruneian values and social sensibilities" was "well recognised" by students.

I was surprised by these responses, because the students' written submissions (none of which, it should be remembered, had been read in full by these teachers) made frequent reference to trade-offs between tourism development and the environment. One possible explanation was that the teachers were right, and that at least some groups had written what they did not themselves really believe. Another was that the teachers were making use of a context in which they experienced shared cultural understandings to express, through their negative or qualified responses, their frustration at the difficulty of conveying their own sense of the importance of the issue of tourism impacts on the environment across (at least) two cultural divides. In the Management Department staffroom teachers shared an egalitarian, collegial culture and also, at a larger cultural 'scale' (Thompson, 1997, pp.145-146), the broad norms and shared understandings of liberal-democratic Western culture. In their classrooms, by contrast, they were foreigners, members of a college hierarchy at a different level from their students, and advocates of a syllabus grounded in free-market individualism to students steeped in the merits of bureaucratic observance (Gough, submitted). Some evidence of the existence of dissonance in the thinking of teachers which might have its origins in these considerations was provided by SE, who offered both the following assessments:

> I don't think, given the general mind-set of Brunei Malays that it will do much for them - I cannot see tourism employing large numbers of locals - e.g. the ideas behind providing service to international customers is, I feel, alien.
>
> Generally a very worthwhile exercise which I enjoyed, as did the students.

At this stage the best that could be done was to hope that further stages of Case Study Two would shed more light on this matter.

Finally, all the teachers felt that the intervention helped them to fulfil their professional role as management educators in the specific context of Brunei. For example, asked about any possible contribution made to a range of stated Brunei Government sustainable tourism development goals RS responded:

> Goals stated are obtainable so long as Government Tourism doesn't try to be all things for all tourists. Niche market approach is essential, especially environmentally centred. Too many other places around here offer beach, sun, booze etc. at lower prices and better service.

The Ministry of Industry and Primary Resources Seminar

Unlike Case Study One, Case Study Two was not followed by a routine departmental test. None was scheduled for February 1997 for college-level administrative reasons, and the second quality week intervention was timetabled to begin in March. As will be seen, a limited, formal, syllabus-related test was carried out in relation to the design week intervention. This did not occur, however, until September 1997 when this cohort of students was undertaking preparations for their final examination in November.

As with Case Study One an external event was organised to obtain an impression of the success of the design week intervention in impacting upon stakeholders at the policy-making level. To this end I arranged and conducted an interview with the Head of the Tourism Unit at the Ministry of Industry and Primary Resources, Sheikh Jamaluddin bin Sheikh Mohamed, on 29 January 1997. Unfortunately Sheikh Jamaluddin was unwilling for this interview to be tape recorded. It consisted of an item-by-item discussion of the Brunei Tourism Masterplan Overview (Brunei Tourism Unit, 1996), with this researcher simply asking at every stage whether, and what, the Sheikh believed education might contribute to his plans. It was clear from his responses that this matter had hitherto received little attention, though the 'Masterplan' document did make reference to the need for the following:

- increased awareness by Bruneians of the importance of tourism (p.7)
- "shifts in attitude on the part of the Bruneian people" with respect to "taking care of the environment" and "public health, hygiene, safety etc." (p.7)
- a "Tourism Awareness Programme to highlight the Bruneians on [sic] the advantages of Tourism as a career, and the value of Tourism to the economy of Brunei Darussalam" (p.11)
- that "full advantage must be taken of the ASEAN and BIMP-EAGA initiatives for tourism training in this region

Sheikh Jamaluddin agreed to address and speak with students from Maktab Duli, and also to read some of their work before doing so. This event was arranged for 18 March 1997, and was held not at the Ministry of Industry and Primary Resources, but at the ASEAN-EU Management Centre, which was near the college and had better facilities. Twenty-one students were invited to attend. They were selected by myself on the basis of their written work and in the light of discussions with their own teachers. Samples of students' work, including the work of these twenty-one, were delivered to Sheikh Jamaluddin on 8 March 1997.

The seminar took place as planned on 18 March. Both the Ministry of Industry and Primary Resources and the administration of Maktab Duli issued press releases in advance, and the event was covered by the Borneo Bulletin and by Radio Television Brunei (RTB). It was featured on the TV News that evening. Sheikh Jamaluddin gave a presentation which recapped much of the content of the 'Masterplan', but with emphasis on the perceived importance of education, particularly in terms of meeting future human resources needs. This was consistent with the tone of his press release, the first "key message" of which ran (exactly) as follows:

> One of Tourism Unit priorities in the short-term plan is to create tourism awareness to the schools, especially to students who are now doing their 'O' and 'A' levels. This industry will need young generation to fill in the gaps of employment it will provide. We in the tourism unit are very pleased to see that our local education authorities are now placing the tourism subject as one of their emphasis in the classrooms.

The importance of encouraging a caring attitude towards the environment was emphasised several times during the presentation, though apparently only for economically-instrumental reasons.

In terms of the aims of this research it would not be too disappointing if environmental education were introduced into the Maktab Duli management curriculum in ways which attracted the approval, even if not the full understanding, of policy-makers such as Sheikh Jamaluddin. However, after his presentation the Sheikh spoke at length with the students (and their teachers, who were all present) on their work, which he appeared to have taken the trouble to read. In the wider interests of the initiative I wanted him to talk to them, not to me. This meant I had no choice but to keep at a distance, since I had no doubt that the Sheikh would have felt it a requirement of protocol to address me, as Head of Department, had I been within earshot. Thus, I could not record what was said, only that both students and

teachers appeared to find the experience a positive one. As far as teachers were concerned, this impression was confirmed in the staffroom next day, where a lengthy discussion developed around the Sheikh's previous roles as Head of the Brunei Investment Agency and Managing Director of London's Dorchester Hotel, and the implications of his seniority for tourism development in Brunei.

Shaking hands, as the Sheikh prepared to leave, he commented to me, "I like this, you know? They all have written about the environment. This is good". My own thoughts as I went to lunch centred on an inescapable irony of this, and perhaps all **[23]** attempts to introduce environmental education into mainstream curricula: that successful introduction requires that approval and support be obtained from individuals and institutions to whose declared interests such education is, at least partly, opposed.

ENDNOTES TO CHAPTER NINE

1. Joint-venture arrangements linking an established foreign consultancy with a qualified local individual were a common way of doing business in Brunei at the time of this research. Subsequent economic difficulties at both national and regional level have significantly reduced the numbers of such enterprises.
2. 2003 was a significant date. According to official plans Brunei was to become established as a regional hub for trade and tourism by then.
3. By coincidence, detailed comparisons between modern Brunei and sixteenth-century Brunei are also both possible and frequently made (see, for example, Brunei Yearbook, 1997, p.132). A description written by Pigafetta in 1521 survives.
4. The 4 'P's are a rather tired cliché which I had at one time tried to eradicate from use in the department. My complete failure to do so seemed evidence of their enduring nature in management education, and this, under present circumstances,

became an advantage in a way. Given the prevalence of this 4 'P's formulation in textbooks and, as was clear from the comments of examiners, management teaching, its use made the subject context of the intervention arguably more 'typical'. In any case, while more recent thinkers have identified more components of marketing, and of marketing of services in particular, the compulsion to have these begin with the letter 'P' seems undiminished. Cowell (1984) has identified seven 'P's in the marketing mix for services, a formulation also used in recent literature on educational marketing (James and Phillips, 1997, pp.131-137).

5. The aims of Tourism Concern, as stated in the magazine, included, "to promote greater understanding of the impact of tourism on hóst communities and the environment", and, "to raise awareness of the forms of tourism that respect the rights and interests of people living in tourism receiving areas, promoting tourism that is just, sustainable and participatory".
6. The Borneo Bulletin, published daily, claims to be an 'independent' paper but is owned by QAF holdings, which is in turn owned by the Brunei royal family. It is censored, normally with a light hand. Its front page acts, in effect, as a Government mouthpiece and may feature anything from direct announcements of changes in the law (or its interpretation) to hints about subtler shifts of policy. The paper is also a forum in which individual policy makers seek to appeal to the different factions within the ruling elite and Malay society at large. For example, in the last quarter of 1996 Bruneian readers were on separate occasions urged by the permanent secretary at the Ministry of Communications to support the tourism development policy, once in the name of "progressive government", and again because to fail to do so would be a "sin".
7. Design week ran from Saturday to Sàturday inclusive at the request of teachers, making six working days. RS and BH chose to overrun this by a further one and two days respectively. To the extent that this seemed to show that they felt the innovation belonged to them, I welcomed this.

8. Some Brunei Chinese took an 'English' name and some did not. Hence, Ho Siew Fung was always known informally as just 'Siew Fung'. Tan Khai Lie anglicised (as she saw it) the last two parts of her name and became 'Caille'. Fang Kei Cez pronounced the last two parts of her name 'KC', and was so called by her friends. Shim Mei Ching had at some point, and for some reason, decided to be 'Diana'. In passing, the teacher AF was from Bolton but had married a Chinese Bruneian citizen. She was therefore a Bruneian permanent resident. Her daughter was a Bruneian citizen. Her divorce proceedings were a constant and often dramatic backdrop to this phase of this research, as members of the department were concerned to offer her support. She has since married an Egyptian and left the College.
9. In Brunei, Brunei citizens are prohibited by the Government from attending the International School of Brunei. Exceptions are made for children of senior members of the royal family.
10. Performance of the haj, or pilgrimage to Mecca, is of great religious and social significance to Brunei Malays. Indeed, to make a meaningful separation of the social from the religious in Malay society is probably impossible. For example, religious signifiers are inseparable from a person's name. Returning from the haj, a man takes the title 'Haji', a woman becomes 'Hajjah'. Unless they also have certain other titles they will move to 'H' in the telephone book.
11. History curricula have received particular attention.
12. For example, nothing could have been further removed than Maktab Duli from the 'self-managing schools' which were its contemporaries in England, the U.S., and other 'Western' countries (Gilbert, 1990; Whitty *et al.* 1998) at the time of this research. To illustrate: In 1998 Maktab Duli secured money from the Ministry of Education to equip a specialist information technology room. These funds were for the purchase of specified machines from a specified supplier. This supplier was paid, but the computers were not installed because the designated room was without air-conditioning. Air-conditioning was the preserve of a different Ministry of Education department, whose chosen contractor had

declared the central air-conditioning irreparable and offered to replace it. This would have been expensive, but sufficient funds had previously been voted. Unfortunately, it was found that the greater part of these funds had 'disappeared'. An alternative proposal, to install six split-level air-conditioners, which was possible within the (remaining) available air-conditioning budget, was refused by a third Ministry of Education department on the grounds that the college plans specifically provided for a central unit, and could not be changed without invoking an extensive appeal to still higher authority. The problem was solved when an Indian electrician, engaged on other, minor repairs, spotted the problem with the existing central air-conditioning unit and fixed it in a few minutes for nothing.

13. It is not certain that he had a choice. Nor was there any point in asking him about this. He would have been unlikely to admit to a Westerner that he was performing a sacred religious duty with reluctance, and might well have found the question offensive.

14. Channel V (vee) is the popular music video station of the Star TV Satellite Network. A 'vee-jay' is a video - jockey.

15. During their upper sixth year all students were required to negotiate a detailed statement of their interests and achievements with the careers service.

16. After talking to Caille I asked her to write down what she had said.

17. There is, however, a parallel discourse which awards the key role not to citizens but to either countries (for example, Leal Filho,1996), states (for example, World Bank/UNEP/UNDP, 1994) or "Governments of the.world" (Hopkins, Damlamian and López Ospina, 1996). In this context Jickling (1997) offers a relevant and critical discussion of how the terms 'education' in general, and 'environmental education' in particular, have acquired their variety of meanings and their various baggages of values. It should also be noted that some writers in environmental education continue to identify with marginalised groups (for example, Gough, A. 1997) to whom neither discourse seems to have much to offer. The stateless individuals in this research provide an example of such a group.

18.Nor, apparently, are writers such as Huckle able to escape intact from the consequences of their idealism. In more recent work (1996, p.15) he calls for "new forms of regulation and governance" at the level of the European Union, as an alternative to "deregulation". This seems to suggest a view that "education for environmental management" might yet be good for something more than "hegemonising the prevailing 'commonsense' ideology of the dominant class" (Huckle, 1993, p.63).

19.Brunei's best coral is some way offshore and coincides with the site of one of the biggest oil fields, the Champion field.

20.From the desk at which most of this thesis was written it was less than six kilometres to the centre of Brunei's capital and less than 200 paces to edge of the jungle.

21.Nipah is a tropical plant used particularly for roofing.

22.In South East Asia strategies for multiple-use sustainable management of mangroves have been developed and, sometimes, applied (Maxwell, 1990). The mangrove forests of Borneo provide the only habitat of the proboscis monkey. *Rafflesia* is the largest known flower. I am not at all sure that it occurs with much frequency in Brunei, but it is certainly known in neighbouring Sabah, where it grows on the slopes of Mount Kinabulu.

23.See Greenall Gough and Robottom (1993) for an illustration of the difficulties in environmental education curriculum development of simultaneously working with, and opposing, liberal democratic institutions.

CHAPTER 10

CASE STUDY TWO: THE DESIGN WEEK DATA

Coding written design week data using 'loose networks

Consideration of the requirements of an ideal coding method for the Case Study Two written design week data flowed from the same broad principles as were discussed in Case Study One (see Chapter Six). Ideal characteristics of such a method were that it should;

- facilitate both 'looking in' and 'looking out', that is, it should re-present data in ways meaningful both to respondents and to this researcher's professional peers
- following from this, promote the identification and elucidation of links both within the data, and between the data and more abstract theoretical knowledge and principles
- facilitate analysis
- permit the derivation of theory
- facilitate data retrieval
- facilitate the ongoing generation of coding categories
- permit the separation and problematisation of this researcher's own preconceptions about the research setting
- permit testing of internal validity
- be based upon simple-to-use rules and procedures

Coding was undertaken using loose networks in line with the guiding principles and rules developed in Case Study One. It may be helpful briefly to review these, as follows:

- networks are an elaborated method of ascribing elements of data to categories (Bliss *et al.* 1983, p.8)
- implicit in the use of networks is the assumption that the data in question can usefully be described from a particular point of view and with some degree of generalisation (Bliss *et al.* 1983, p.184)
- the term 'loose networks' was coined in this research to acknowledge that the categories which comprised the networks originated with the students, not this researcher
- as used in this research loose networks themselves were a form of qualitative analysis. Quantitative analysis was only possible after the development of an additional theoretical framework and its application to the completed loose networks
- the categories of which loose networks were comprised were normally signified by a word or words actually used by students. Exceptions to this were rare and subjected to close examination
- everything a student had written was normally coded. An exception was made in this case study where students had copied directly from a known source, or simply reproduced such a source
- categories within loose networks were linked by horizontal, vertical, and diagonal lines according to simple rules (see Chapter Six)

There were, however, two important differences between the first two case studies in the use of loose networks. First, in Case Study One four different colours were used to signify categories derived from students' responses to the different tasks. These tasks were distinct, and were, without exception, answered separately by students. In Case Study Two by contrast, the two tasks tended to merge, or overlap, in the work of many students. Coding was therefore completed in a single colour, with solid lines indicating links between categories made by the student, and dotted lines

indicating such links inferred by this researcher. Second, unlike Case Study One, the Case Study Two data were produced by groups, not individuals.

Coding written design week data using loose networks: a 'turbulent' time

As already noted, the presentation by students of group, rather than individual submissions had the practical benefit of speeding up the process of coding. The design week loose networks were completed on 4 March 1997. There were important disadvantages to this presentation of group submissions, and these are discussed below, in the section which deals with the shortcomings of the coding of design week data by means of loose networks. However, the importance of the element of speed should not, perhaps, be underestimated in the context of the overall intervention, which was at this time both gathering momentum and undergoing independent revision by teachers. As it was, only 13 days separated the completion by this researcher of the design week loose networks and the commencement of Case Study Three **[1]**. SE was already conducting preparatory work with his students in the general fields of quality assurance and quality control, and this was generating discussion, and an atmosphere of anticipation, among other teachers. Times were, for this researcher, 'turbulent', in the broad sense that this term has been used by Sagasti (1988, p.436), that is, the ground upon which this research had been built, and I myself stood, seemed to be shifting. Of course, one might expect as much in research predicated on the notion of uncertainty, and I was able cheerfully to tell myself that so much busy chaos must indicate that I was beginning to get to the heart of matters. Even so, I was happy quickly to be free of at least part of the task of processing design week data.

Cohen and Mannion (1994), following Wolcott (1973), advise case study researchers that:

> Until your observations and impressions from one visit are a matter of record, there is little point in returning to the classroom or school and reducing the impact of one set of events by superimposing another and more recent set.
> (Cohen and Mannion, 1994, p.112)

In this phase of this research proceeding to a new 'set of events' (Case Study Three) while still grappling with the impact of an earlier set was unavoidable if research aim two, using two adaptive concepts to introduce an environmental education intervention into the management education programme of Maktab Duli, was to be realised to its fullest possible extent. In post-rationalising this difficulty I also have found it helpful to turn to Wolcott's (1988) work. He writes:

> I have found it useful to make distinctions among different participant-observer styles to take into account whether the researcher has (and is able to use) the opportunity to be an *active participant*, is (or eventually becomes) a *privileged observer*, or is, at best, a limited observer...(I might note here that I think the role of active participant has been underutilized in educational research...)
> (Wolcott, 1988, p.194, original emphasis and parentheses)

In this research I believe I was an active participant, but if that status brings research advantages it also reduces research choice, particularly about the timing of observations. Anything which enables data processing to be speeded up at crucial times is therefore valuable. Of course, it would be far from the truth to say that I was free of involvement with the design week data during that period, the last three weeks of March 1997, in which Case Study Three was being prepared and implemented. Rather, I was engaged in the interpretation of the students' design loose networks. Even so, however, it seemed arguably better from the point of view of developing both the research, and my understanding of its context, to be thinking about the meanings of the students' written submissions, rather than performing a

more-or-less routine coding task, if one or other of these tasks had of necessity to happen in parallel with the second quality intervention.

The element of uncertainty in my last sentence results from a conflict, apparent at this stage of this research, between the requirements of internal and external validity. Internal validity, that is, confidence that meanings attributed to students are correctly attributed, would have been better served by the complete separation of the design week intervention from the second quality week intervention. Because I was involved simultaneously in working on both, there was an increased possibility that my interpretations of one would be influenced by my experiences in the other, and vice versa. On the other hand the establishment of a degree of external validity, that is, that what worked in this case would be likely to work in other, broadly similar cases, could only be achieved by making the entire research process as close to normal, day-to-day college life as possible. Guba and Lincoln (1981) put this point as follows:

> there is...a sense in which internal validity can truncate or inhibit external validity. An overemphasis on *a priori* control of the factors or conditions that influence an inquiry - control instituted precisely in the interest of achieving high internal validity - may seriously affect external validity, because then the findings can, at best, be said to be generalizable only to other, similarly controlled situations... such situations rarely exist in real life (Guba and Lincoln, 1981, p.115-116)

A preference for trading-off a degree of internal validity in exchange for generalisablity would also seem to be suggested by Sagasti's (1988) work on development planning, a discipline for which this research might hope to have implications. He writes:

> In these uncertain times planners in developing countries face a particularly difficult task: they must be able to filter out the noise and interpret the conflicting signals accompanying human actions on social ground that is continuously shifting; they must be able to structure conceptual patterns to make sense out of apparently chaotic situations; and they must be able to identify positive directions for social change and devise ways of moving towards them.
> (Sagasti, 1988, p.444)

The aims of this research were, ultimately, to investigate a possible technique for carrying out a certain kind of innovation having environmental, developmental and managerial implications. Ethnographic investigation of the time and place-specific context of this research, though often useful and sometimes indispensible to the pursuit of the primary aims, was not a primary aim itself. Ethnographic understanding might have been better served had I stood back from the developing intervention in March 1997, perhaps postponing Case Study Three for twelve months. The aims of this research were, I believe, better served by allowing the developing intervention to sweep me along. By doing so, I hope, I stayed closer to my chosen focus and avoided a danger for qualitative research identified by Silverman, that it may become:

> a disorganised stumble through a mass of data, full of 'insightful' observations of a mainly 'anecdotal' nature.
> (Silverman, 1993, p.43)

Coding written design week data using loose networks: outcomes

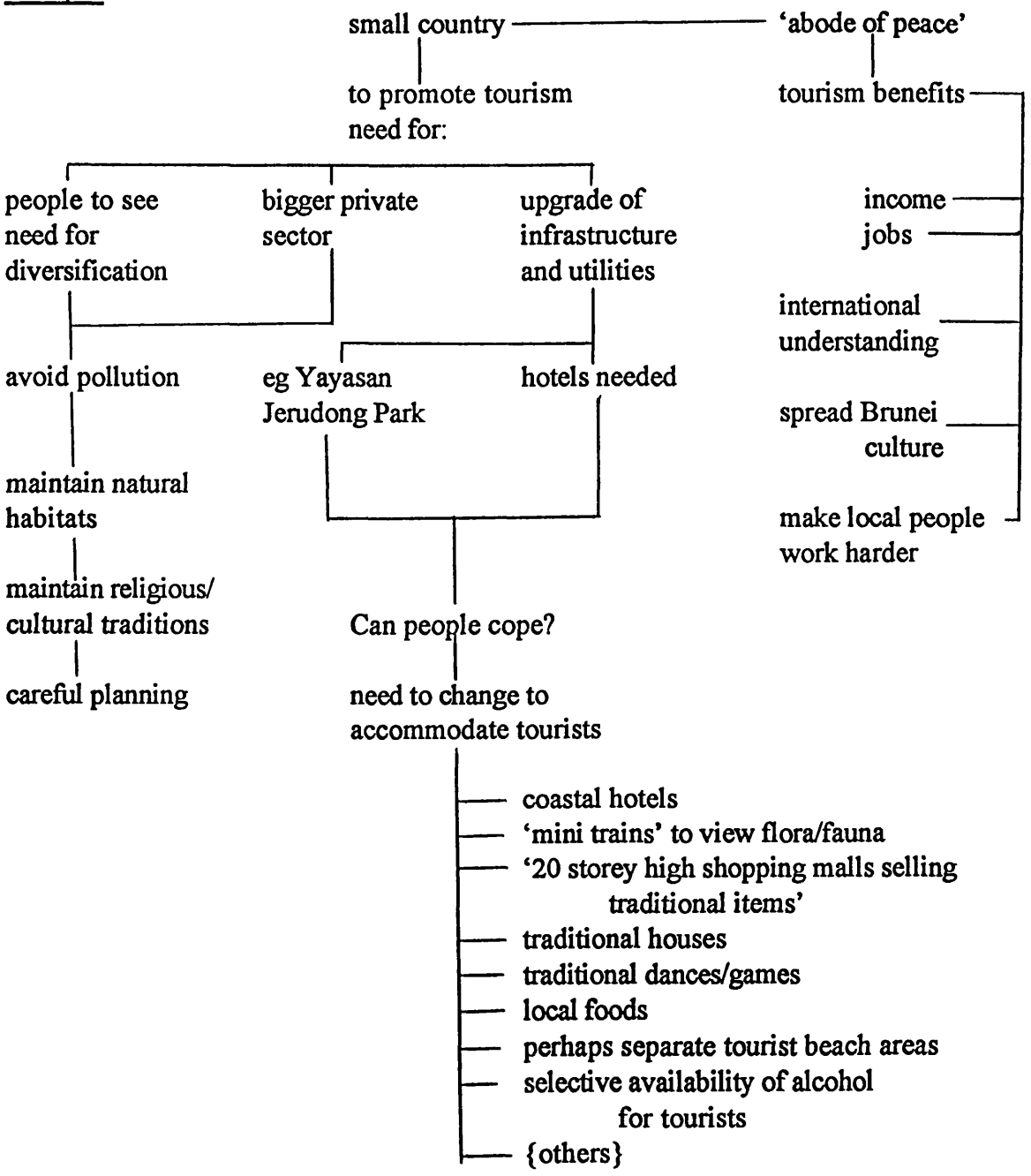
In Chapter Six of this thesis the outcomes of the coding by loose networks of the students' written Progressive Plastics data were discussed in terms of their:

- representation of ideas developed by students, and links between them
- contribution of evidence concerning enhancement of the effectiveness of teaching and learning
- contribution of evidence concerning the usefulness of adaptive concepts
- shortcomings

This same framework is now employed in discussing coding of the written design week data.

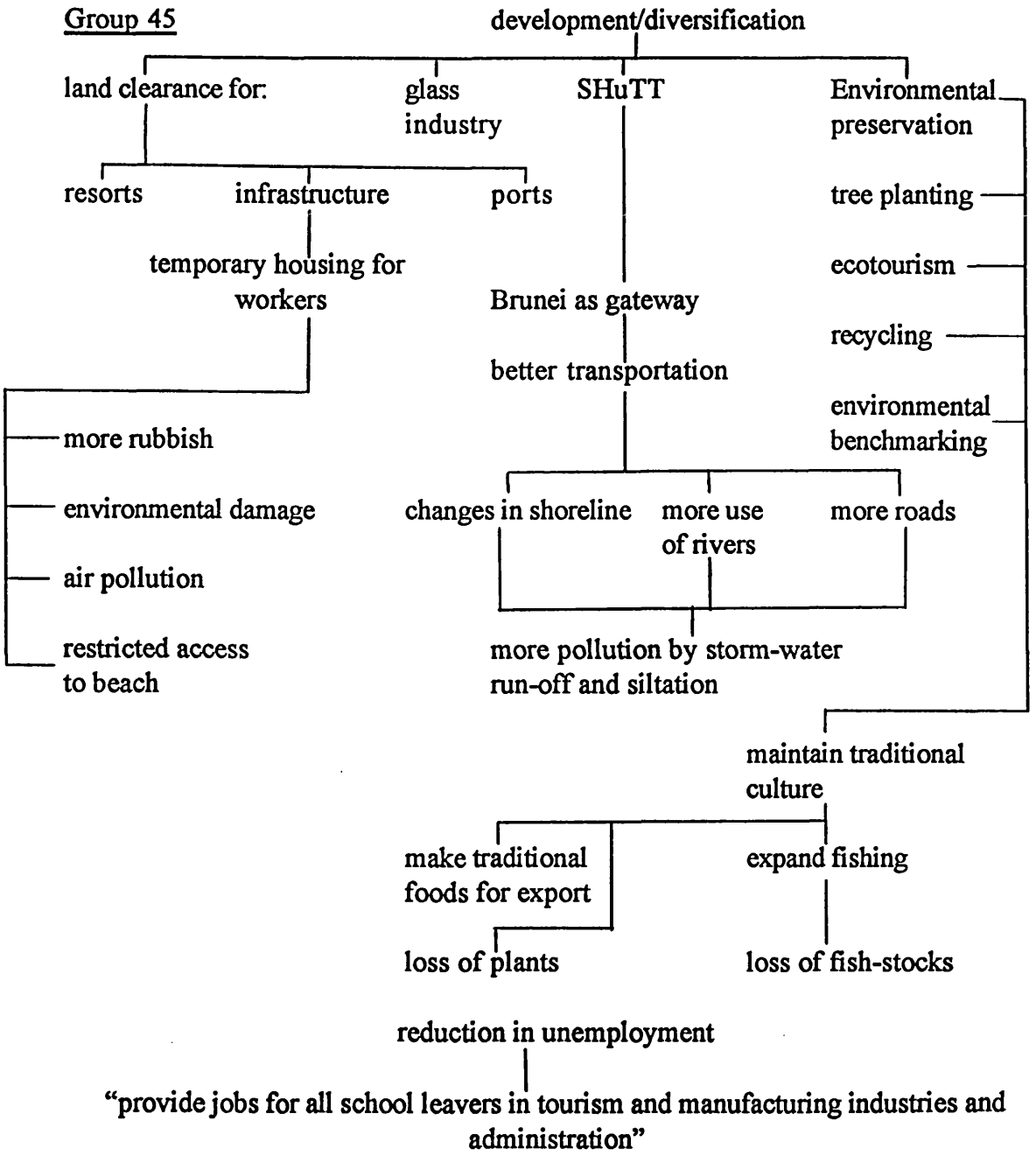
Links: Though the design loose networks were derived from group, rather than individual written submissions, the tendency for parallel strands of argument to develop between which tension of some sort existed was once more evident. It should be said that, while this was an unanticipated finding in Case Study One, it was something I was looking for in Case Study Two. A further point which bears on the internal validity of these loose networks is that this researcher had no way of knowing whether small changes in the composition of groups might have lead to relatively large changes in the final loose networks. In fact, this was hardly less an issue for the Case Study One loose networks, since although they were based on individual submissions the students did work in groups. However, there was an heterogeneity of groups (more so in Case Study Two than in the first case study - see Chapter 14), and the evidence of such tensions in the students' written submissions seemed solid. The following extracts from design loose networks illustrate this.

Group 1


small country
'abode of peace'
to promote tourism
need for:
tourism benefits
people to see need for diversification
bigger private sector
upgrade of infrastructure and utilities
income
jobs
international understanding
spread Brunei culture
make local people work harder
avoid pollution
eg Yayasan Jerudong Park
hotels needed
maintain natural habitats
maintain religious/ cultural traditions
careful planning
Can people cope?
need to change to accommodate tourists
coastal hotels
'mini trains' to view flora/fauna
'20 storey high shopping malls selling traditional items'
traditional houses
traditional dances/games
local foods
perhaps separate tourist beach areas
selective availability of alcohol for tourists
{others}

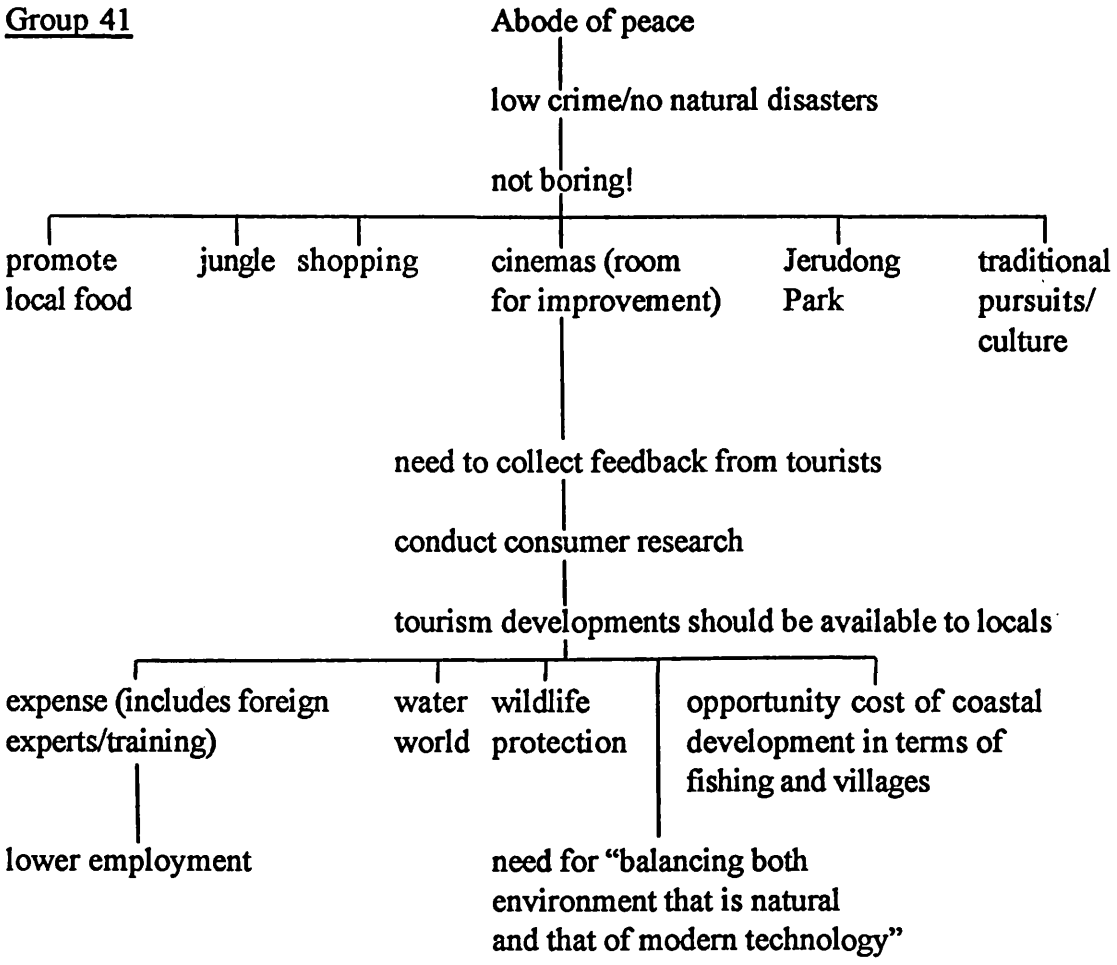
Discussion of group 1's loose network

This was an all-Malay group, consisting of two girls and one boy. I want to recount an apparently unrelated observation made in a different school which comes strongly into my mind in interpreting this loose network. In a primary school on *Kampong Ayer*, the water village, a wooden panel fell from a wall, revealing many small eggs laid by a house gecko or *chit chat*. A boy promptly ate several of these eggs. Uproar ensued among his peers, attracting other (local Malay) class teachers and, eventually, the *Guru Besar*, or Principal. All scolded the child severely. "Primitive!", they said, *in English*, "you are primitive!". In this loose network, there is tension between pride in local environment, culture and traditional life-styles on the one hand, and a perceived need to be 'modern' on the other.


Group 45
development/diversification
land clearance for:
glass industry
SHuTT
Environmental preservation
resorts
infrastructure
ports
tree planting
temporary housing for workers
ecotourism
Brunei as gateway
recycling
better transportation
environmental benchmarking
more rubbish
environmental damage
changes in shoreline
more use of rivers
more roads
air pollution
restricted access to beach
more pollution by storm-water run-off and siltation
maintain traditional culture
make traditional foods for export
expand fishing
loss of plants
loss of fish-stocks
reduction in unemployment
"provide jobs for all school leavers in tourism and manufacturing industries and administration"

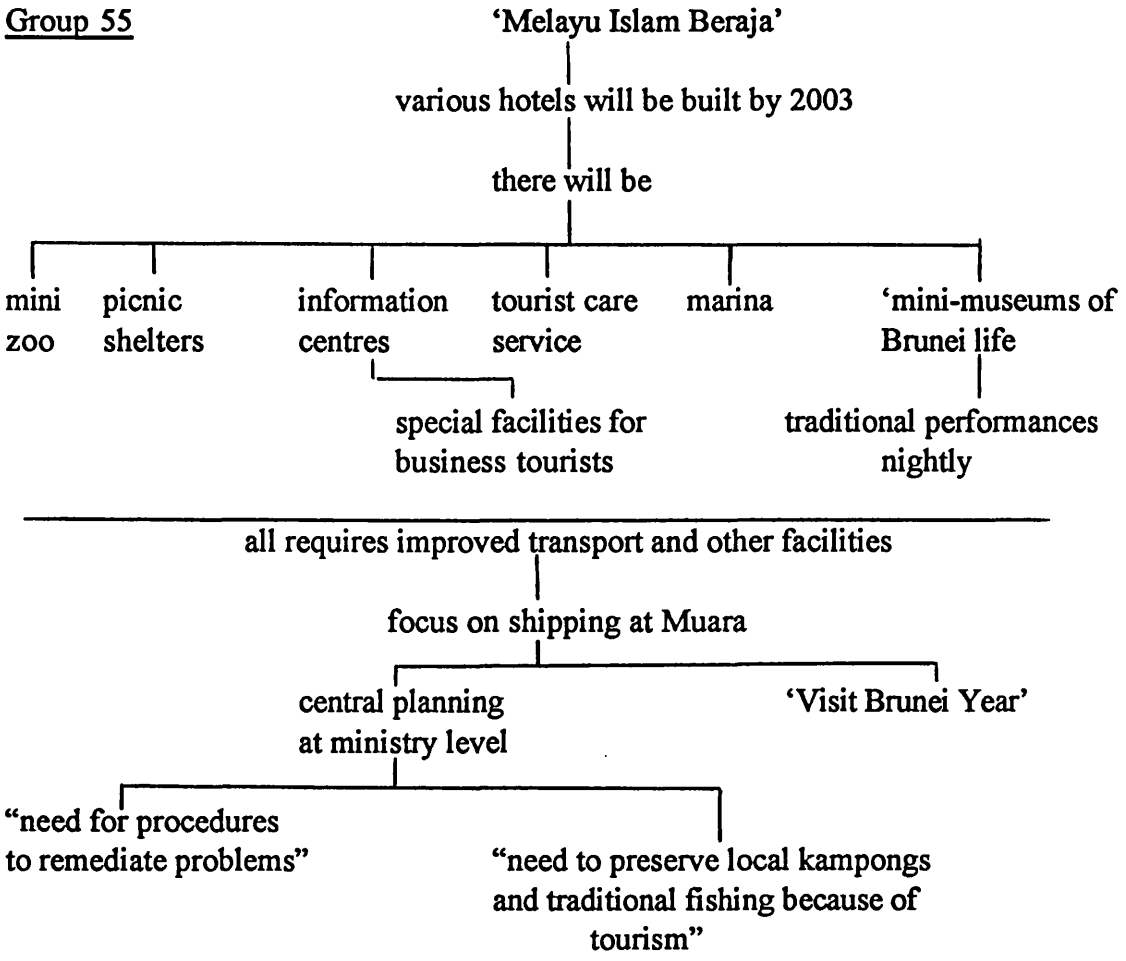
Discussion of group 45's loose network

This was a group of three Malay girls. Their loose network appears to display a sense of the unsustainability of traditional fishing and agriculture at an expanded scale, and therefore a tension between development and the conservation of traditional practice. Also nicely shown is the issue, of particular significance in the tropics, of the way in which better road transportation tends to lead, through increased storm run-off, to worse pollution. There is a tension between perceived needs to clear land and plant trees, and an implicit irony in the hope that sufficient jobs for the future can be created by promoting to tourists a traditional lifestyle in which those jobs were unnecessary.


Group 41
Abode of peace
low crime/no natural disasters
not boring!
promote local food
jungle
shopping
cinemas (room for improvement)
Jerudong Park
traditional pursuits/ culture
need to collect feedback from tourists
conduct consumer research
tourism developments should be available to locals
expense (includes foreign experts/training)
water world
wildlife protection
opportunity cost of coastal development in terms of fishing and villages
lower employment
need for "balancing both environment that is natural and that of modern technology"

Discussion of group 41's loose network

This was a group of Chinese girls whose work has already been discussed in some detail in Chapter 9. Apparently unlike many students, they felt that the county's full official name, 'Brunei, Abode of Peace' or *Brunei Darussalam*, was not certain to be found appealing by all potential customers for a tourism product. They also suggested that tourism development might *reduce* employment opportunities for locals, since some of these would have to be replaced by more skilled foreigners. Finally, they wondered why tourism in Brunei should be, apparently, only be for foreigners. This is perhaps a good question, given that domestic tourism accounts for an estimated 91 per cent of tourism receipts worldwide (Travel Industry World Yearbook, 1990). All these points appear to relate to a single, broad, underlying, and environmentally-significant issue: how far should Brunei's tourism product depend on what was already there, and how far on developing something new?


Group 55
'Melayu Islam Beraja'
various hotels will be built by 2003
there will be
mini zoo
picnic shelters
information centres
tourist care service
marina
'mini-museums of Brunei life
special facilities for business tourists
traditional performances nightly
all requires improved transport and other facilities
focus on shipping at Muara
central planning at ministry level
'Visit Brunei Year'
"need for procedures to remediate problems"
"need to preserve local kampongs and traditional fishing because of tourism"

Discussion of group 55's loose network

This loose network, which represents the submission of three Malay girls and one Malay boy, is striking because while it seeks to keep tourism compartmentalised within a framework of 'central planning' and closely defined 'tourist' activities, it does *not* seem to be in any way nostalgic for traditional lifestyles. Rather, the students seem happy to preserve these only for the entirely functional purpose of entertaining tourists. Tourism is seen as useful in the service of a higher national agenda founded in religious observance, and in conformity to those political manifestations which spring from such observance. The point here is that while students may accept a distinction between 'traditional' and 'modern', they are very likely to disagree with Western observers about the contents of those categories. For these students, I suggest, Islam was unequivocally 'modern'.

As with Case Study One, consideration of these and other links emerging from the design loose networks raised questions of the validity of the analyses, the strength with which apparent tensions were felt by individual students, and the frequency with which the experience of particular tensions occurred within the student sample as a whole. Following from Case Study One, it was intended to attempt to address these issues through dilemma analysis, and the checking-back of tension-statements with the students. From an administrative point of view, however, there was no possibility of preparing a tourism 'perspective document' before the commencement of the second quality week on 17 March. Even if this could have been done, teachers would have had good grounds for arguing that it was not legitimately a priority in terms of their own teaching at that time. It was therefore decided to produce a combined perspective document for the second and third case studies, and to issue this following the conclusion of the second quality week intervention.

Effectiveness of teaching and learning: As with Case Study One, the success of the design week intervention in enhancing the effectiveness of teaching and learning was evaluated:

- against criteria drawn from a positivist environmental education perspective
- against criteria drawn from a socially critical environmental education perspective
- through written teacher evaluations
- from the perspective of the literatures of school effectiveness and school improvement

Also as before, teaching and learning outcomes are discussed here in their entirety, not merely to the extent that these were indicated by the students' loose networks.

Teaching and learning from a positivist perspective

To recap, positivist criteria against which to evaluate teaching and learning outcomes in this research were derived from Hungerford, Peyton and Wilke (1980, pp.72-74, see Chapter 6). Positivist environmental education aims to help learners become "environmentally knowledgeable...skilled and dedicated citizens (p.72). It classifies its goals at four levels: ecological foundations; conceptual awareness - issues and values; investigation and evaluation; and environmental action skills - training and evaluation.

As already noted, a problem with this theoretical approach in the context of North Borneo in general, and Brunei in particular, is the fact that citizenship rights are neither universal nor unqualified. Some students in this research were stateless, and even Malay citizens might be of lower or higher political status in terms of their ability to make their views heard. A potential irony is that state-funded environmental education may advocate citizenship action in favour of life styles which were traditional for non-citizen or low-status students, and which are

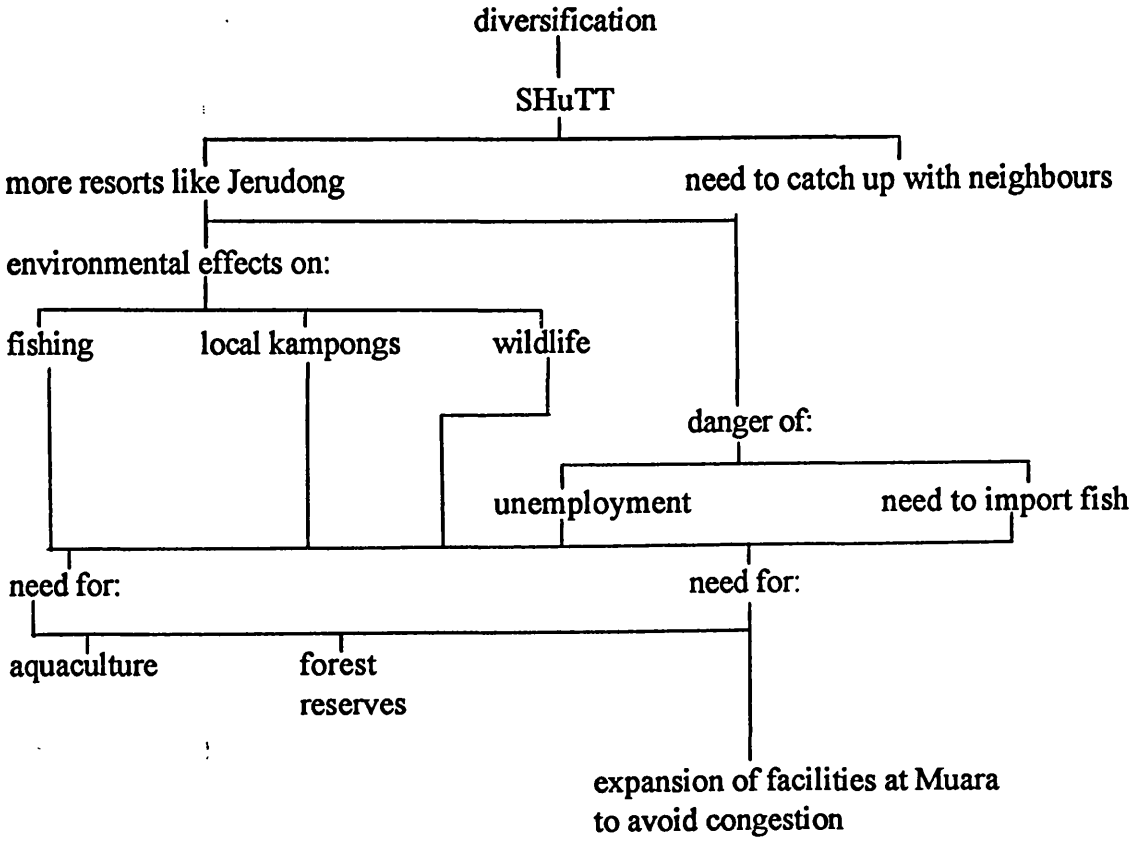
inexorably declining under pressure from that same state. As Everett (1997), writing about environmental education among Australian aborigines, has noted:

> it is not wholesome if one is taught a way of living without being able to live in that way.
> (Everett, 1997, p.12)

This seems particularly likely to be true if the 'way of living' in question closely resembles one which the student, or the students' family, has in living memory been compelled, by economic and/or political pressures, to abandon.

The impact of development projects on the traditional lifestyles of politically marginalised populations, particularly through deforestation, has been more closely documented for the neighbouring East Malaysian states of Sabah and Sarawak than for Brunei itself (for example, Ngau, Apoi and Chee, 1987, pp.43-45). A large number of luxury resort hotels have been developed in the region during the 1990s, and these frequently include appeals to 'eco-tourism' or 'environmentalism' in their publicity and planning (see, for example, Gunsika, 1995). In Brunei, the six-star Jerudong Resort Hotel (completed in 1997, but never opened) was constructed on the erstwhile site of the country's major traditional fishing ground. A natural rocky breakwater which gave the site much of its character was destroyed, and the offshore waters dredged, in order to facilitate the construction of a marina.

Students' concern for traditional fishing grounds and methods, and the possible impacts upon these of tourism development, emerged strongly from many design week loose networks. A number of instances of this have already been touched upon obliquely in this report. The following extract is from the loose network of group 25. As it happens the students in this group were Chinese.



One might argue, from a positivist perspective, that by bringing these issues to the fore environmental education was doing its job, and that the establishment of full citizenship rights, though essential for the success of such education, was properly the subject of a separate, and only partly educational, agenda. A socially-critical theorist would not accept this, and I return to this issue shortly in discussing teaching and learning from the socially-critical perspective.

At the level of 'ecological foundations' (Hungerford, Peyton and Wilke, 1980, p.72) there may have been learning in respect of categories:

A: individuals and populations

H: man [sic] as an ecosystem component

I: the ecological implications of man's [sic] activities and his [sic] communities

If so, however, this was probably less extensive and less detailed than had been the case in the first quality week intervention. A particular reason for this seemed to be that although Brunei's coast is less than 200 kilometres in length, students felt able to segregate different uses from each other, rather than try to understand and accommodate the ways in which they impacted upon each other. This indicated a fault in the design of the materials and tasks. It might have been rectified by incorporating a more specific problem or activity into the students' tasks. For example, students could have been asked to take the role of a local hotel manager charged with resolving a dispute in which local people had complained that wastes discharged from the hotel into the sea were adversely affecting local catches of the delicacy *ikan bilis*. If it had been added that the manager's father-in-law was a locally-resident *ikan bilis* fisherman, and the hotel's owner a *pehin*, or senior Malay noble, then students' interest in investigating coastal ecology could well have been aroused, as some understanding of ecological principles would seem to be a precondition of designing acceptable arrangements. One expects to learn by doing, but I wish I had thought at the time of doing this. I return later in this chapter to a discussion of how one might arrive at a set of general criteria for evaluating such tasks in advance.

At Hungerford, Peyton and Wilke's (1980, p.73) level of 'conceptual awareness - issues and values' there may have been enhanced learning in category E, 'the need for environmental issue investigation and evaluation as a prerequisite to sound decision making'. Certainly, some progress could be claimed on the part of many students in terms of category B - 'how individual behaviours impact on the environment from an ecological perspective' - and category C - 'a wide variety of environmental issues and the ecological and cultural implications of these issues'. Overall, however, I felt that the intervention was disappointing with respect to environmental values. Too many students simply assumed that not only tourism development in general, but also the precise forms it should take, had been settled already by higher authority. Even where students registered unease with particular tourism proposals, they often did

not go on to engage with them at the level of values. As noted in Chapter 9, that this should happen was probably to some extent an inescapable consequence of what I there termed the 'pragmatism' of this research. However, even without reference to the literature of environmental education, there are good reasons why managers, and therefore trainee managers, should feel that environment-related values are a fundamental concern for businesses and business education. Writing from a purely business perspective, Hedstrom, McLean and Metzger (1997) note that:

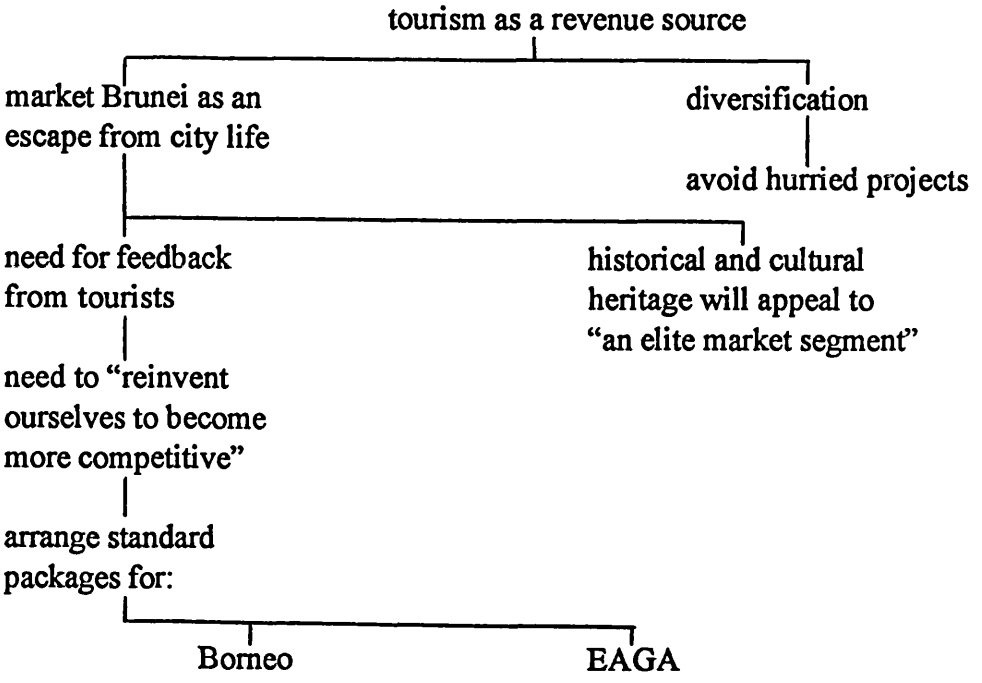
> Robust corporate values provide a consistent basis for negotiating with local regulators, maintaining a consistent approach across diverse local standards and building trust with stakeholders at home and abroad. Environmental values are well established among leading multinationals **[2]**.
> (Hedstrom, McLean and Metzger, 1997, p.81)

Again, it would not be difficult to adapt the design week intervention to take account of these reservations. For example, students might be asked to consider the position of a local manager in a multi-national, tourism-dependent firm (a hotel chain, say, or an airline) which was under pressure from an environmental NGO to pursue a global policy (say, in its use of timber or animal products) which contradicted government policy or officially-stated preferences at the local level. This would compel students to incorporate a political dimension into their processes of design.

At the 'Investigation and Evaluation Level' (Hungerford, Peyton and Wilke, 1980, p.73) there was certainly evidence that students' work had developed their skills of investigation and in synthesising data. Some groups had made good use of internet searches and the data these produced. Others had made enquires with government agencies or private businesses, such as travel agencies. The weakness in environmental values clarification identified at the previous level was equally significant here, but there was, by contrast, quite strong evidence of students developing their ideas about the "cultural implications" of "environmental issues and

the associated value perspectives" (Component A, Category B). At least as far as cultural values were concerned, there was also evidence of students developing "the ability to identify and clarify their own value positions related to discrete environmental issues" (Component A, Category E), and "the ability to evaluate, clarify and change their own value positions in the light of new information" (Component A, Category F). The following extract from the loose network of Group 48 illustrates some of these points:

Group 48



Also at this level, students were able to "participate in environmental issue investigation and evaluation" (Component B, Category G).

Finally, at the "Environmental Action Skills Level - Training and Application" (Hungerford, Peyton and Wilke, 1980, p.74) there was opportunity for those students who participated in the Ministry of Industry and Primary Resources Seminar to develop "those skills which will permit them to effectively work towards ends which are consistent with their values..." (Component A, Category A). They could also be said to have taken "citizen action" (Component B, Category C) as this might be understood in their own political and cultural contexts.

In sum, it might be said that some enhancement of the effectiveness of teaching and learning could be claimed from a positivist environmental education perspective, and that the analysis of the students' written data had further been useful in suggesting

ways in which any future intervention of a similar kind could be improved and developed.

Teaching and learning from a socially-critical perspective

It was suggested above that the notion of 'citizenship' was a problem for positivist approaches to environmental education in the context of this research. In Chapter Six I argued that four particular difficulties presented themselves, given that same context, for environmental education based in socially-critical theory. These difficulties were related to questions of:

- legality
- compatibility with management education
- orientalism (Said, 1985)
- the legitimacy of transferring the Western concept of 'social disadvantage'

As this research developed it seemed increasingly possible that this situation could, in fact, be formulated quite simply. Positivist environmental educators *assume* the existence of a basic degree of social equity. Individuals are *citizens*. Critical theorists *assume* that their own preferred definition of social justice has fundamental, universal properties, and that these properties would have universal appeal **[3]** were they not deliberately (though very subtly) *concealed* from people by those individuals and groups whose economic and political interests such concealment serves **[4]**. For the socially-critical theorist, therefore, citizenship is a smokescreen, and equity is impossible without global political change. In the context of this research neither approach provides an adequate model. Positivism cannot easily accommodate the existence of partial and qualified 'citizenship', while critical theory cannot allow that certain inegalitarian propositions (Malay *adatistiadat*, say, or some of the tenets of Islam) are *what people really think.* Finally, as has been argued throughout this thesis, this should not be taken to suggest that both approaches should be

abandoned, but rather that each should be regarded as a legitimate, but necessarily flawed, response to uncertainty.

Assessment of teaching and learning gains from a socially-critical perspective in the design week were assessed from the standpoint of the same five "defining characteristics of critical pedagogical practice" (Fien, 1993, p.12) as had been used to evaluate the first quality week intervention. Briefly to recap, these concern development of:

- critical environmental consciousness
- critical-thinking and problem-solving skills
- an environmental ethic
- political literacy
- appropriate teaching strategies

Also as before, the word 'critical' was taken in a general sense to imply a questioning, investigative orientation.

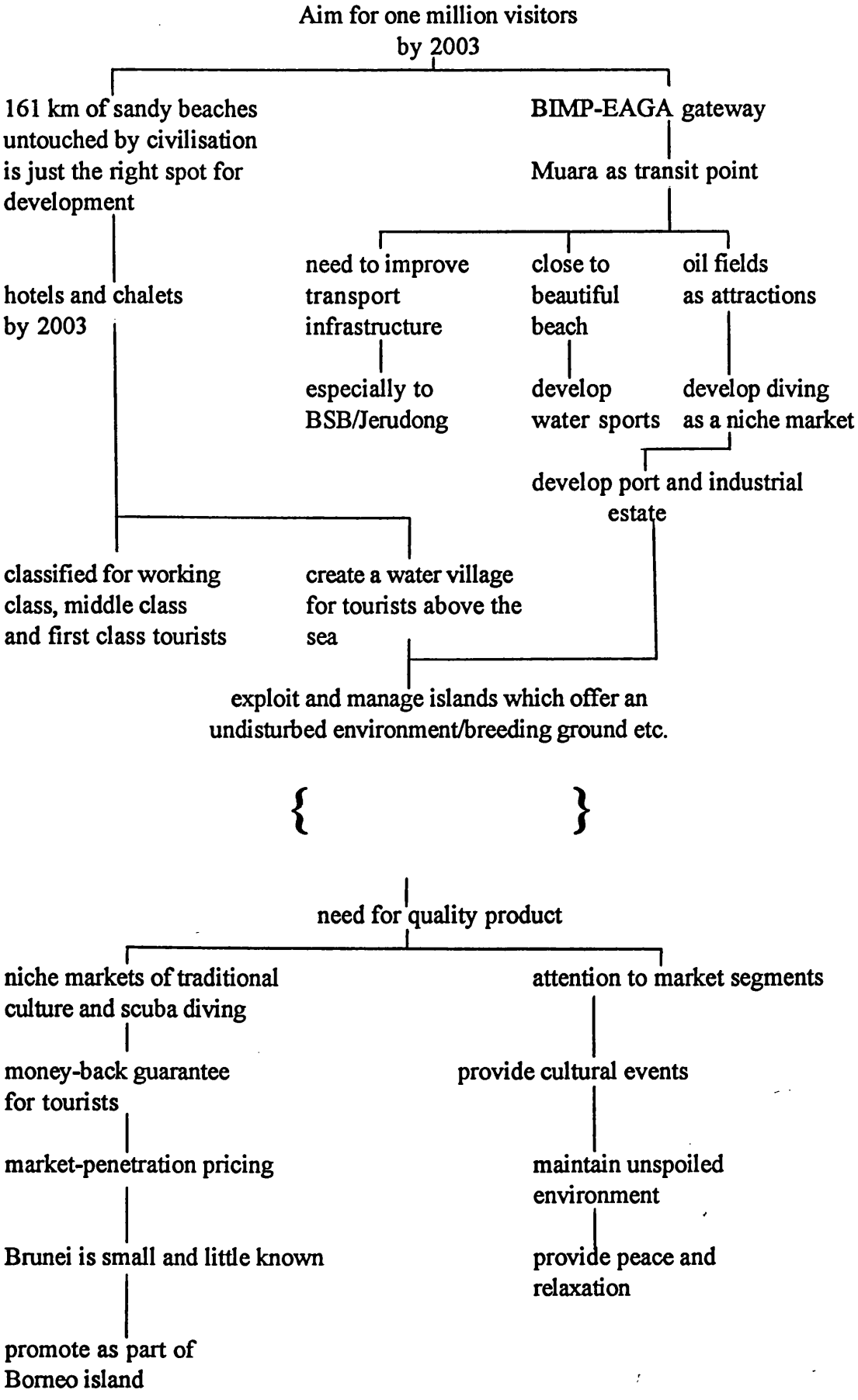
In terms of enabling the development among students of a critical environmental consciousness, as Fien (1993, p.12) defines this term, the intervention appeared to have been more successful in some dimensions than in others. Development of a 'historical perspective on current and future environmental issues' was particularly evident, as the loose networks showed that, for many students, the design tasks had been characterised by tension between exploitation and conservation of traditional environments and cultures [5]. It was also clear that the intervention had prompted a good deal of reflection and discussion on 'the relationships between ideology, economy and technology', though with the benefit of this experience the tasks might have been designed to provoke students into a more thoroughgoing critique. Fien (1993, p.12) calls for examination of these relationships as a means to understanding "causes and effects of environmental problems, and alternative solutions". Some

students seemed to have been content with a supposition that the solution to any environmental problem must lie in either the observance of *Melayu Islam Beraja*, the pursuit of economic development and diversification, or the application of modern technology. To the extent that this was so the intervention was a lost opportunity. The intervention did prompt students to consider in some detail the linkages "between local, regional, national and global economies and governments" (Fien, 1993, p.12). Against this, however, I could not claim that there was very much evidence of development of "a holistic view of the environment as a totality of the interdependent relationship between natural and social systems" (Fien, 1993, p.12). The following loose network, that of group 3 (one Malay boy, one Malay girl, one Chinese boy), illustrates many of these points. It also indicates a number of issues which might usefully have been explored further. For example:

- the method and criteria to be used in distinguishing different classes of tourist
- what happens to the designation "untouched by civilisation" when "hotels and chalets" are built?
- the juxtapositioning of the words "exploit", "manage", "undisturbed" and "breeding ground"
- the similarities and differences between Brunei and the rest of Borneo island

An addition to this list might have been "what does 'quality' mean?", but of course that was to be part of the subject of a separate, imminent intervention.

Group 3


Aim for one million visitors by 2003
161 km of sandy beaches untouched by civilisation is just the right spot for development
BIMP-EAGA gateway
Muara as transit point
hotels and chalets by 2003
need to improve transport infrastructure
close to beautiful beach
oil fields as attractions
especially to BSB/Jerudong
develop water sports
develop diving as a niche market
develop port and industrial estate
classified for working class, middle class and first class tourists
create a water village for tourists above the sea
exploit and manage islands which offer an undisturbed environment/breeding ground etc.
need for quality product
niche markets of traditional culture and scuba diving
attention to market segments
money-back guarantee for tourists
provide cultural events
market-penetration pricing
maintain unspoiled environment
Brunei is small and little known
provide peace and relaxation
promote as part of Borneo island

It is not going to far to say that political and cultural arrangements in Brunei at the time of this research did not encourage critical-thinking or problem-solving behaviour by students. The kind of challenge to established authority mounted, for example, by some environmental education students in Australia (Greenall Gough and Robottom, 1993) as part of their studies would have been unthinkable in this context, and likely to result in formal and informal sanctions against students, teachers and college-level administrators. From this low base it seemed a small but helpful step in the direction of Fien's (1993, p.12) conception of critical-thinking to have students engaged in consideration of a problem which was certainly one example of, "interdisciplinary learning experiences which focus on real-world problems and involve the study of a wide range of sources and types of information" (Fien, 1993, p.12).

By contrast, coding the students' written design week data into loose networks revealed evidence that an "environmental ethic" (Fien, 1993, p.12) was often already present. The merit of the intervention was to seek to legitimise it in contexts, such as those of management and development, which might otherwise seem to threaten it.

The socially-critical requirement that environmental education promote political literacy and "participation in a variety of forms of social action to help improve and maintain environmental quality" was, as has already been noted, very difficult to pursue in this context. There was no evidence of any such emerging inclination in the students' loose networks, though the Ministry of Industry and Primary Resources Seminar was a small step in this direction. Further, if as some environmental educators have proposed it is legitimate and practicable to seek to achieve a degree of life-long education by influencing parents through the teaching of their children (Ballantyne, Connell and Fien, 1998), then it is possible that the intervention produced gains of this kind, given the clear evidence that many students involved their parents quite extensively in their design week studies. Ballantyne, Connell and Fien (1998) have suggested that:

> If young people adopt new behaviours and values, for example, it is plausible that these will influence and, perhaps, modify the prior orientations of their parents or other adults
> (Ballantyne, Connell and Fien, 1998, p.292)

Against this, however, the following seem to provide grounds for caution:

- it is ethically questionable to seek to educate, in effect, by stealth, particularly in a contested and uncertain field such as environmental education, or in a cultural context where the educator is an outsider
- it is open to question whether modifications achieved through this process in the orientations of young people on the one hand, and adults on the other, will necessarily be in the same direction
- intergenerational influence of the kind proposed would operate, in large part, through the internal social dynamics of the family (Ballantyne, Connell and Fien, 1998, p.289). These are certainly not identical in Malay, Chinese, Dayak and Western households

Finally, the limited extent to which this research intervention might be said to have employed teaching strategies consistent with the goals of critical environmental education for the environment has been described and discussed in general terms in Chapters 3 and 6. There are at least two additional qualifications pertinent to the design week intervention:

- it is questionable whether tourism has any place at all in the social, economic and political arrangements envisaged by socially-critical environmental educators (Fien and Trainer, 1993a, 1993b)
- socially-critical environmental educators require nothing less than a social shift to a "New Environmental Paradigm" (Fien, 1993, p.4) or an

"ecological/environmental paradigm" (Robottom and Hart, 1993, p.50). Marketing, and therefore the design of a marketing mix, may be regarded from this perspective as activities which are ineluctably rooted elsewhere

Teaching and learning: the views of participating teachers

Owing to the foreshortened timescale of Case Study Two, as compared to Case Study One, the completion by participating teachers of their evaluation reports took place at an earlier stage. All were completed by 12 March, only eleven days after the official end of design week. Their influence was felt earlier in the research process, and before they were formally coded, and for these reasons they have already been discussed, in part, in Chapter 9. It was noted there that there appeared to be evidence of:

- positive changes in the culture of the Management Department
- disagreement over the extent to which the intervention had prompted students to consider tensions between economic development and environmental conservation
- satisfaction that the intervention had been successful in promoting the goals of management education

Teachers' completed evaluations were, once more, coded into loose networks. It was hoped that the advantages of this approach identified in Case Study One would be repeated. These were that the loose networks would facilitate:

- identification of connections between ideas made by teachers
- identification of other possible connections between ideas in the thinking of teachers
- comparison between the ideas of different teachers

The evaluations themselves were completed in four sections. Each section dealt with a different range of issues relating to the design week intervention. Section One

concerned the appropriateness of materials and evaluation. Section Two asked teachers to consider the intervention in the light of the Brunei Government's official commitment to sustainable development, their own understandings of the goals of sustainablity, and the implications of ideas of sustainable development for business and business education. Section Three asked for an evaluation of the intervention in terms teaching about the costs and benefits of tourism development, and the calculation and comparison of these. Finally, Section Four asked teachers to record any anecdotes, comments, remarks or incidents that arose in their own classrooms. Responses were colour-coded as follows:

Section One = blue (here black underlined)
Section Two = green (here black **emboldened**)
Section Three = red (here black *italicised*)
Section Four = black (here unenhanced)

Once again, all teachers felt that the intervention had enhanced teaching and learning within the department to some degree. This did tend to emerge from their loose networks. IF's loose network, which was one of the most unambiguously positive of the six, is included below to illustrate this.

It was also clear that the intervention had provoked a good deal of reflection and discussion among teachers on a range of matters. I must say that in view of the thoughtful complexity of much of what they had to say, and the quite manageable volume of data involved, qualitative understanding seemed better served, in the main, by returning to, and re-reading, the original written data. Even so, I would argue that the loose networks have a residual value even in this case in terms of:

- comparing what different teachers had written
- enhanced speed of data recovery/tracing. To find out *who* said something, and *where* they said it, the quickest method was to look first at the loose networks

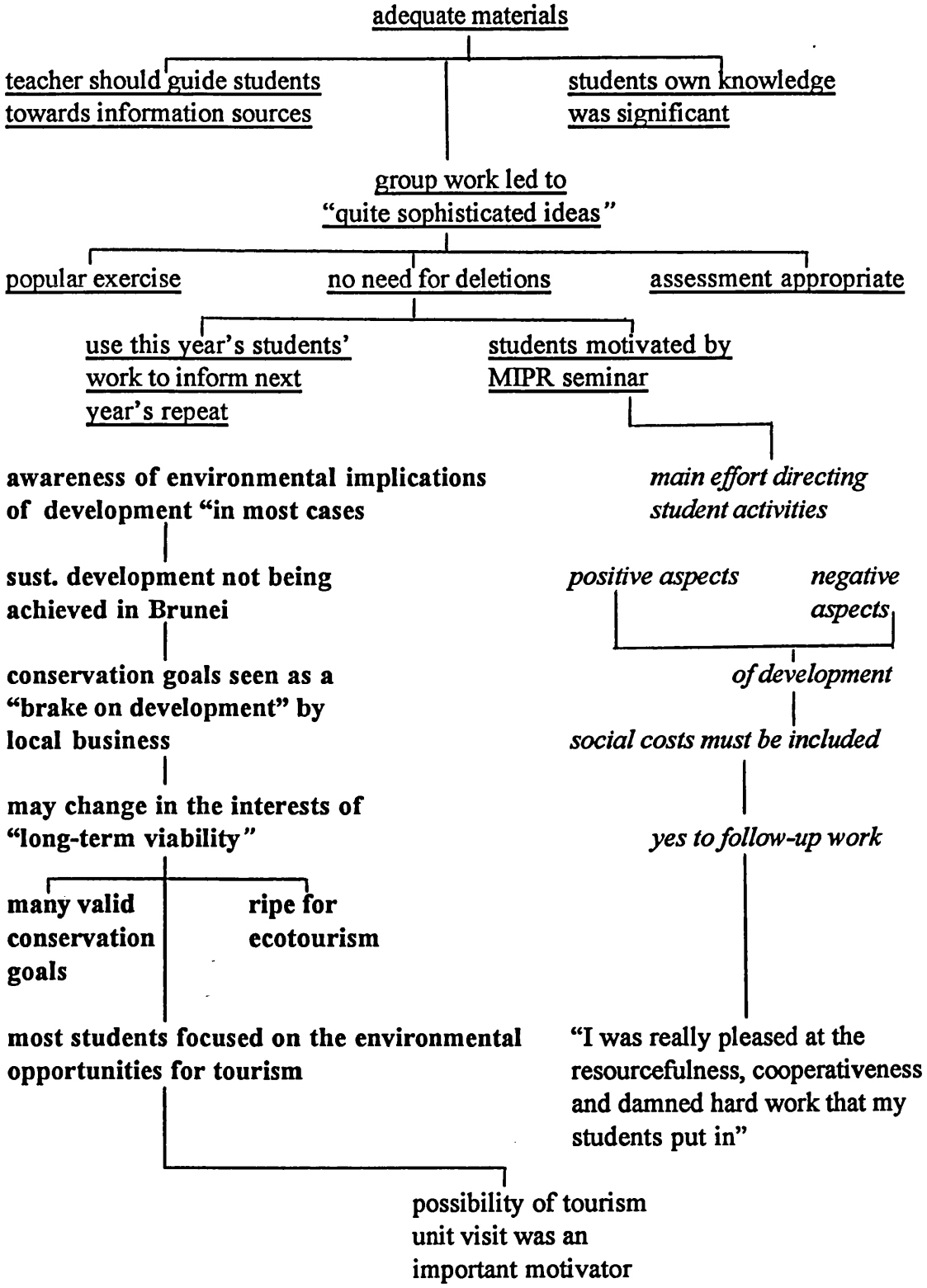
- forcing this researcher to pay attention to the way in which teachers have organised their thoughts

Several teachers emphasised the practical value, and the 'reality' of the intervention. For example:

> students must be able to connect issues of national economic development to broadening business opportunities...This must start with at least a general informed knowledge of the business (local) environment. The link with a practical marketing exercise is evidence of a learning opportunity applied to a 'real' developing situation
> (BH)

> there needs to be more educating the population in general as to the need for tourists and the appropriate way to treat them. 'A tolerance of other cultures, together with an encouragement to share Bruneian culture with pride...should bring the economic benefits...But, from a social point of view, it could strengthen the locals pride and belief in their own culture and hopefully lessen the impact of visitors from other cultures
> (AF)

IF's loose network



It was also clear that several teachers had experienced (perhaps creative) tension between institutional arrangements in the college and their teaching during design week. The following extracts illustrate aspects of this:

> More time should be allocated to the project...class time at one's own availability and needs. Make it part of an internal assessment
> (AL)

> Method of working would obviously suit the UK based A levels which are based around projects and coursework assignments and require a certain degree of autonomous learning from students - however, given the nature of our M.O.B. terminal exam...- although I think it is useful for our students to be given the opportunity to do this sort of thing
> (SE)

Finally, the intervention prompted some teachers to reflect upon wider issues. BH, for example, wrote:

> Preservation of the natural environment in its pristine state is wilderness and unexploited by modern society. It is often the front and backyard of indigenous peoples. Conflict between members of modern society and indigenous peoples, often of different socio-ethnic-cultural-linguistic backgrounds is both unavoidable and inevitable. Since the 'engineers' of development control the state development will proceed apace minimal resistance
> (BH, as written) **[6]**

Overall, the teachers' evaluation documents did seem to suggest that limited gains in terms of teaching and learning could be claimed. More importantly, perhaps, they indicated that teachers were showing greater confidence than before in critiquing

curriculum opportunities presented to them in this way, and developing them in their own classrooms.

Teaching and learning: school effectiveness and school improvement

In Chapter 6, four characteristics of effective departments were identified from the work of Harris, Jamieson and Russ (1995) and used as standards against which to evaluate this intervention. The characteristics were:

- involvement of all pupils in the learning process by providing a variety of tasks which deal with individual, small-group and large-group situations
- encouragement of cooperative learning
- involvement of students in review of the learning process and in action-planning
- development by teachers of formative, motivational forms of assessment

That the first two characteristics were present during the design week intervention was evident both from my own classroom observations, and from the comments, both written and verbal, of participating teachers. A number of the teachers' written comments which bear on this point have already been quoted in other contexts. My personal feeling, as I have already made clear, was that the tasks specified in the design week booklet could have been more imaginatively focused in order more directly to confront students (and their teachers) with environmental education issues. One possible way of thinking about this is that the tasks, in both quality week and design week interventions, were stories in which students were being asked to play a role. The use of stories as a tool in environmental education is well established (see, for example, Monroe and Kaplan, 1988). Indeed, there are some who would argue that there is nothing with which environmental educators can work *except* stories (For example, Greenall Gough, 1993a, pp.34-35). On this same theme Noel Gough (1997) has written:

> I find it most helpful to think of environmental education as a struggle to come to pedagogic terms with the 'narrative complexity'...generated by the categorical ambiguities and entanglements that now attend such concepts as self, culture, nature and artefact.
> (Gough, N. 1997, pp.157-158)

I believe this to be an important insight. It is expressed in the above quotation with economy and fluency of language, but in a way that is not very widely accessible. This is to say that while, in this research, one might make a case that students, teachers and this researcher were, at least to some extent, engaged in such a "struggle", I do not think that presenting the interventions to teachers, researchers, administrators, parents and government officials as a process of pedagogical grappling with narrative complexity would have been at all profitable. Simply, what is "most helpful" in one context may be most unhelpful in another.

In fact, educational innovation and research, like any other social activities, take place at a number of separate scales (Thompson, 1997; Gough, S. submitted). At the level of the international community of environmental education researchers, 'narrative complexity' is a useful concept. It successfully condenses a lot of thinking about education into a high-density form, and this is useful in a context where thinking about education is the most important thing people do **[7]**.

In a school or college, or, let us say, at least in the case of Maktab Duli, teaching is the most important thing teachers do. This is not the same thing as 'thinking about education', though thinking about education is part of what a teacher does. Change is part of teaching, but so is maintenance (Hopkins, Ainscow and West, 1997, pp.264-265). Teachers may expect to hear very directly from a wide range of stakeholders. Teachers do not want to 'struggle' all the time, particularly since they are *always* under stakeholder pressure to be *competent*. This means that, for teachers, the notion of a developing, necessarily incomplete, understanding of teaching and learning which

is so natural to the education academic is not always very helpful. Parents, for example, are likely to expect teachers to understand that which it is necessary for them to understand *now*, because their child is being taught *now*. Teachers, therefore, need to be able to take some things as given for now and the foreseeable future, and to defend this state of affairs. Further, teaching is a site-specific activity, and this brings its own idiosyncratic constraints and opportunities. Given all these circumstances, a formulation such as 'responding to the legitimate interests of all stakeholders' retains enough of the content of the 'struggle with narrative complexity' to be going on with, I suggest, if one wishes to persuade teachers to collaborate in the introduction of an innovation in environmental education which frames reality in terms of stories.

The expressions 'struggle with narrative complexity' and 'respond to the interests of stakeholders' each has the function, at its respective scale, of suggesting a reason why a particular environmental education innovation concerned with stories might, or might not, be thought of merit. At the scale of the classroom, however, a teacher needs to give to these expressions content which satisfies another criteria: *will it work*? According to De Young and Monroe (1996) stories work in environmental education if they are interesting or "engaging" (De Young and Monroe, 1996, p.179). Following from these authors' analysis of what makes a story engaging, I want to suggest that in this research intervention stories worked better (at the classroom level), *and* responded to stakeholder interests more completely (so achieving credibility at the departmental staffroom level), *and* engaged with narrative complexity more successfully (for purposes of evaluation at the level of the education academy) *if* they were characterised by:

- coherence. Stories should be based in an understanding of the local context, how that context is perceived by students, and how the story may relate both to that context and those perceptions
- problem-setting and problem-resolution

- an element of mystery
- identification by students with a character or characters in the story
- concreteness. Stories should relate to actual events rather than abstractions
- imageability. Students should be able to picture themselves playing an active role in the story

(adapted form De Young and Monroe, 1996, p.182)

With hindsight it seems to me that the design week tasks, which were rooted in stories, scored highly only in terms of coherence. In all other categories they were weak. By contrast, the alternative proposed earlier, for example, in which students would have been asked to take the role of a local hotel manager in a dispute over pollution effects on local catches of *ikan bilis*, seems stronger in all these categories.

Of the other characteristics identified for effective departments by Harris, Jamieson and Russ (1995), it seems fair to say that there was some limited evidence in the design week intervention of action planning, particularly in relation to students' preparations to submit proposals to the Ministry of Industry and Primary Resources Seminar. Finally, the evaluation of students' submissions was extremely well-received by both teachers and, according to those teachers and my own classroom observations, by pupils. As with Case Study One, there was evidence that teachers were engaging in formative discussions with students during the intervention. Also, as noted earlier, some students incorporated their work and its evaluation into their own 'personal statements', which were in turn incorporated into their personal evaluations and applications for UCAS..

Teaching and learning: conclusion

It is suggested that some gains in teaching and learning could be demonstrated through data generated by the design week intervention, and through the coding of those data. As in Case Study One, it is suggested that the credibility of this claim is enhanced by the presence of 'investigator triangulation' and 'theoretical triangulation' (see

Chapter Six). At the same time, it is accepted that improvements in the design week materials might have led to larger gains in teaching and learning. Proposals for achieving such improvements in practice have been offered.

The usefulness of adaptive concepts: The adaptive concept 'design' was very successful indeed insofar as an innovation which clearly had some environmental education content was broadly welcomed by all on-site stakeholders. At the same time however, the intervention demonstrated that adaptive concepts may be deployed with more or less skill, and that it may be both possible and desirable to develop guidelines to inform such deployment.

Shortcomings: As might be expected, coding using loose networks in Case Study Two was subject to similar shortcomings, in terms of the requirements of this research for data processing and analysis, as had been the case in the coding of the first quality week intervention. Once more, outstanding issues were those of:

- validity
- obtaining an overview of the data
- further improving understanding of the research setting
- identification of further adaptive concepts

A particular threat to the internal validity of the design week loose networks, which had not been a factor in the coding of Case Study One written data, was that these loose networks related to group, rather than individual submissions. Watts and Ebbutt (1987, pp. 29-30) identify the following problems of groups in educational research.

- a group may contain a dominant individual. Dominant individuals may perform a useful function, such as promoting discussion and debate. They may also inhibit other group members

- how groups are recruited is significant. In this research all teachers allowed groups to self-select. Whatever factors influenced this process of self-selection may also have influenced the shape of the final submissions, and therefore of the loose networks
- the deliberations of groups of school students are influenced by the internal conventions of friendship groups
- groups of school pupils may not be very stable. In this research groups *were* fairly stable, though on any given occasion some pupils would be missing because of illness, prefect duty, or (surprisingly commonly) because of required attendance at one sort or another of 'family function'

These points gave rise to further data analysis and collection, which necessarily took place at the same time as, and to some extent tended to merge with, Case Study Three. In particular, it was hoped that the doubts about the internal validity of group submissions raised above might to some extent be addressed through the completion by students of individual 'perspective documents'.

ENDNOTES TO CHAPTER 10

1. There was no choice about this timing, which was dictated by the wider parameters of the college and the syllabus.
2. This claim would surely seem incredible to many environmentalists. To the Board of Directors of Conoco, the multinational which Hedstrom, McLean and Metzger (1997) use to illustrate it, I am sure it seems not a claim at all, but a demonstrable, indisputable fact. This is, I think, rather a good illustration of the reality of "contradictory knowledges" (Thompson, 1997).
3. For example, Pepper (1989, pp.86-87), writes: "It probably is not largely a matter of 'teaching' the 'correct' values...Education is about drawing out what is likely already to be there...If pupils are enabled to analyse the values behind their present socially-learned behaviour patterns they will conclude for themselves that

different behaviour requires different values - and these will probably be the values they believe in at heart, because at heart most kids are decent and nice" (see also Chapter 4).

4. It is this formulation, I would argue, that makes it possible for a socially-critical theorist such as Huckle (1983a) simultaneously to advocate environmental education which empowers pupils "to form their own judgements and to participate in environmental politics" (p.105) and to warn against "naive respect for both children and nature" (p.104).
5. Note, once more, that this finding was contradicted by the written impressions of the intervention recorded by some teachers
6. An interesting dimension of qualitative understanding in research of this kind is the way in which teachers' perceptions of an educational situation or process of change may be influenced by their biographical circumstances (Blenkin, Edwards and Kelly, 1997, pp.223-225). It seems, therefore, only appropriate to record that BH, from Brisbane himself, was married to a Filippina and operated a fish farming business, as a side-line, with his father-in-law, in Luzon. At the time of this research, breeding was being badly impeded by the spread of water hyacinth across the lake they farmed, a problem which BH, almost certainly correctly, blamed on development activities in the surrounding countryside.
7. However, Payne (1997) has noted:

> The entrepreneurial role of academics in the emergence of education as a virtual social form of technologically mediated and abstracted information exchange
> (Payne, 1997, p.136)

and the resulting

> post-modern, technologically driven potential for the insensitive downloading'...in various educational and cultural settings of prescriptive, descriptive or critical

curriculum approaches to environmental education

(Payne, 1997, pp.136-137)

These points bear strongly on the continuing argument of this section.

CHAPTER ELEVEN

FURTHER DATA COLLECTION AND PROCESSING IN CASE STUDY TWO

Timing of research

There has already been some discussion in this report of the ways in which Case Study Two and Case Study Three overlapped. The timing of the main events in 1997 in this research are laid out in Table 4.

Of the events listed in this table, those of the 25th and 29th January, and the 4th and 18th March have already been discussed. The focus groups, which began on the 17th March, and the 'review exercise', which took place on the 15th September, both related to the whole of the 1997 research effort. To some degree they were evidence that this phase of this research had become transformed from two separate case studies, which was how it was originally conceived by this researcher, into 'the way we do things around here' (Deal and Kennedy, 1983), that is, the interventions were to an extent accepted by teachers and pupils as part of the normal, continuing activity of the department. This is an important possibility, because it suggests that the interventions were successful in bringing about changes in culture within Maktab Duli. Other evidence, cited in Chapter 9, of the growing willingness of teachers to assume ownership of the interventions, also points tentatively towards this conclusion. There is a strong case, summarised for example by Stoll and Fink (1995, pp.80-83), that changing school culture is fundamental to the achievement of improvements in teaching and learning (research aim 2).

Further, and on a completely separate point, the extent to which the two case studies tended to overlap and merge is indicative of a tendency for the methodology of the research to change ('evolve' would be a more optimistic, positively value-loaded

Table 4

1997 Research Timing

Date	Event
25 January	'design week' begins
29 January	interview with Head Of Tourism Unit
4 March	design loose networks completed
17 March	'second quality week' begins focus groups begin
18 March	Ministry of Industry and Primary Resources Seminar
9 April	second set of quality loose networks completed
16 April	second Ministry of Development seminar
7 June	second 'perspective document' issued to students
28 August	coding of Case Study Two and Case Study Three quantitative data completed
15 September	'review exercise'

word) as the research itself proceeded. Cantrell's (1993, p.88) account of initial interpretive research design as consisting of, "a broad outline of contingency plans", as it related to this research, was discussed in Chapter 4. An important issue remains however. A readiness on the part of qualitative researchers to abandon their research designs whenever this seems convenient seems unlikely to help much to:

> show the ways in which field research is every bit as rigorous as the best quantitative work
> (Silverman, 1993, p.170)

At the same time, rigid adherence to a pre-conceived research design is at odds with a long-standing and productive tradition in qualitative research that:

> finding the questions should be one of the products of data collection rather than *a priori*
> (Bogdan and Biklen, 1982, p.55)

For all these reasons it seems most appropriate to give full consideration to the focus groups and the 'review exercise' (see Table 4) later in this report, when this can be done in the light of both 1997 case studies.

All the other 'events' except one listed in Table 4 relate exclusively to the second quality week intervention. The remaining item is the second 'perspective document', issued to students on 7th June. Part of this perspective document questionnaire related to the design week intervention. Putting the items in it to students had been delayed because of other demands of, and on, the continuing research (see Chapter 10) earlier in the year. These items, and the responses obtained to them, comprise the subject matter of the remainder of this chapter.

A quantitative dimension to Case Study Two

As with the first case study, an element of quantitative analysis was introduced into Case Study Two. Once again this quantitative analysis was based upon dilemma analysis (Winter, 1982). Tensions identified from the students' loose networks were condensed into a 'perspective document' following the procedure described by Winter (1982, p.169), adapted as in Case Study One (see Chapter 7). This consisted of three stages:

1. Formulating the tensions or dilemmas at roughly the same level of abstraction at which they were originally presented in the students' written Progressive Plastics responses
2. Choosing as a starting point the most elaborated formulation of any given tension, or aspect of a tension, from among the various statements in those responses
3. Formulating each tension so that it balanced non-controversially between the potentially opposed points of view

The design perspective document consisted of 65 items, and was combined with the second quality week perspective document to produce a single questionnaire which was issued to students by their class teachers in normal contact time on 7th June (Annex 9: note that 'design' items were numbers 100 - 164). As with Case Study One, students were asked to respond individually and anonymously to both parts of each tension statement under the headings: 'Strongly Agree'; 'Agree'; 'Don't Know'; 'Disagree'; 'Strongly Disagree'. Again, it was emphasised that statements had originated with students themselves, and the exercise was justified to students, teachers and the College administration on the grounds that it would be used in continuing departmental curriculum planning and development. It was specifically included as an item in the annual departmental Development Plan, and reported to the Ministry of Education.

Completed Perspective Documents were collected and analysed with the following aims in mind:

- to investigate the validity of the design week loose networks analysis by means of a 'member check' (Winter, 1982, p.169; Lincoln and Guba, 1985, p.314; Robinson, 1993a, pp.117-120)
- to establish the frequency with which a particular tension was felt among the sample of students. The more students who indicated agreement with *both* parts of a tension-statement item, the greater the frequency.
- to establish a rough measure of the strength with which a particular tension was felt
- to contribute to improved understanding of the overall research setting through the subsequent identification of possible patterns within the responses
- to advance understanding of processes for the identification of further adaptive concepts

Responses were counted using a tally sheet and aggregated and presented using the spreadsheet software package, *Microsoft Excel 5.0*, (Annex 10). Among them, the following seemed of particular significance in terms of the aims listed above.

Item 104

Tourists must be able to enjoy themselves as they wish

Tourists must respect Bruneian values and traditions

dilemma = 46.5 per cent

tension = 60.7 per cent **[1]**

91 per cent of students either agreed or strongly agreed, however, that local values and traditions should be respected by tourists. A similar pattern was repeated in a related item.

Item 111

Tourism needs to cater to foreign cultures

Tourists want to experience local culture

dilemma = 38 per cent

tension = 66 per cent

(93 per cent in agreement with the second statement of the pair)

These numbers indicate that approximately 30 per cent of students, in each case, agreed with the second part of the item but disagreed with the first. Interestingly, in further responses to:

Item 149

Tourists should be free to explore Brunei by themselves

Tourists should be restricted to guided tours

dilemma = 16 per cent

tension = 33 per cent

38 per cent of students agreed or strongly agreed that 'tourists should be restricted to guided tours'. These results suggest a hypothesis (it is no more than that) that there is a fairly widespread view among students that, in Brunei, the onus should be on the tourist to take a lead from the wishes of the local population, rather than the other way around. Such a view would be very much at odds both with the actual turn of events in many developing countries which have sought to a develop a tourism industry, including Malaysia (Hong, 1985), and with the conventional wisdom of marketing and marketing education **[2]**.

The significance of fishing as an economic and cultural activity in Brunei, and the destruction of the Tungku Beach fishing area in order to make way for the Jerudong Resort Hotel and its associated marina, were mentioned in Chapter 10. This was reflected in:

Item 119

Tourism requires an unspoiled marine environment

Tourism requires marinas and watersports facilities

dilemma = 64 per cent

tension = 77.5 per cent

Other responses showed more students to be rather more positive about coastal development for tourism. For example:

Item 145

Coastal tourism will reduce Brunei's unemployment

Coastal tourism will put fishermen out of work

dilemma = 20 per cent

tension = 32 per cent

Only 32 per cent agreed or strongly agreed that jobs in the fishing industry would be lost, against 47 per cent who disagreed or strongly disagreed. Also:

Item 146

Coastal development will increase Brunei's exports

Coastal development will create a need to import fish

dilemma = 30 per cent

tension = 46 per cent

63.5 per cent thought exports would increase, while 39.5 per cent thought a need for fish imports would result.

Item 161

Traditional fishing methods are inefficient because they do not catch enough fish

Traditional fishing methods are more efficient because they avoid overfishing

dilemma = 30 per cent

tension = 49 per cent

61.5 per cent favoured the view that traditional fishing methods prevented overfishing. Thinking about these results in conjunction with other evidence from Case Study Two led me to hypothesise that there may have been quite a clear divide within Brunei society in relation to the commercial activity of fishing. On the one hand, there seem to be those for whom fishing, especially fishing by traditional (and sustainable) methods, is of very great importance for economic reasons, and/or because it is an important cultural symbol. On the other hand, there seemed to be those for whom local fishing was of no particular significance **[3]**. Wondering if these issues might be explored by means of an adaptive concept led to the reflection that an adaptive concept does not have to be expressed as a word or phrase. It might, for example, be expressed as a photograph or a painting, perhaps of traditional fishermen in a Malay *prahau*. To a tourism developer, such a picture might suggest good advertising copy. To different local residents it might suggest deep cultural meaning or, perhaps, a past best forgotten.

Item 125

Brunei is a unique tourist destination

Brunei faces competition from many Asian countries offering cultural, leisure, sporting and coastal attractions

dilemma = 73 per cent

tension = 86.5 per cent

15 per cent of students strongly agreed with both statements in this pair. What appeared to be at stake here was that while most students had a well-developed sense of their own society and its environmental setting as being 'unique', they had been forced during design week to respond to the fact that tourists could choose between what seemed, from an outsider's perspective, a number of equally 'unique' tourist destinations in the South East Asian region. One response to this might be to compete to be 'more unique' than the competition, and this may partly have been in the minds of those groups of students, mentioned in Chapter 9, who warned against

"a culture rip-off" or presenting culture as though in a museum as a "the way we *were* thing". On a related issue:

Item 136

Tourists should be encouraged to 'have a go' at traditional Bruneian dances and music making

Traditional dances and music should be treated with respect

dilemma = 79 per cent

tension = 90 per cent

Of course these two statements do not necessarily contradict each other, but these results seem, at least, seem to suggest a link to a possible preference of students which emerged earlier in this discussion, that for the respectful tourist who takes a lead from his or her hosts rather than expecting constantly to be obliged. A similar sense of difficulty with tourists' interest in Brunei's uniqueness was also evident in responses to:

Item 131

Traditional Bruneian artefacts such as BERTUKANG PERAK, EMAS, MENENUN KAIN and KETUKAN LOGAM, also musical instruments such as TAWAK-TAWAK and GENDANG BALIK are part of the national heritage and should be kept in Brunei

Such items should be made for sale to tourists

dilemma = 61 per cent

tension = 76 per cent

91 per cent agreed or strongly agreed that such artefacts should be kept in Brunei.

It will be remembered that evidence was mixed in Case Study Two with regard whether, and how far, the intervention caused students to confront the tendency of tourism development to destroy or modify the environmental assets on which it depends. While some teachers felt that there had been widespread engagement with

this problem by students, others were less sure. A similarly unclear picture had emerged from the students' loose networks. Unfortunately the design perspective document did not resolve the matter either. To illustrate:

Item 133

The aim is to attract large numbers of tourists

Brunei should promote itself as a place of peace, solitude and rest

dilemma = 74 per cent

tension = 85 per cent

Unfortunately, it cannot be established with confidence for what proportion of these students the dilemma was an active one, that is, a "problem" in Winter's (1982, p.169) terminology, and for what proportion it was merely an "ambiguity" (Winter, 1982, p.169). The difference between these terms, to recap, is that a 'problem' is said to exist if possible or required course of action appear to be undermined or rendered invalid by the tensions inherent in the situation. An 'ambiguity' by contrast, does not relate to any required course of action, but indicates simply a 'background awareness' of tension **[4]**. For anyone engaged upon a very specific design task in tourism, this dilemma would have been a problem, that is, an obstacle to action. Once again, however, it may be that the tasks set for students in the design week intervention were insufficiently closely focused, and could have been improved in the ways, and with reference to the theoretical framework, suggested in Chapter 10. In particular, this lack of close focus may have allowed some students to lose sight of the fact that a process of *design* was supposed to be central to their endeavours. The discipline implicit in such a design process was clearly necessary to force students to consider the various official and industry claims and plans for tourism development in Brunei in a critical way. All that can be said in the event, however, is that while some students clearly did engage with the most fundamental problem of the design of any tourism product, that is, its tendency to destroy its resource base (Cater and Goodall, 1992), others may not have done so.

The possible mechanics of this research failure are of some interest. Less-than-ideally designed tasks, perhaps, meant that the loose networks failed to reveal tension statements which were sufficiently pertinent to be re-presented to students as clear "problems" (Winter, 1982, p.169). In Chapter 7 it was suggested as a working hypothesis that new adaptive concepts appropriate to the context of this research might profitably be sought in the substance of items which the completed students' perspective documents revealed to be widespread, strongly-held problems (rather than ambiguities or judgements). Circumstantial evidence to support this analysis, therefore, is the frustrating failure of the design week perspective document analysis to suggest many new candidate adaptive concepts in a very powerful way.

That said, one item which did suggest a candidate adaptive concept was:

Item 137

Brunei should develop its own tourism industry

Foreign investment in Brunei tourism should be encouraged

dilemma = 72.5 per cent

tension = 84 per cent

This item touches, I believe, on an issue of fundamental importance in Brunei in particular, and South East Asia in general, where national economies have first spectacularly prospered, and subsequently (shortly after the field research phase of this research was concluded) equally spectacularly crashed at least partly as a result of following a Western developmental model which regarded the free international flow of capital as an unambiguous benefit **[5]**. From the perspective of a concern with the natural environment the issue is complex. On the one hand foreign capital inflows to the region, including those earmarked for tourism development, have frequently paid scant regard to the environmental effects of choosing to finance, or not to finance, particular projects (Pleumarom, 1994; Carley and Christie, 1992, pp.100-106; Holmberg, 1992, pp.289-298). On the other hand it has been argued from a developing country perspective that international programmes to introduce

environmental controls on development amount to nothing more than a self-interested attempt by rich countries to remove the price differential which arises from the relatively lower opportunity cost of certain environmental resources in the developing world, and which confers on developing countries a competitive advantage they badly need (Mahathir Mohamad, 1994). *Self-sufficiency* suggested itself, in principle, as a potential adaptive concept through which these matters could be addressed educationally.

A number of results from the design perspective document seem of particular interest in terms of the frequency with which particular views were held by students. Strong majorities emerged in favour of conservation, apparently regardless of the possible consequences for tourism, with respect to:

- habitats (item 103)
- islands in the Brunei river (item 105). These provide a home for proboscis monkeys and large colonies of fruit bats, but had also been identified as sites of great tourism potential by some students
- jungle (item 121) **[6]**
- mangroves (item 132)

Item 160, which set the 'convenience' of 'modern lifestyles' against 'relaxing' traditional lifestyles produced 36.5 per cent dilemmas and 58 per cent tensions. This outcome was characterised, in more detail, by a high degree of weak agreement that modern lifestyles were convenient, and a good deal of apparent ambivalence about the merits of traditional lifestyles such as *padian*, which is a method of selling produce from a boat. It may be the case that further work based around the idea of *lifestyle* would be productive, though if *lifestyle* were admitted as á potential adaptive concept then its identification would have to be said to have been largely intuitive.

Finally, the idea of *cost* as a potential adaptive concept, which was first proposed after the literature search (see Chapter Two) was somewhat reinforced by:

Item 130

The costs of tourism development should be carefully and accurately calculated

The cost of lost customs, traditions, values, habitats, species and natural beauty cannot be calculated

dilemma = 61 per cent

tension = 78 per cent

The above is a selective account of the quantitative data which has been derived from the perspective document. It is helpful, I would argue, in:

- obtaining an overview of the design week data in its entirety
- further developing understanding of the context of this research
- more closely understanding some weaknesses in the instruments used in this stage of this research
- informing possible further development of the overall innovation.

However, the data on which the account is based was not available in time to be considered in the preparation of the second quality week intervention. It is to the events of that phase of this research that I turn in the next chapter.

ENDNOTES TO CHAPTER 11

1. To recap, a 'dilemma' was designated where a student either agreed or strongly agreed with *both* parts of a given item. A 'tension' indicated that a student has

either agreed or strongly agreed with one part of the item, and had entered, at the very least, a 'don't know' for the other part.

2. For example, the UK Institute of Marketing definition of marketing, given in the standard textbook used at Maktab Duli, is "the management process responsible for identifying, anticipating and satisfying customer requirements profitably" (Gorman, 1992, p.105).
3. Marine resources in Brunei are the responsibility of the Department of Fisheries. The Department has regulatory powers over commercial fisheries, including the issue of licences, species to be caught, size of fish to be caught, equipment to be used, seasons for fishing and areas which may be fished (Eaton, 1994, p.15). In principle, Departmental policy favours the integrated management of coastal resources. The Department worked with ICLARM to produce an integrated coastal management plan (Brunei Fisheries Department, 1992). However, projects such as the building of the Jerudong Resort Hotel, which was specifically commissioned by Prince Jefri Bolkiah, the Sultan's brother and (then) Minister of Finance, carry a stamp of Royal authority which wholly over-rides Fisheries Department policy, or anything else.
4. A third possibility exists and was discussed in Chapter 7. Tensions may be 'judgements'. This means that a course of action is required to resolve the cause of tension, but this course of action is clearly defined, and available given only requisite skill.
5. The situation in Brunei was unusually opaque even in a region where opacity is the norm. Revealing information about the state finances was, at least until mid-1998, punishable by death. However it may be said that Brunei's income from production has historically depended very largely upon Royal Dutch Shell, through its various Brunei subsidiaries. At the time of writing, in late 1998, the price of a barrel of oil is approximately US$9.50. At this price anecdotal, though well-informed, opinion in the country is that the oil and gas industry is losing approximately US$ 3.50 per barrel on its direct costs of production. It has already been noted that in 1998 strong evidence emerged that the country's

investment funds had, to a substantial degree, been lost or embezzled. The impacts of this turnaround upon ordinary citizens were not, at least by the end of 1998, as catastrophic as in neighbouring countries, though bankruptcies were rife. Default on bank loans had become so common that international banks were offering buyers with cash an informal "repossess to order" scheme for cars, whereby the buyer would describe the desired model, colour and so on, and make an offer, and the bank would then find a vehicle of that type with an outstanding loan that could be foreclosed.

6. This was interesting since the item opposed conservation of jungle to creation of golf courses. The spread of golf courses in East Asia (including Brunei) has been such a conspicuous feature of the process of regional development that in 1997 *The Economist* ran a feature which was only mostly tongue in cheek, arguing that golf was responsible for the Asian economic crisis ('Golfonomics', *The Economist, 20 December, 1997, pp.89-91*). The following extracts from the article show that the matter is far from a joke: "Golf courses need about 3,000 cubic metres of water a day, which is enough to meet the needs of 15,000 people. They also gobble up large amounts of pesticide, fertiliser and herbicide, polluting water supplies and damaging health. They require vegetation to be cleared, trees to be chopped down and the creation of an artificial landscape that erodes the soil and depletes its ability to retain water" (p.91), and "The bubble burst first in Japan, where more than 100 golf courses went bankrupt in the early 1990s...in Thailand, three golf courses, once valued at the equivalent of $200m, were discreetly on the market for a mere $18m." (p.91).

CHAPTER TWELVE

CASE STUDY THREE: THE SECOND QUALITY INTERVENTION AND THE FOCUS GROUPS

Experts and novices

The situation in the management department of Maktab Duli in mid-March 1997 was busy and quite complex. Students and teachers were still considering the evaluations of the design week submissions. This researcher had completed coding design week data into loose networks, but had not as yet either prepared or issued the associated perspective document. The Ministry of Industry and Primary Resources Tourism Unit seminar was scheduled for the 18th. The second quality week intervention was to start the previous day, on the 17th.

All the students in the department now had experience of an adaptive-concept based environmental education intervention into their management course. Four of the teachers (SE, RS, AL, BH) who would participate in the second quality intervention had prior experience of two such interventions. Two (IF and AF) had prior experience only from design week. One class was to be taken by AK, who had no such previous experience [1]. Teachers had been engaged in preparing their classes for the forthcoming quality week work, according to their own ideas of its potential and its problems.

As before, the support of the college administration had been enlisted, and liaison had taken place with the Environment Unit of the Ministry of Development. It had been arranged that a number of students would be able to attend a seminar and discussion at the Ministry, to be held on the 16th April. A number of students had also volunteered to take part in a series of focus group sessions with this researcher.

Quite clearly this could not, in sum, be described as a controlled situation instituted by this researcher, and from the perspective of positivist environmental education research this would surely be seen as a problem. Neither, however, could it be described as a situation brought about by the attempts of this researcher rationally to,

> empower individuals, particularly those who are disadvantaged or oppressed
> (Stevenson, 1993, p.7)

and this, in turn, might seem a problem from the perspective of critical environmental education research. A useful way of thinking about this apparent lack of conformity to theoretical benchmarks is that positivistic environmental education is expert-driven, while critical environmental education is novice-driven or, at the very least, casts the environmental education facilitator in a schizophrenic role as both leader, and facilitator for empowerment (Gaulthier, Guilbert and Pelletier, 1997, p.171). This research may have had something in common in this respect with the 'new emergent reflexive paradigm' for environmental education and environmental education research proposed by Gaulthier, Guilbert and Pelletier (1997). They write:

> in the reflexivity orientation, both expert and novice collaborate to challenge the dominant worldview of modernity within their community, each bringing knowledge to construct a definition of the environmental problem being investigated.
> (Gaulthier, Guilbert and Pelletier, 1997, p.171)

On a related point, the proposed 'new emergent reflexive paradigm' also provides an alternative theoretical perspective on the problem, identified in Chapter 10, of the failure of the design week tasks to prompt some students to take a sufficiently critical view of the issues before them. In Chapter 10 this problem was considered in

terms of a need to operationalise a "struggle to come to pedagogic terms" with "narrative complexity" (Gough, N. 1997, p.157). It might also be considered in terms of the claim that:

> most problem solving models in environmental education...are designed rapidly to bring the participants to the solution space...This diminishes reflexivity since the natural tendency of any learner is to try to solve the problem through his (sic) personal perspective rather than through a less familiar scientific, social science or political vantage.
> (Gaulthier, Guilbert and Pelletier, 1997, p.172)

These authors argue that learners should be encouraged to "stay in the problem space", and to envisage problems "through multiple perspectives" (Gaulthier, Guilbert and Pelletier, 1997, pp.172-172). Conflating these disparate analyses, one might say that by hastening to the 'solution space' learners (or 'novices') fail to engage with the narrative complexity which defines, and in fact constitutes the problem. Some students during design week were led too directly by the tasks (set for them by an 'expert', myself) out of the 'problem space' and into a solution space framed in terms of a single, uncontroversial, and readily-accessible narrative, that of national development.

As I believe the above illustrates, it is often useful to interrogate work based on one particular theoretical approach from other theoretical perspectives. I would argue that the above discussion both widens the theoretical base and sharpens the theoretical focus of this research. We may say that the role of the expert facilitator in environmental education research founded in cultural theory is to create opportunities for learners to engage with different and competing rationalities, with 'narrative complexity', and with 'multiple perspectives', as these are separately and distinctly perceived within these different theoretical frameworks. They continue to be *different* theoretical frameworks, however. Some of the differences between

cultural theory and the poststructuralism of Noel Gough (1991a, 1997) were discussed in Chapter 9, and while protagonists of the 'new emergent reflexive paradigm' declare it open to continuing definition through debate (Gaulthier, Guilbert and Pelletier, 1997, p.178) it has, nevertheless, fundamental features which a cultural theorist would find hard to accommodate. Briefly, these are:

- a tendency to equate 'multiple perspectives' with multiple 'paradigms' or 'worldviews'. Cultural theory, by contrast, asks why people find particular explanations of uncertain reality credible at some times and in some places. It expects to find no answer as all-embracing or coherent as a 'paradigm' in most cases **[2]**
- an insistence that environmental problem situations are socially constructed (Gaulthier, Guilbert and Pelletier, 1997, p.174). A cultural theorist would agree, but argue that the range of possible social constructions is limited and can be incrementally reduced through increases in knowledge
- a dependency on a concept of the "natural tendency of any learner" (Gaulthier, Guilbert and Pelletier, 1997, p.171, see above), without any apparent theoretical attempt to understand from whence such a tendency might (in a particular case? in all cases?) be derived

The second quality week

Case Study Three was centred around a unit of work, nominally lasting one week **[3]**. As before, it was undertaken by all groups with their normal teachers. Once again, I undertook to team teach in AF's classes. The second quality week resource booklet (Annex 3), issued to all students, was identical with that used in the first quality week except for:

- the removal of some pages which had not photocopied well. Instead, the originals were made available in all classrooms. These were *Bersiḥkanlah Kampong Ayer*

materials (Brunei Ministry of Development, 1995) which related to sustainable development

- the inclusion of quotations from the work of students in the previous cohort. This was at the suggestion of members of the department (Annex 11, see Chapter 9)

In addition a set of official documents detailing Brunei-specific quality systems standards, and a Brunei 'roadmap' to the environmental management systems standard series ISO 14000 were made available in all classrooms, as was promotional material for ISO 14000 from the firm Bureau Veritas, which was authorised in Brunei to accredit companies to all such standards following inspection. The 'problem space' **[4]** for students and teachers alike was the set of four tasks relating to 'Progressive Plastics' (see Chapter 5).

It was announced to all groups that the opportunity existed of presenting and discussing finished submissions at the forthcoming second Ministry of Development seminar. No staff questionnaire was issued, because the innovation was now established in the college. No pre-test was carried out, because the task of establishing for students the legitimacy and ordinariness of environmental issues related to quality in their management classrooms (see Chapter Four) could now be left to the teachers **[5]**.

Staff and students during the second quality week

Though the resource booklet specified that students should work in groups, it was left to teachers to determine whether there should be group or individual submissions. All allowed both. From my own experiences, in my classroom and in AF's, I would say that this decision was ultimately made by the students themselves, who showed signs of beginning to establish their own, various, preferred ways of working. Most groups submitted a single document. Some groups

submitted multiple copies of the same document. Some students worked with a group but made an individual submission. The total number of different submissions resulting from this arrangement was sixty-six. In the groups which I myself taught or team-taught the groups were the same as had been the case during design week. In group 40, Amirul was absent throughout the second quality week intervention. In group 16, Gary Thien discussed the work with the other group members, but produced his own submission.

One noticeable feature of the delivery of the second quality week intervention was that teachers felt able to leave classes, for short periods of time, for example to photocopy documents. This perhaps indicated not only that they were confident of the students' commitment to the tasks, but also that they were confident that the working arrangements appropriate to the intervention, which were unusually informal by the standards of the college, had the approval of the college authorities **[6]**. Students worked without much intervention by teachers, and in the three groups in which I myself was involved it was now a case of having to find reasons to involve oneself in the deliberations of groups. Different teachers responded to this in different ways. AL continued his habitual practice of introducing each lesson with comments of his own. He also, he told me, intervened in the organisation of the students' time to be sure that they completed all four tasks. IF was also very interventionist, but less formal and directive, in his approach **[7]**. SE and RS, by contrast, saw the encouragement of independent learning by students as an important benefit of the work. Both offered support when students asked for it, but otherwise left them to themselves.

In Chapter 9 it was proposed, as part of a developing interpretation of the context of this research and the students' understanding of it, that:

- any 'knowledge', or way of understanding, will have other characteristics in addition to its organisational rationality

- some of these other characteristics were likely, in the case of Maktab Duli students, to be capable of representation along particular continua

The limits of those continua which were identified were:

- traditional knowledge/iconoclastic knowledge
- high status knowledge/low status knowledge
- female knowledge/male knowledge

This formulation continued to be found, in small ways, and subject to the limitations on their overall worth identified in Chapter 9, to have some explanatory value. This was so even though classroom observation, at this stage of this research, tended simply to suggest, through the closed huddles of students it tended to reveal, that both the task and the method of working had been substantially assimilated into students' own conceptions of normality. In particular, it became increasingly common for students to approach their own, or other management teachers informally about their quality work. Such encounters often took place during the afternoons, when most formal teaching had ended for the day. Visits were almost always by girls or Chinese boys. Vincent On Wei Sin, in Group 40, was a regular visitor. For him, traditional knowledge - the overseas Chinese emphasis on hard work and self-advancement - supported an identification of academic study with high-status knowledge. This may have been reinforced for him by living in a wider social context in which he did not, and could not, possess significant male knowledge by virtue of his being Chinese. During the afternoons Malay boys would often be engaged in college administrative activities of one sort or another, which had no obvious merit from the perspective of academic learning but which possessed high status in a traditional context. Some others, such as Mohammed Shahrul in group 15 perhaps, attached very low status to their studies. They may have been bolstered in this, in their social context, by a sense of security and importance derived simply from being male. Another regular visitor to the Management staffroom was Fauziah,

in Group 42, who would abandon uniform and arrive in smart western dress. Her declared ambition, as already noted, was a career in law. Law is considered high status knowledge in traditional Malay views of both society in general and education in particular (see, for example, Ali Ashraf, 1988). It is a domain in which Western knowledge is not necessarily considered iconoclastic, and indeed at the time of this research much of Brunei law continued to be derived from British law. Further, law was a suitable career for a woman in the terms in which this was understood within Bruneian society, since knowledge of the law implies no power to make the law (see Weaver, 1991). No one ever seemed to complain about Fauziah's apparently flagrant breach of a normally strictly-enforced dress code. On the other hand Nuzliana (also group 42), Teene and Kim (both group 43) would come with some question pertaining to management, but quickly seek to engage in chat and gossip, normally with members of the Department who were younger than this researcher, and often making much of loosening the pin which held the *tudong* closed, to reveal throat and jewellery. For these students management was low status knowledge, but they were attracted by ways of thinking that were iconoclastic and female. They attracted the attention of the Student Affairs Department, and were warned not to dress improperly. Teene became the subject of a circular in which staff were asked to monitor her behaviour.

However, most girls visiting staff informally came dressed according to the rules, conducted themselves with great modesty, and asked only questions which the college principal might have been expected to think proper. This was true of both successful students such as Rostini in Group 16 and Madeline in Group 8, and also some of those who found their studies extremely difficult, such as Atikah and Noralinda in Group 17. All attached high status to their studies, but also to their traditional female role in Malay society.

These observations seem to suggest that the various cultural groupings to which individuals may belong at different cultural scales may, if considered in their totality,

exhibit a degree of correspondence with the complexities of individual motivations and behaviours. Of course, other factors may impact upon such motivations and behaviours too, and motivations and behaviours might in turn might be expected to feed back into the development of cultures. To say this is not so much to argue a point, as to indicate a possible direction worthy of future exploration which has been suggested by this research.

Written data collected from students during the second quality week intervention: description and first impressions

The sixty-six submissions produced by students in response to the second quality week/Progressive Plastics intervention were read by this researcher, graded and returned to students. As throughout this research, grading was according to the requirements of the management syllabus. Also consistent with previous case studies, the written data were gathered with three primary and two subsidiary purposes in mind (see Chapter 5 and Chapter 9). These might be summarised as follows:

primary purposes:

- evaluate the intervention in terms of enhancement of the effectiveness of teaching and learning (research aim 2)
- contribute to a preliminary evaluation of the usefulness of adaptive concepts (research aim 3)
- improve and refine processes for the identification of adaptive concepts (research aim 1)

subsidiary purposes:

- develop qualitative understanding of the research context
- contribute to a preliminary evaluation of adaptive concepts as a focus for qualitative research

It was clear that the tendency of students during the first quality week intervention to produce extensive and varied responses to task 4, which asked them to articulate scenarios to the year 2020, had been repeated in the second quality week. Most students began from the proposition that Brunei would continue rapid economic development. Some students examined the extent to which development was necessary. One group of two Malay boys and a Malay girl felt that development was likely to be a source of problems but that "if the industry in Brunei is not continued we will be left out". For these students, the introduction of ISO standards was unlikely to provide a complete solution to environmental difficulties. They expected continuing damage to forests, beaches and air quality. Not everyone agreed. A very able Chinese girl who was taking Management as a fourth A level, and who made an individual submission, thought that thanks to ISO standards "the dangers of environment damage will be reduced or eliminated". Diversification was mentioned less frequently than in the first quality week data, and with less than universal confidence that it would happen. For example, one Malay girl, also in an individual submission, wrote:

> Brunei's government is hard pressed to find ways of the economy's survival without being dependent on oil and gas

This apparent loss of confidence in diversification of the Brunei economy may have been due to the fact that at the time of the first quality week intervention official propaganda about the desirability and progress of diversification, associated with the launch of the BIMP-EAGA growth zone, was very strong. By early 1997 this had faded from view somewhat. It may also have been the case that the design week intervention had caused students to reflect upon the difficulties associated with diversification. Against this, however, those students who saw diversification as unproblematic tended to accord tourism a substantial role.

Also possibly related to events during the design week intervention was the preoccupation of many students with the views that foreigners might have of Brunei, both in the present and in the year 2020. I was surprised to read in the individual submission of one student that Brunei should consider "the possibility of political change", and even more surprised when the author of the remark turned out to be both male and Malay **[9]**. This view was developed in parallel with his argument that the country should improve its infrastructure to "attract foreign countries to use the facilities as a springboard to the Asian region". He continued (exactly) as follows:

> the concept of MIB will still be the national doctrine and the base of the system; but one should not disregard the possibility of some sort of people's representatives through a sort of many general elections. For example, a district elected representative in addition to the government nominated representatives.

A Chinese girl believed that in 2020:

> Brunei is going to be a highly regarded country in terms of economic structure.

This she linked to ISO standards which she held to be necessary to "move into this new era", because "business organisation has a big impact on the environment" and there should be concern for "not only human but also living things".

A group of four Chinese girls (Siew Fung, Kei Cez, Diana, and Caille, who featured as individuals in the account of design week) had a slightly more critical perspective:

> Brunei has a lot to offer if only the perception of others towards our country is eradicated.

An early observation made in this submission was that "it is difficult to be both 'pretty and 'modern'." These girls felt that the proposed Progressive Plastics initiative was too much at odds with government environmental objectives to be allowed to proceed, and called instead for diversification guided by the need for sustainable development. They continued:

> Brunei is a Malay Islamic Monarchy (Melayu Islam Beraja) which upholds Islamic principles and values based on the Holy Al-Quran as the basis of all activities. Nevertheless, it wants to move on. Therefore it is important to be flexible in production especially where local culture is concerned.

I was able to observe and talk with this group at length. The following interpretation of the above is a personal, 'anthropological' one in the sense this term has been used by Okley (1994, pp.19-21). It would be impossible to make without having a degree of empathy for these students, but I believe I make it having due regard for the proper caution that:

> Empathy has its place in ethnography but it should enter after recording rather than being confused with it.
> (Dingwall, 1992, p.169)

In its Bruneian context this statement is carefully-worded but politically highly charged. None of these young women was a Muslim. Their deference to Islam was a politically necessary statement of loyalty with which they had learned, from their families, to precede their opinions. They were calling for a more open society as a precondition for 'moving on', and the 'perception of others' they were worried about was that of Brunei as a backward-looking, restrictive place. Other national needs which they linked to 'diversification with sustainable development' were that Muara port should be upgraded, "to facilitate free trade", and that "the people are trained to

be competent and efficient 'salesmen' in order to run the country's public services" (original emphasis).

Brunei's public services systematically discriminated against Chinese citizens and, especially, permanent residents. What I think is interesting here is the way these points illustrate that non-Western individuals *may well* equate environmental sustainability with social justice, as so much of the literature of environmental education would suggest they should (for example, Fien, 1993; Huckle, 1991, 1993, 1996; Gough, A. 1997), but they *may also* associate social justice with an enhanced, rather than a reduced, role for markets where such markets seem likely to present the most effective challenge to, say, an entrenched bureaucracy. In cultural theory terms, this is to say that the egalitarian rationality of many environmental educators *may* or *may not* connect to issues of social justice and/or sustainability as they are perceived by local people in particular places and at particular times. There is no 'one size fits all' solution to these problems because, as was noted in the preceding discussion of post-structuralist and 'new emerging reflexive paradigm' positions, there is no single problem definition. Recent work from a critical perspective appears to be beginning to accommodate to this at a theoretical level through notions of "postmodern green socialism" (Huckle, 1996, p.15) and "cosmopolitan democracy" (Huckle, 1998, p.5). At the same time the emergence in this research of a political dimension in the thinking of students might be seen as a satisfactory practical outcome from a critical environmental education perspective (Robottom and Muhlebach, 1989, p.42; Fien, 1993, pp.69-73).

Many students tried to grapple in less controversial ways with the political and economic dimensions of development and its environmental impact. The following extract from the work of a group of four Malay girls and one Malay boy captures a common flavour of some of this work very well, and is given at length.

> A few months ago the Municipal Department ran their campaign in the town where businesses were given warning to clean up their areas and many shops are being closed because the businesses does not meet the Municipal Department's requirements. The businesses were then prepared to clean up the areas because of two reasons. (A) Because of political pressure: pressure given by the Municipal Department (B) Because they want to do it themselves. These are the rare businesses that can be found in the business world. These are the businesses that would like to do it because they care, not because they were forced to do it. The Minister would like to see Brunei to continue her progress but without damaging the environment. For some people it might be impossible as businesses are formed, the workers are employed and they get income. Income will be spent on goods and services. And these goods and services will have an effect on the environment. It is true that business organisation have the biggest impact on the environment.

Almost all students and groups of students considered the broad issue that development and diversification were, at the very least, only problematically compatible with development. However, the removal of detailed information on sustainable development as it might affect Brunei from the resource booklet (it was on those pages which photocopied badly), and its provision instead as an available resource in classrooms, seemed to have considerably weakened the impact of this idea among students. Statements in which a sense of concern with sustainability to the year 2020 and beyond appeared to be embodied were much more common than use of the term 'sustainable development' as such. Statements of this more general kind relating to coastal zone usage and road building were particularly common. A focus on coastal zones suggested that, to some extent at least, the design week intervention had a continuing impact on students' thinking. On the subject of roads a group of three Malay girls declared that although more houses would be needed by 2020 to accommodate the forecast larger population, there were already enough roads. They continued:

> Although forest have to be fell for housing scheme, there will be gardens being build and flowers and greenery alongside of major roads to compensate the loss of the forest

Another case against more road building was made by a Malay group of three girls and one boy:

> More roads are constructed, therefore there is encouragement to use much more energy. As there are many more developments, more water is required. When more water is required, people generated more rubbish and this will cause pollution.

The point being made here is probably that if less water is available for domestic and construction site use because of other demands on the supply, then rubbish will be burned rather than disposed of to the septic tank **[10]** or waterway.

Common themes emerging from students' work on the other second quality week tasks included a perceived need to encourage socially and environmentally responsible behaviour by both firms and consumers and, to a lesser extent, the assertion of firms' 'cradle-to-grave' responsibility for their products. To recap, the tasks were:

1. In the role of a local manager, produce a report for the Chief Executive of 'Progressive Plastics' discussing the case for seeking accreditation to ISO 9000 and ISO 14000
2. In the role of a government officer in the Brunei Ministry of Development, design a questionnaire to be completed by the senior management of Progressive Plastics to establish whether their proposed development met Ministry requirements

3. In the role of a citizen, write a letter to the Borneo Bulletin contributing to the debate over pollution of the Brunei River by plastic wastes

The case for ISO accreditation was expressed by most students in terms of some or all of the following:

- overall cost reductions
- improved relations with local people
- compliance with government and international standards/avoidance of liability
- reduced pollution risks
- improved health and safety
- reduced threat to quality of life
- spur to improved production process design
- improved customer relations
- better productivity
- improvement of international corporate reputation

A good deal of other advice was offered. A Chinese girl, in an individual submission, returned to the importance of fishing grounds, identifying the protection of these as fundamental to the process of continuous environmental standards improvement, which is at the heart of ISO 14000. She outlined threats to fishing both during the production of Progressive Plastics' raw materials by the oil industry, and during the disposal of its waste products. A group of three Malay boys were anxious about the proposed location of the Progressive Plastics facility near a *kampong* at the mouth of the Brunei River (this same anxiety occurred more commonly in responses to task 2). In an echo of the coastal zoning proposals which were common in students' design week submissions they advised that it be moved far from any residential area. Considerations of the respective responsibilities of producers and consumers also emerged, though these appeared more commonly in responses to task 3. Four Malay girls suggested:

> as a recommendation to avoid from harming the company's reputation, first informing consumers to look around their homes and surrounding areas to start realising that something can be done to reduce hazard of pollution and enjoying good quality product. Consumers can start recycling the product like paper and plastic.

A small number of students felt there was very little to worry about from the business's perspective. In making this case, for example, a Malay group of three girls and two boys wrote:

> everybody needs plastics and it is considered as a basic need to people

This same group, however, in their response to task 3, showed great impatience with consumers who disposed carelessly of plastic packaging. Another mixed Malay group of five made a direct link to the government's promotion of tourism, arguing that this made it necessary for Progressive Plastics to demonstrate sound environmental credentials by seeking ISO 14000.

In only six submissions did students feel it appropriate specifically to bring to the CEO's attention the argument that ISO accreditation might be a step in the direction of, and contribution to, the achievement of sustainable development. This is interesting, given that both representatives of multi-national firms (Moser and Miller, 1997, 45-47) and the Brunei Government (1993) publicly emphasise their commitment to sustainable development. It has already been noted that there may have been technical reasons why the actual term 'sustainable development' featured less in Case Study Three submissions than it had in Case Study One submissions. Nevertheless, and in both these Case Studies, it appeared that for many students matters relating to the achievement of sustainablity were thought to be legitimately a

regulatory issue (task 2), a citizenship issue (task 3) and a strategic business issue (task 4) but not, to any significant degree, an operational business issue (task 1).

Questionnaire items in task 2 touched upon a wide range of concerns, among which the following were common:

- product end-of-life disposal
- waste disposal to land, air and water
- recyclability of products
- biodegradability of products and raw materials
- local job creation
- management attitude to democratic internal organisation design
- health and safety
- procedures for compliance evaluation
- impacts on wildlife
- possible impacts on the tourism industry
- staff training
- attitude to community relations in the local area
- planning for emergencies
- willingness to contribute to local environmental campaigns
- willingness to contribute to public education

Finally, the question of where responsibility lay for the pollution by waste plastics of the Brunei river generated a very polarised debate, as it had in Case Study One. Some students identified environmental problems in the production of the raw materials from which plastic bags are made, and some pointed out the unsatisfactory nature of existing arrangements for their disposal in Brunei by landfill or by burning. Others emphasised the economic damage which pollution by plastics caused. "A nuisance to water-taxis and a problem for the tourism industry" was the view of one mixed-gender, all-Malay group. A few students identified supermarkets and

department stores as having a degree of responsibility for the problem. Observing that giving away plastic bags was part of such stores' marketing effort, a group of four Chinese boys noted "the importance of environmental education to marketing". One group of four Malay girls argued that though the problem was ultimately one of "consumers' attitudes" , the companies manufacturing plastic bags should take responsibility for shaping those attitudes. Though the students' submissions revealed the same pride in traditional culture that was a feature of their design week submissions there was, however, only sparse enthusiasm for pre-plastic shopping technologies. A Chinese girl summarised the views of many when she wrote "the traditional rattan bags are now seen as being clumsy and old fashioned".

These, in outline, were the impressions I took with me both to the coding process, and to the focus group activities. Focus group sessions took place over a period of three weeks. They were contemporaneous with the second quality week intervention, the grading, and, in part, the coding of the students' written data. For this reason they are described and discussed before the coding of the second quality week data into loose networks.

Focus groups

It was announced to all students during design week that there would be an opportunity for up to twenty volunteer students to participate in additional tutorials with this researcher. From the students' point of view the purpose of these tutorials would be to enhance their learning from the design week and second quality week interventions by considering in detail a number of business techniques which might be useful in exploring some of the environmental issues their work had raised. Those students who indicated that they might wish to participate were invited to discuss the matter further with myself. It was then made clear to them that:

- the tutorials *were* intended for the purpose described above

- the tutorials would *also* serve purposes related to my personal research
- as part of that personal research, written responses would be required from participating students
- such written responses would be anonymous
- the act of volunteering entailed a commitment to attend all sessions

The first twenty volunteers were organised into two groups, each of which met for between an hour and ninety minutes on three separate occasions. Meetings were scheduled for the mid-to-late afternoon, when other teaching had finished. A maximum group size of ten was set in line with the opinion of Hedges (1985) that

> It is impossible to run a satisfactory group with more than ten people present
> (Hedges, 1985, p.75)

Group size was 'maximised' to ten because other demands on students' time during the afternoons meant that only two sessions per week could be arranged. Each group met three times. Group 1 met on the 17th, 24th and 31st March. Group 2 met on the 19th and 26th March, and on 2nd April. Each of these sessions was concerned with instruction in a particular business technique, and discussion of its possible local applications. The sessions were formal in nature. Following every session, students were asked to complete an individual, written task which was to be returned to myself within the week. The details of these arrangements are set out in Table 5.

SESSION	TECHNIQUE	TASK
One	SWOT analysis	Prepare a tourism SWOT analysis for the area in which you live
Two	Cost-benefit analysis	Consider possible pecuniary, non-pecuniary, and intergenerational costs and benefits of tourism development in Brunei
Three	Environmental audit	Identify and explain five items which should be included in an environmental audit of Maktab Duli

TABLE 5

Focus Group Sessions and Tasks

Sessions one and two were intended to extend the application of the adaptive concept 'design' to the context of Brunei tourism development. Session three focused on a technique for exploring the environmental quality of the activities of an organisation, in this case the college itself. It was hoped that this small addition to the research design would contribute to meeting the research aims by:

- reaffirming 'quality' and 'design' as adaptive concepts in the shared context of environmental education, environmental management and economic development (research aim one)
- extending the environmental education interventions using these adaptive concepts made in the management education programme of Maktab Duli (research aim two)
- evaluating any additional gains in teaching and learning resulting from this process of extension (research aim two)
- contributing incrementally to the evaluation of the usefulness of adaptive concepts as a way of introducing environmental education into such management education programmes (research aim three)

The methodological approach taken to the focus group activity was designed to be consistent with that of the rest of this research. First, it exhibited a low degree of structure in the observational setting, that is, the activity was quite 'natural' from the perspective of participating students. However, a high degree of structure was imposed by this researcher upon the form of data collected (Cohen and Mannion, 1994, pp.107-110; Bailey, 1978). Second, it was consistent with the ethical principles governing this research (see Chapter 4) and, in particular, with the ethical guidelines for qualitative research offered by Miles and Huberman (1994, pp.296-297, see also Chapter 4). Third, emphasis continued to be placed on data which were written by students (see Chapter 5). The complex linguistic context of this research seemed as valid a justification for this at this stage of this research as it had at earlier stages. Further, consideration of the literature of group interviewing **[11]** seemed to

offer further reasons for relying on written data. According to Hedges (1985, pp.74-75) group discussions have weaknesses which include the following:

- interviewing one person at a time allows fuller exploration of their position
- social pressures within groups may influence individual responses
- individuals are unlikely to reveal personal information in front of their peers, particularly if this might be thought to show them in a poor light

It seemed reasonable to hope that by relying exclusively upon anonymous, written data produced and collected shortly after each session these problems might be substantially avoided. At the same time, this arrangement had the advantage of allowing this researcher to behave as naturally as possible during the sessions themselves, and unequivocally to meet the undertaking given to the students that additional, syllabus-related teaching would be provided. Finally, students were enabled, and often chose, to use an Asian first language as a means to negotiate with other students the precise meanings they wished subsequently to convey in English (see Chapter 4).

The two groups included both Malay and Chinese students, citizens and non-citizens of Brunei, male and female students, and students of high, low and average ability as previously assessed by the department in terms of its management examination syllabus. However, girls, students of ethnic Chinese origin, and non-citizens, were disproportionately over-represented**[12]**.

Session One: As noted elsewhere in this report, SWOT analysis is a simple management analysis technique which involves writing down the identified Strengths, Weaknesses, Opportunities, and Threats present in a particular context. The Brunei Tourism Masterplan Overview (Brunei Tourism Unit, 1996, pp.8-10) included such an analysis for the country as whole. Following their first focus group sessions, students were to complete such an analysis of their home area in the context of

tourism development. A number of themes emerged from this work. Asked what they liked about the area in which they lived these students **[13]** overwhelmingly identified the environmental charm of their particular *kampongs*. This appeared to be true regardless of whether students lived in urban *kampongs* or in rural areas. For example, a student who lived on a small island in Brunei Bay called *Pulau Baru-Baru* chose to mention the facts that her home was "a fishing area, and very windy". Another, who described home as "a hillside in Tutong District, large part covered with forests" described the "fresh air because of the forests nearby. The mountains/hills and the forests. Orchards...growing *limau manis*, bananas, durians, *mata kuching*, mangoes etc." **[14]**. A student who lived in the built up suburb of Berakas wrote "there is a forest near my house. I would like it to stay the same for the future generation to enjoy". Most students thought that these would also be the things that tourists would like, but one who lived in Kuala Belait and who had identified her own likings as being that the place was "peaceful" and "surrounded by many trees", felt that tourists would be likely to be more interested in the Brunei Shell Petroleum installations a few miles away at Seria. Also, several students who wanted to live in a rural, traditional setting nevertheless made it clear that they did not want to be too far from modern amenities either. One wrote:

> I don't like the idea that my village is very far from town and city. I would like a few more buildings to be built nearby e.g. flats and cafeteria

The most frequently cited 'weaknesses' were:

- rubbish along roadsides and on beaches
- dirty sea and river water
- narrow and poorly-maintained roads

Finally, the following summary, by another student from the Tutong District, illustrates in brief the range of inter-related issues she had been prompted to consider.

Strengths: Seri Kenangan Beach (2 views), Tasek Merimbun lake, sun-bathing, Saturday night *tamu* (market)

Weaknesses: Not good roads, rubbish rafts floating on the river

Opportunities: Developed areas in the beach i.e. accommodation, facilities e.g. rest house....jobs created

Threats: Devalued natural heritage because of too much development. Most work will go to foreigners (Filipinos, Thais - cheaper)

Session two: Though it has been to some extent superseded by Environmental Impact Assessment, cost benefit analysis is still routinely used in project appraisal and may take quite sophisticated forms which seek to take account of costs and benefits which are intangible and incapable of quantification (Wathern, 1988, p.19). Cost benefit analysis was specifically included on the management syllabus of Maktab Duli, with the proviso that it should be treated 'descriptively' rather than taught as a technique. Students were asked to evaluate the pecuniary, non-pecuniary and inter-generational costs and benefits **[15]** of the following types of tourism development:

- resorts
- jungle ecotourism
- Jerudong Park
- airport
- pan-Borneo highway **[16]**
- watersports
- business tourism
- cultural tourism
- service infrastructure
- others...

Students were further asked to imagine themselves in three different roles with regard to a proposal to bulldoze a coastal *kampong* to make way for a tourist resort, and to prioritise the costs and benefits of that scheme from the perspectives of those roles. The roles were:

- *ketua kampong* (village chief)
- local representative of the developer
- adjudicating government official

Responses to these rather demanding tasks were of variable thoroughness, but had clearly prompted a good deal of thoughtful reflection. With regard to the first task, the most widely identified non-pecuniary costs were loss of access to forests resulting from all forms of construction, noise pollution arising from watersports and airport developments, damage to marine life by resorts and watersports, loss of a familiar landscape, and increases in corruption. Widely-identified non-pecuniary benefits, attributed across the types of development, were that the country's reputation and international standing would be improved, and that more contact with foreigners would have a "mind-broadening influence" or "lead to an exchange of ideas". In terms of inter-generational costs, two students were worried that deforestation, particularly for resort construction, would contribute to flooding in the future. The same two were concerned that the development of the coast for watersports would lead to a loss of traditional fishing grounds. Others also emphasised the economic aspect of fisheries and their perceived fragility. One student was concerned that cultural tourism would lead to a devaluation of local culture - "turn culture to a zero" - as she put it. Another worried about the greenhouse effect, and about "loss of herbs, species of plants and animals". The possibility that future generations might, in fact, not be able to benefit from tourism was raised by the student who wrote:

> tourists may not be coming to Brunei with lots of buildings just like their home country

The second part of the task provided a degree of circumstantial verification for the argument first developed in Chapter 10 about the use of stories in environmental education. Several students became deeply engaged with the story about the bulldozing of *Kampong Bukit Lama* ('Old-hill village') and wrote at length. In the role of *ketua kampong* only one favoured the scheme. She wrote:

> I would like to tell them that they are not to pollute the village and employ the unemployed residents to work in different parts of the resort...I favour the scheme because it will improve the standard of living of the people in *Kampong Bukit Lama.* The young people will be able to get to know more about the real life of the outside world, at the same time learning from the experience of working at the resort itself. The residents may also get to learn about different people's culture.

The following extracts illustrate the views of other students who, as *ketua kampong*, opposed the scheme.

> Most of the villagers depended on the rainforest, the coast, the mangroves for their income. If we are to move we will lose the source of our income

> I oppose the scheme. It would be rather difficult for me and my people to be rehoused. Construction are detrimental to the environment. Natural landscape, an attraction itself, is dwindling fast

> I opposed. Although the development is of high techniques and with lots of luxury, but tourists will prefer a green environment with trees and not

buildings. Furthermore, the construction causes pollution too. My **[17]** locals may lost their jobs too.

I oppose because:
my people will have no place to live in
the rainforest will be destroy
there'll be loss of skills due to lack of wood etc.
it's hard to look for other lands
no jobs for my people

When taking the role of developer's representative, students had to say what they would tell the residents of *Kampong Bukit Lama*. The following extracts convey the general flavour of most responses:

Our company will take care of the environment. It increases the country's revenue. We can employ the unemployed. It will advertise the *kampong*

the country will benefit from this scheme. If it is a success it can create a market for their work i.e. basket etc.

Resources left idle is to mutual disadvantage

It's my responsibility to see them move out. I'm not the real boss. I'm not the one who makes decisions.

In the role of government official students were more undecided about the merits of the scheme, but with a majority against. Arguments in favour tended to centre on perceived merits of the scheme from the wider perspective of the Brunei economy.

> Yes, it's connected with our vision of SHuTT. If many businessmen come to this place to do deals, then the deals they are talking about must have/maybe have something to do with Brunei.

Arguments against tended to emphasise perceived physical environmental costs rather than social costs.

Session three: The focus of this session was environmental auditing, a procedure to which students had been introduced during design week and with implications for the notion of environmental quality. Their task was to 'identify five things going on in the college which should be included in an environmental audit and explain why'. This proved too demanding for a few students, but produced some interesting responses from the rest. Two girls in particular researched the task in some considerable detail, both in the college library and by counting rooms and airconditioners. Their list, which they explained at length, comprised:

- air conditioning
- stationery (especially pens, paper, erasers, and Tippex)
- furniture (especially wood and steel)
- vehicles and fuel
- toilets (tiling, water purification, fittings, sewage disposal)

I do not want to claim too much for this focus group work. It was an attempt to obtain an impression of whether the pedagogic use of adaptive concepts to introduce environmental education into the Maktab Duli management programme could usefully be extended beyond the kind of intervention used in the three week-long interventions. I would say that these focus group sessions show that:

- it was possible to develop work based on the two adaptive concepts 'design' and 'quality' into quite sharply focused discussion with a small number of students in

the shared 'problem space' of environmental education, environmental management and economic development in Brunei

- in these processes of development and focusing some techniques appeared to work better than others. Requiring students to think through a range of potentially antagonistic roles in potentially realistic local situations appeared to work particularly well

In the interests of consistency and clarity, valuation of the focus group activity in terms of teaching and learning is dealt with in the next section.

Coding the second quality week data using loose networks: description and outcomes

The coding by loose networks of the students' written second quality week data was carried out following the rules and procedure established in case study one (see Chapter 6). It may be helpful to restate the rules followed with regard to colour coding of responses to different tasks:

Each task was coded using a different colour.

- Task One responses were coded in red (here *italic* black script)
- Task Two responses were coded in green (here **bold** black script)
- Task Three responses were coded in blue (here underlined black script)
- Task Four responses were coded in black (here standard black script)

As with the first two case studies, the outcomes of this process are discussed in terms of their:

- representation of ideas developed by students, and links between them
- contribution of evidence concerning enhancement of the effectiveness of teaching and learning
- contribution of evidence concerning the usefulness of adaptive concepts

- shortcomings

Links: The coding exercise at this stage of this research differed from that during the coding of the first quality week data in two significant respects. First, loose networks generated following the second quality week intervention related to data which were sometimes individually produced, sometimes jointly produced, and sometimes individually produced following collaboration. There is a sense in which this was unfortunate, since clearly not only did the second case study not replicate the first in this respect (see Chapter 10), but the third case study replicated neither the second nor the first. However, while it would have been perfectly possible to insist on such replication throughout, to do so would, I feel, have damaged the establishment of the overall innovation (research aim 2). This is because it would have entailed a refusal to devolve responsibility for the changes that took place (Louis and Miles, 1990, p.214), and so limited the extent to which teachers and pupils felt empowered (Hopkins, Ainscow and West, 1997, p.262). Further, it is questionable whether any methodological advantage would have resulted from such insistence. According to Guba and Lincoln (1981, p.116) replication in qualitative research is, in any case, "impossible". Secondly, it was by now anticipated that the loose networks derived from the data would reveal parallel strands of argument between which tension of some sort existed. Therefore, a consciously self-critical orientation on the part of this researcher during the identification of such strands was therefore necessary. As Eisner (1979) notes:

> Evidence is structurally corroborative when pieces of evidence validate each other, the story holds up, the pieces fit, it makes sense, the facts are consistent.
> (Eisner, 1979, p.215)

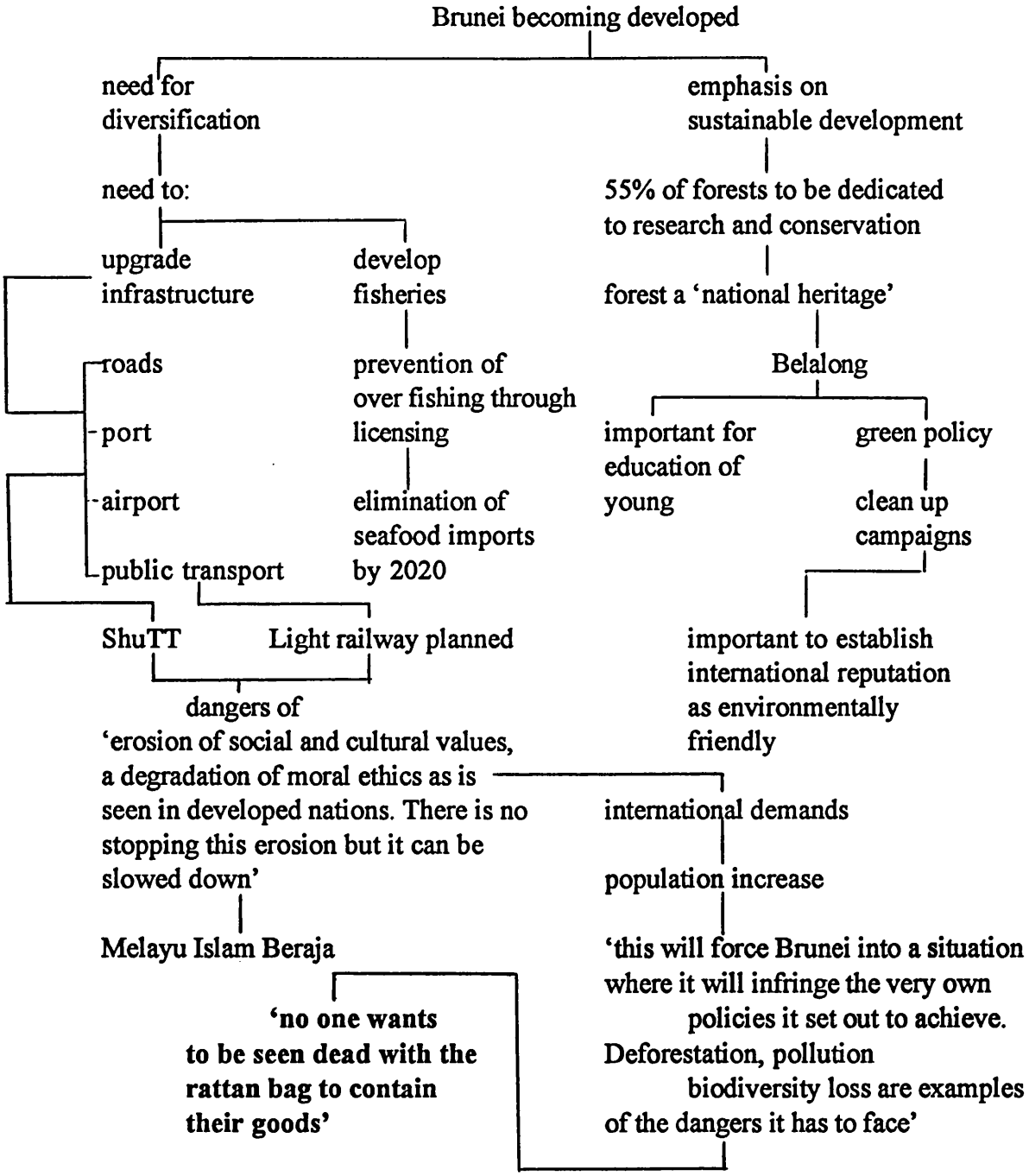
The corresponding danger is that of:

not remaining open to evidence that disconfirms the pattern.
(Sowden and Keeves, 1988, p.523)

In this instance there was, however, some cause to hope that the research method might in any case fail to safety, since any tensions that were 'identified' by this researcher would become the basis of an item in the subsequent perspective document and be subsequently resubmitted to students. Any items which had little basis in reality might then be expected to produce very low numbers of 'dilemmas' and/or 'tensions'.

The following extracts from second quality week loose networks illustrate some of the tensions that seemed to emerge:

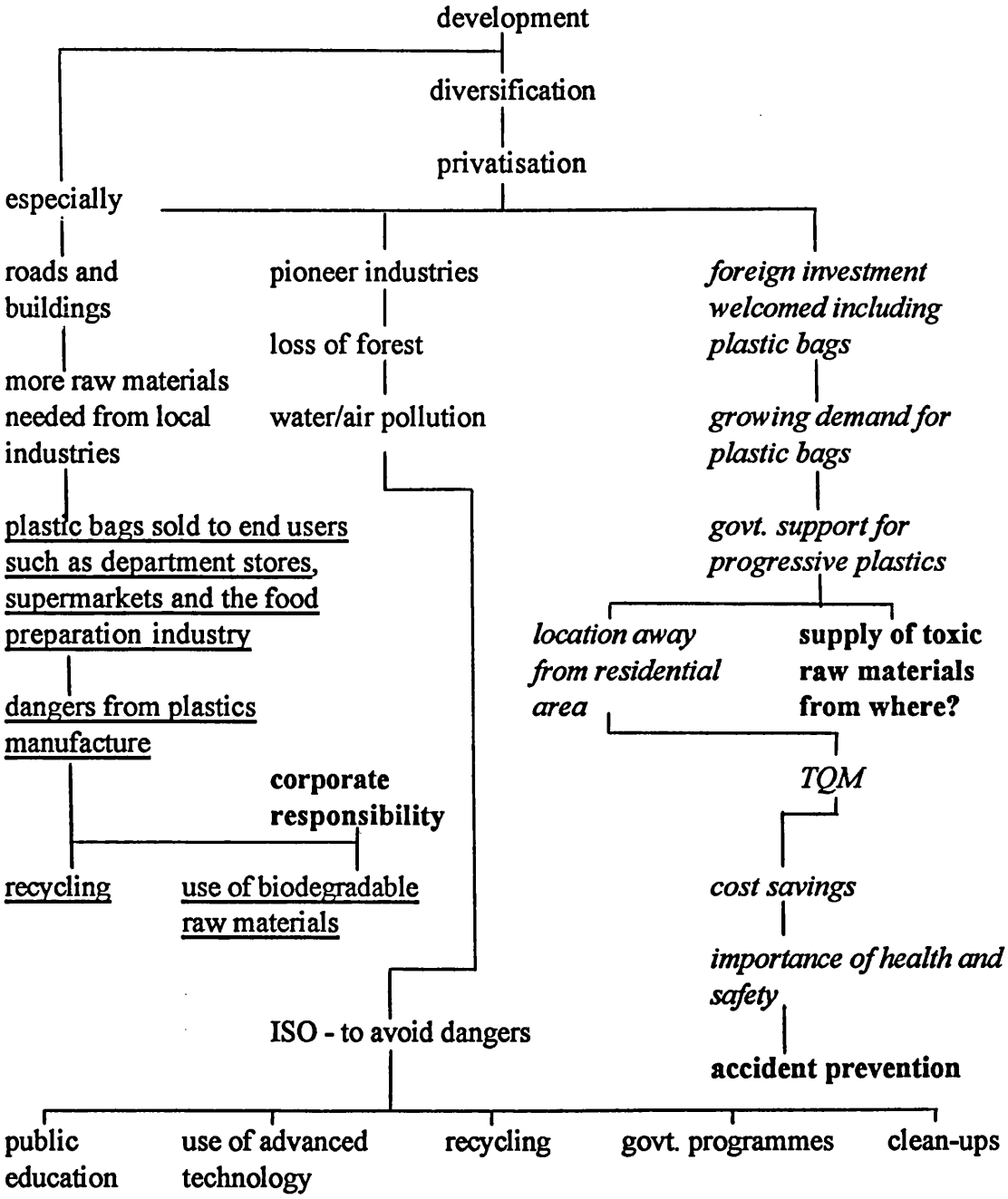
Submission 12



Discussion of submission 12

This loose network resulted from the submission of a Chinese boy working alone. It is striking for its fatalism. There is also a sense of tension between international demands versus local priorities; the benefits versus the dangers of development; and the moral value of traditional ways versus the convenience and/or fashionability of modern ones. Also of note is the respect accorded to *Melayu Islam Beraja* by a young man who was himself neither Malay nor Muslim.

Submission 15



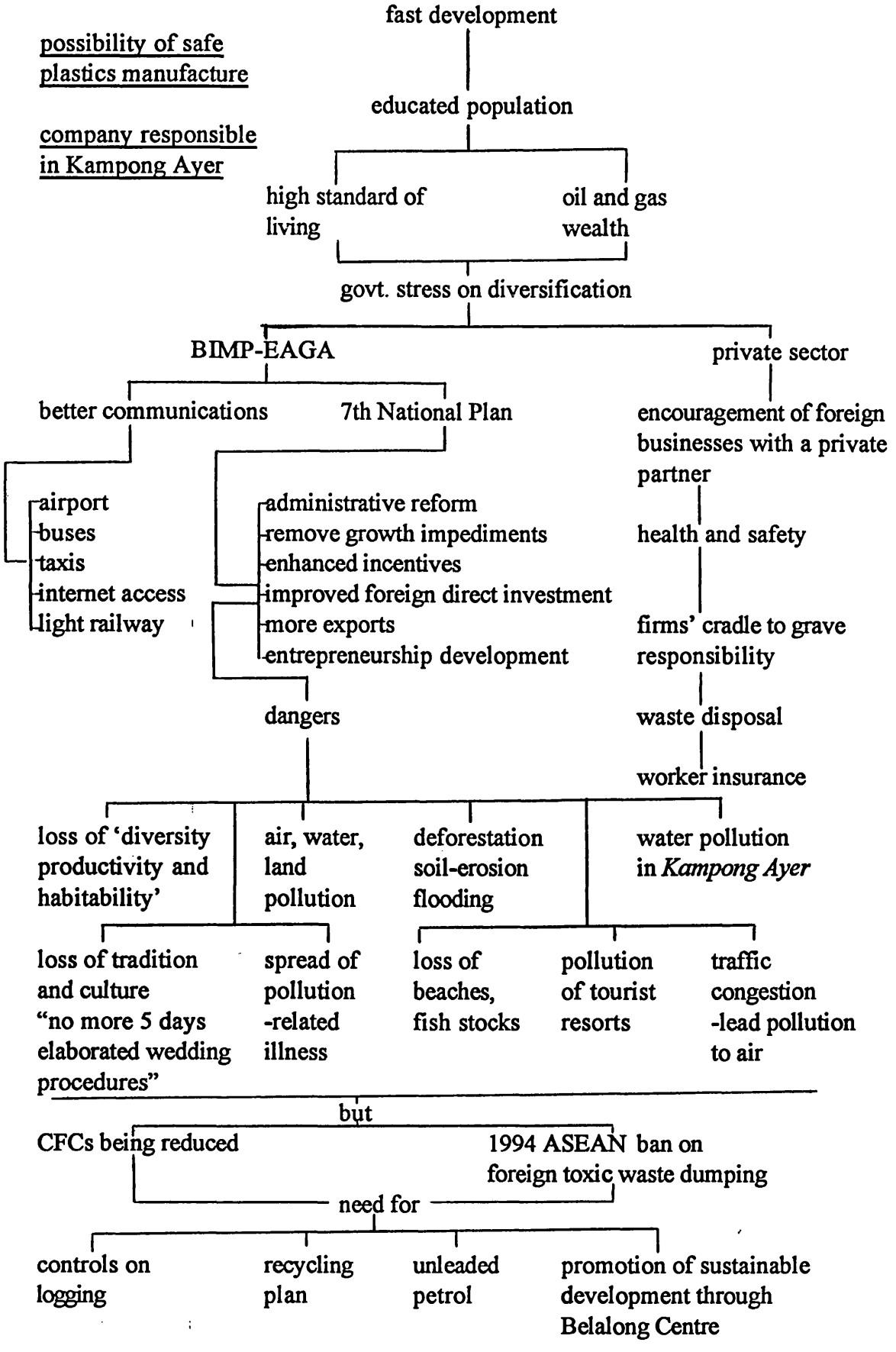
Discussion of submission 15

The work of a group of three boys, two Malay and one Chinese, resulted in this loose network. The absence of any sense of a role for the individual in averting environmental hazards stands out. Corporate and government responsibilities, by contrast, appear to loom large. A central tension here seems to be between the developmental and environmental impacts of industry. The network also seems to suggest that the students' perceptions of the relationship between foreign and local businesses and their respective roles might usefully be explored further.

Submission 61

possibility of safe plastics manufacture

company responsible in Kampong Ayer



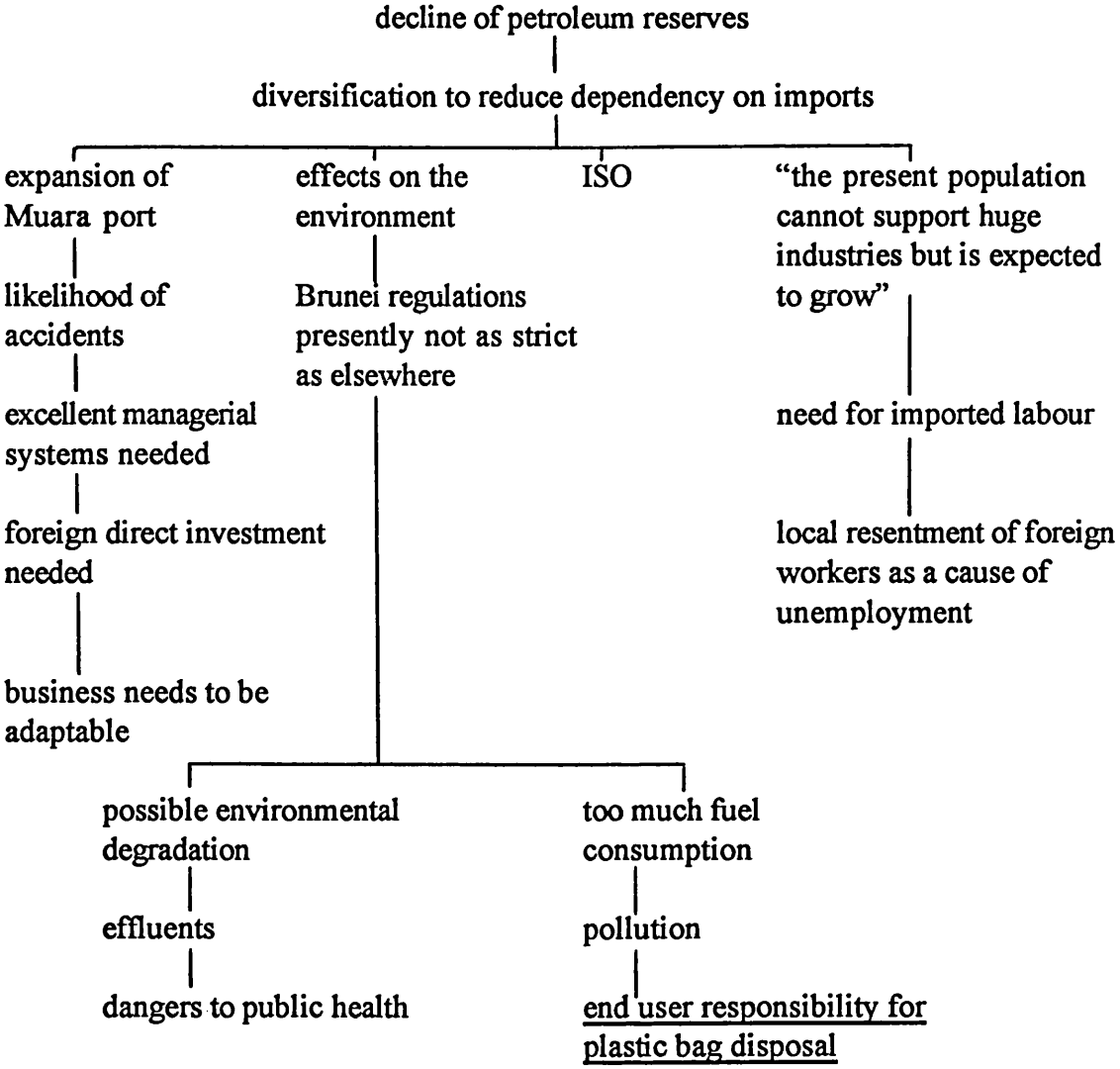
Discussion of submission 61

This loose network resulted from the work of group 18, which included Leziana, Noorhayati and Huzzymah. It exhibits awareness of a wide range of tensions between the imperatives of development, trade and national planning in a very clear and systematic way. Most satisfying, at least from the point of view of this researcher as these students' teacher, is the evidence here of learning which appears to be quite appropriate both to management and environmental education, and which further suggests some degree of clarity of understanding of the interrelationship of these dimensions.

Discussion of submission 54 (following page)

This group was comprised of two Malay boys, one Chinese boy, and two Chinese girls. It is unusual because it begins from a perceived issue of resource shortage, and because it acknowledges the difficulties faced by Brunei, with its very small population, of meeting from its own labour resources the requirements which the national development planning process would seem to imply. The significance of the tension between a desire for foreign investment and a resentment of foreign workers, which this loose network suggests, seemed likely to be worthy of further investigation.

Submission 54



Once again, issues of validity, the strength of individual tensions revealed by the loose networks, and the frequency with which individual tensions were experienced within the student sample as a whole were addressed through dilemma analysis and the construction of a perspective document. As noted in Chapter 10, this document was combined with that arising from design week, for administrative reasons. This joint document was issued to students on 7 June 1998. That part of it which related to the second quality week intervention is discussed in detail in Chapter 13.

Effectiveness of teaching and learning: As with both previous case studies, the success of the design week intervention in enhancing the effectiveness of teaching and learning was evaluated:

- against criteria drawn from a positivist environmental education perspective
- against criteria drawn from a socially critical environmental education perspective
- through written teacher evaluations
- from the perspective of the literatures of school effectiveness and school improvement

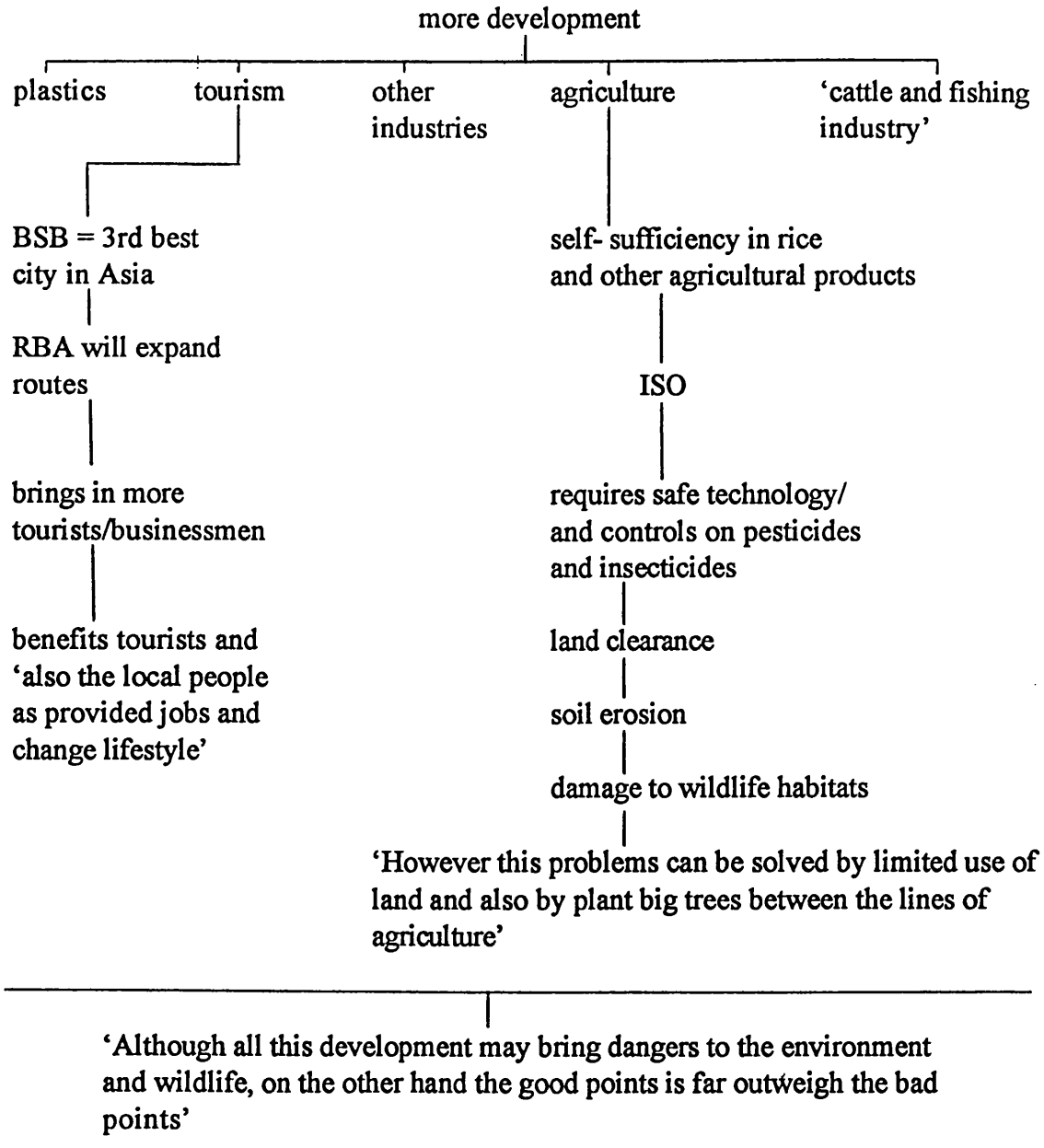
Also as before, teaching and learning outcomes are discussed here in their entirety, not merely to the extent that these were indicated by the students' loose networks.

Teaching and learning from a positivist perspective

As with the first two case studies, teaching and learning from a positivist perspective was evaluated against the 'superordinate goal', and the four levels of 'specific goals' for environmental education proposed by Hungerford, Peyton and Wilke (1980, pp.72-74) (See Chapter 6). As in Case Study One, the second Progressive Plastics intervention was able to do little to address the problematic nature of 'citizenship' in the context of this research, but there was evidence of almost universal recognition by students of the existence of relationships between environmental impacts and economic development, and between "quality of life and quality of the environment"

(Hungerford, Peyton and Wilke, 1980, p.72). That said, a minority of students clearly perceived the environmental threat to be slight. An example was submission 48, from four Malay boys, whose loose network included the following:

Submission 48

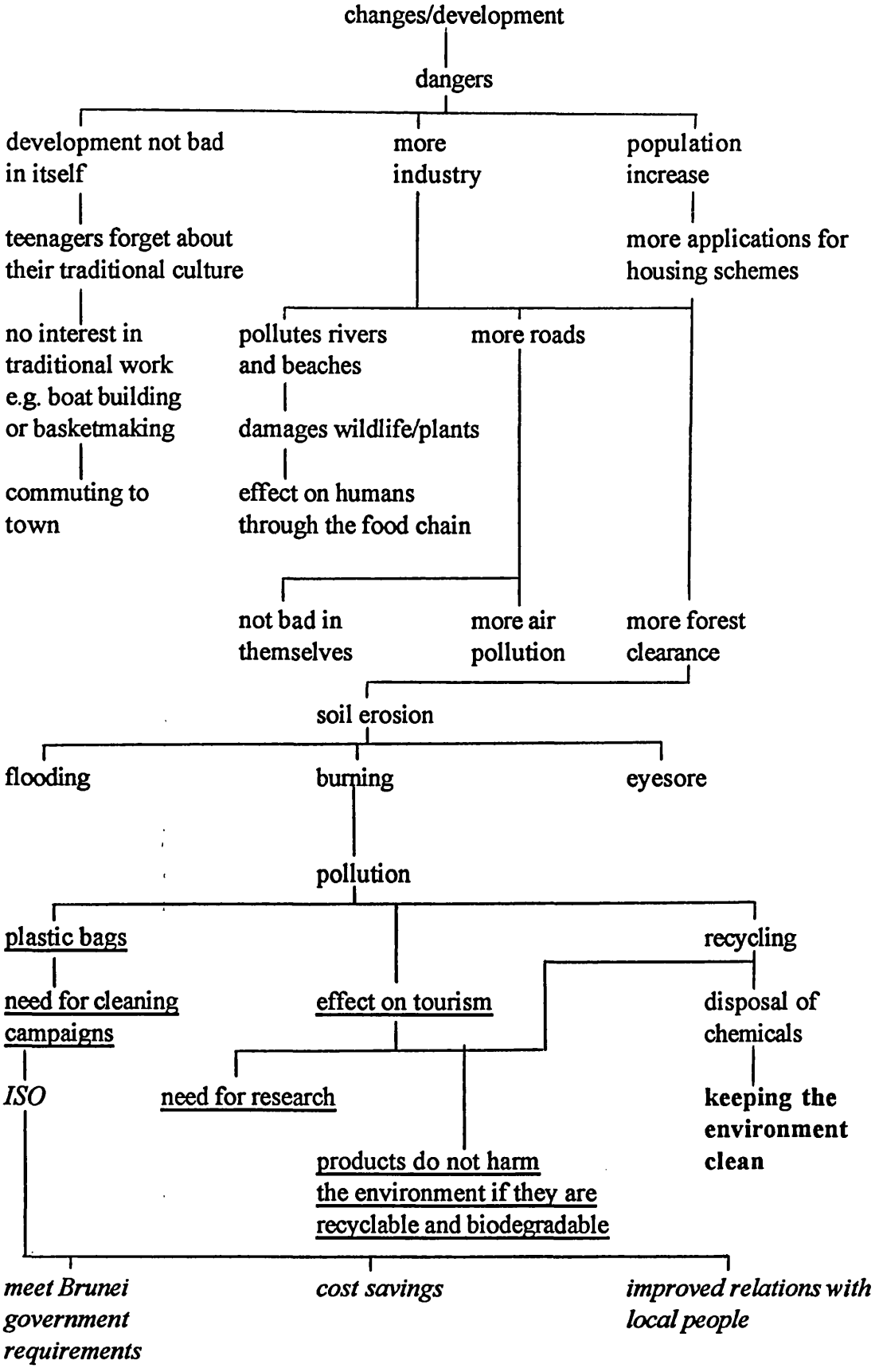


At Hungerford, Peyton and Wilke's (1980, p.72) 'ecological foundations' level 1, there was substantial evidence that students had tried, in a variety of different ways, to come to terms with ecological impacts arising from plastics manufacture. This was sometimes further linked to evidence about Brunei's coastal ecosystems which seemed likely to have been derived from the design week intervention. However, as with Case Study One, the main gains in teaching and learning from a positivist perspective appeared to be at level 2, 'conceptual awareness - issues and values'. In Chapter Six the following concerns recorded in the Case Study One students' loose networks were claimed as evidence of learning at this level:

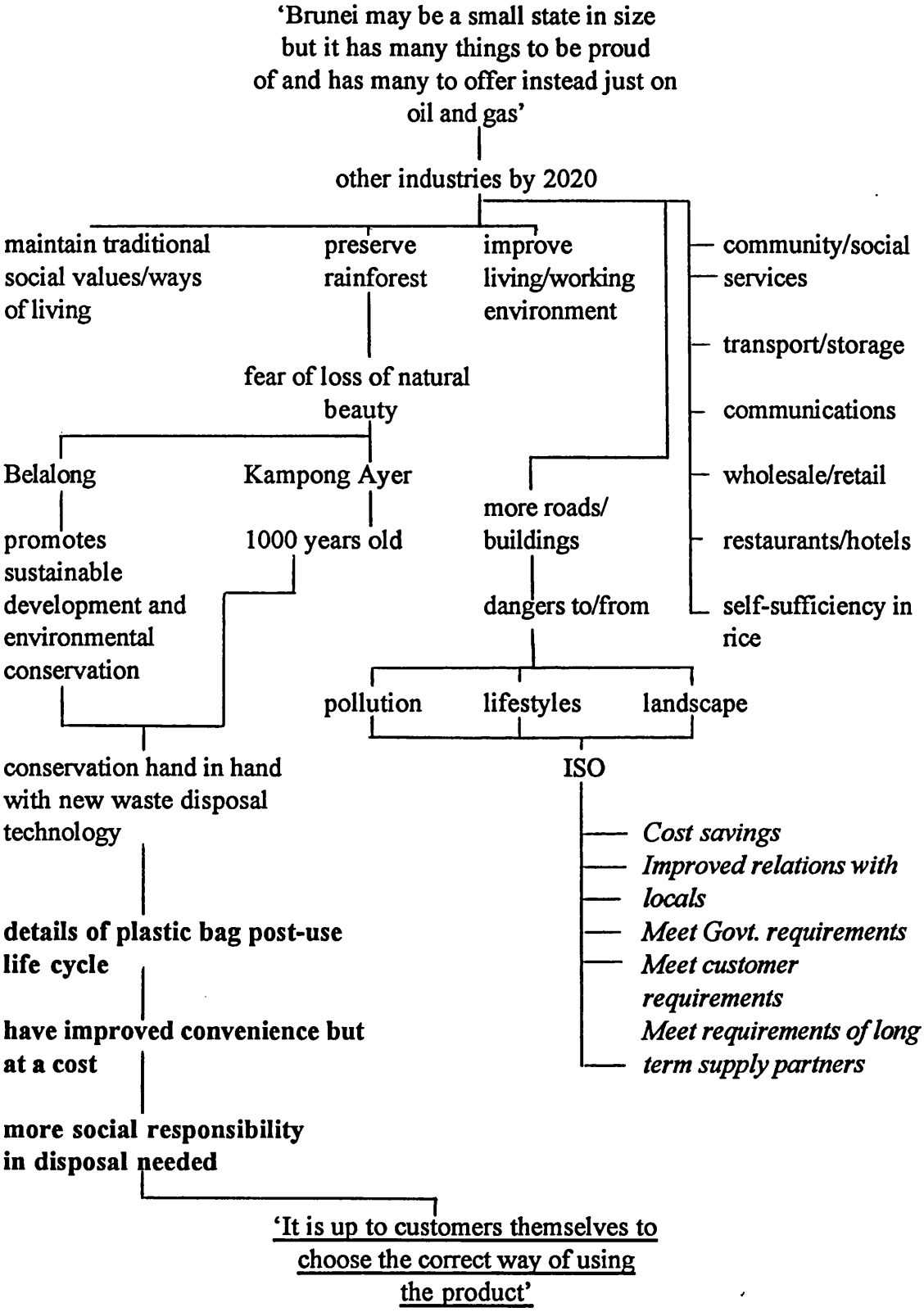
- the detrimental effects of development on local culture and hence on traditional interactions with the environment
- the impact of individual decisions with regard to lifestyle in general and waste disposal in particular
- the effects on both fish and the activity of fishing of changes in coastal land use
- discussion of possible solutions to the issue of plastic waste in *Kampong Ayer*
- a perceived need to interrogate business about environmental impacts and create an appropriate regulatory framework
- statements qualifying the desirability of development
- calls for ecomanagement, particularly in the prevention and remediation of problems caused by waste, and in the area of health and safety

The following examples of Case Study Three students' loose networks constitute evidence of engagement by students with these same concerns.

Submission 3



Submission 30



It should be noted that the focus group sessions were also broadly concerned with issues and values as they related to many of these matters.

As with Case Study One, there may well have been learning gains by students in terms of Hungerford, Peyton and Wilke's (1980) level 3 goals ('investigation and evaluation') through their adoption during the intervention of a range of both competing and complementary social perspectives upon the same set of issues.

Finally, the level 4 goals concerned with 'environmental action skills - training and evaluation' continued to present a particular difficulty given the non-democratic nature of Brunei society. A further, necessarily limited attempt to address this in Case Study Three was made through the Ministry of Development seminar, which was held on 16 April 1997. It is described in Chapter 13.

Teaching and learning from a critical perspective

Once again, the same theoretical benchmark was applied in Case Study Three as had been used in Case Study One (See Chapter 6). This was drawn from Fien (1993) and consisted of five "defining characteristics of critical pedagogical practice in environmental education" (Fien, 1993, p.12) which may be summarised as:

- the development of critical environmental consciousness
- the development of critical-thinking and problem-solving skills
- the development of an environmental ethic
- the development of political literacy
- teaching strategies consistent with the goals of such pedagogy

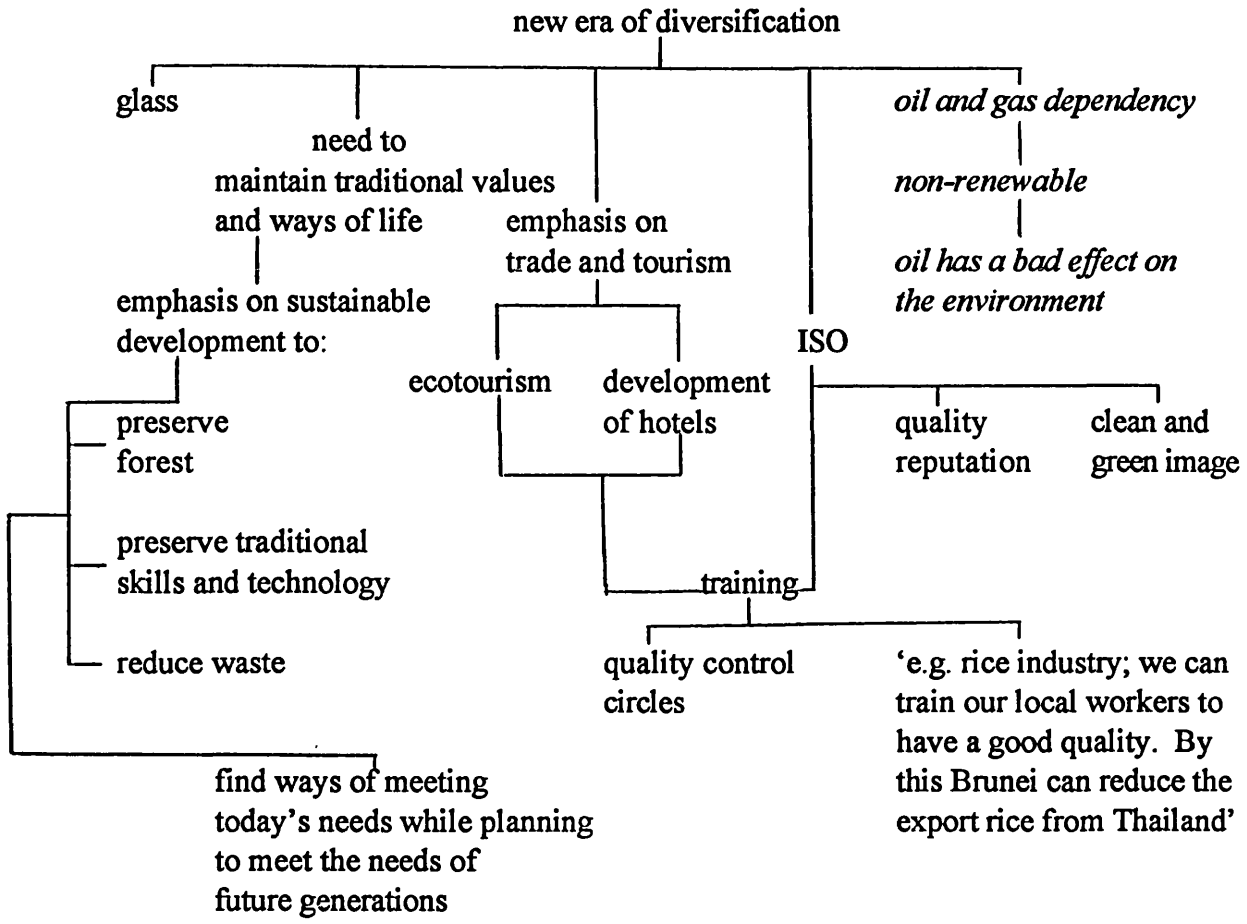
Pursuit of these criteria was subject to the same general restraints as in Case Study one, specifically:

- the need to conduct the intervention with regard for Brunei law

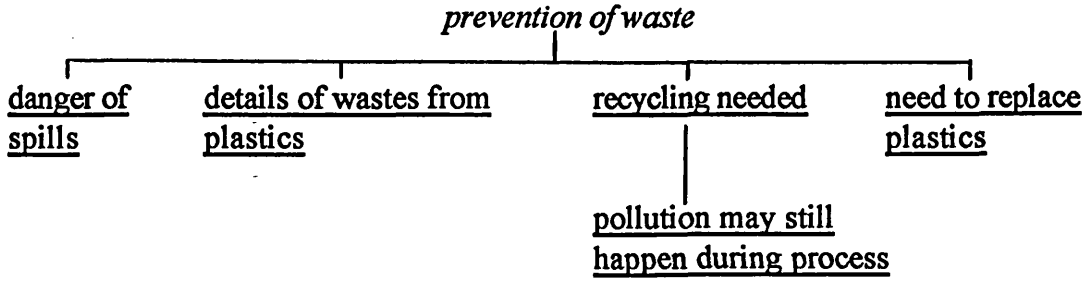
- the uncomfortable fit between the social goals of critical educators and the goals of business education
- the centrality to critical theory of the notion of 'false consciousness', and the questionable legitimacy of the judgements of Western educators concerning instances of false consciousness in an oriental society
- problems with the transferability across cultures of concepts of 'social disadvantage'

Students' loose networks in the third case study frequently suggested a sense of the inter-relatedness of natural and social systems which, according to Fien (1993) is part of a critical environmental consciousness. A particular issue which emerged was the tension evident, in the submissions of many students, between the respective demands of the Brunei environment, development in a competitive world of markets, and *Melayu Islam Beraja.* This is illustrated, for example, in the cases mentioned earlier in this chapter of the Malay boy who speculated about the desirability of some form of electoral representation in the country, or the four Chinese girls who, with due deference to *MIB*, wanted to 'move on'. Further in keeping with processes of 'critical' learning, students frequently adopted a perspective which considered contemporary issues in their historical context, combined together ideas pertaining to ideology, economy and technology, and elaborated possible future consequences of contemporary choices at the local, regional, national, regional and (to a lesser extent) global levels. The following loose network, from a group comprising a Malay boy and girl, and a Chinese boy and girl, illustrates some of these aspects.

Submission 8



{.....}



In addition to the above there appeared to be similar grounds for claiming limited gains in learning from a critical perspective as had been the case in the first progressive plastics intervention. These grounds might be summarised as follows:

- though the problem considered by students was not 'real', it was credible and locally significant. This was also true of the focus group tasks
- the work was interdisciplinary
- students considered ethical issues relating to their environment from a range of social perspectives. Again, this was also a feature of the focus group tasks
- unlike the first case study, there *was* some evidence in Case Study Three that students had been prompted to consider the political dimensions of the problem and to reflect on possibilities for change. This was so in only a small number of cases, but in the political context of Brunei it was still surprising
- there seems likely to have been some collaborative professional development of teachers, who were becoming accustomed to work in ways that previously had been largely untried in Maktab Duli.

Teaching and learning: views of participating teachers

As with the previous two case studies, participating teachers were asked to complete a detailed written evaluation. Responses were coded into loose networks as before in the hope that these would facilitate:

- identification of connections between ideas made by teachers
- identification of other possible connections between ideas in the thinking of teachers
- comparison between the ideas of different teachers

However, in this section I illustrate teachers' views of the impacts of the intervention on teaching and learning by means of direct quotations from their evaluations. The

usefulness of the Case Study Three teachers' Evaluation Report loose networks is further discussed in Chapter 14.

Extract from IF's evaluation

> The choice of the plastics manufacturing company and its planned introduction of plastic bag manufacturing was a particularly topical scenario. Students realised that if this new manufacturing facility was established without proper guidelines, Brunei could head into the same environmental disaster that has befallen some other S.E. Asian nations...Any exercise which allows students to explore, analyse and produce creative ideas to solve problems is going to be beneficial. This is essentially what the 4 Quality exercises did - and they generated considerable enthusiasm in the process. Students enjoy working on exercises like this, they look forward to presenting their material to groups/organisations outside the college, and this of course also raises the profile of Maktab Duli

Extract from AF's evaluation

> After reviewing the materials you supplied, I now feel quite strongly that all businesses have an obligation to the consumer and society in general, to educate them as to the effects of their 'consumption'...a very useful exercise - relevant to the production/marketing sections of the syllabus - and no doubt others. Also, from a wider point of view, it is very useful to them in the outside world, when they are managers.

Extract from BH's evaluation

> 2nd time through topic, I am quite certain that the environment needs to be more central to the study of business...Did it extend students? Yes. There

were many concepts and examples that the students may not have considered without this unit.

Extract from AL's evaluation

This work is developing to the extent that more time is needed to share the theory and complete the assignments. M.O.B. syllabus involves quality and quality control and from these a good application is this work involving B.S.B. and its people.

Extract from RS's evaluation

I thought this one was better than the tourism unit. Connections to the syllabus were more obvious to students and myself. It could be that the students were familiar with the type of work required after the tourism project...project based group work is rather worthwhile with these students at U6 level, They seem rather enthusiastic about it.

Extract from SE's evaluation

Obvious improvements noticed:

1. Second time around
2. experience of tourism project...

I was generally impressed by the effort put in by the majority of students. They displayed an encouragingly mature approach to working (semi)-autonomously, and responded well to having to think for themselves and express their opinions.

Extract from AK's evaluation

> The challenge to business education is to be not just reflective of change but to be proactive by promoting modes of thought which enable students to perceive the whole dynamic interchange and be prepared with solutions to problems, targets and challenges. Quality standards relating to the environment have to be flexible and adaptable to new scientific evidence as well as to the limits of political response within countries...Students were compelled to apply their knowledge to real-life examples of production. They gained a clearer insight into the environmental consequences and, to some extent, the social costs of production.

On the basis of this evidence it does seem possible to support a claim that teaching and learning were enhanced, in the views of participating teachers, through both the second quality week intervention and the series of interventions as a whole.

Teaching and learning: school effectiveness and school improvement

As noted in Chapters 6 and 10, it may be argued that assessments of gains in teaching and learning by participating teachers enhance, by means of investigator triangulation (Smith, 1975; Cohen and Mannion, 1994, pp.236-237), the validity of the claims for such gains made by this researcher. It has been sought, in each case study, further to enhance the validity of such claims by means of theoretical triangulation (Smith, 1975; Cohen and Mannion, 1994, pp.236-237), involving criteria drawn from the literature of school effectiveness and school improvement. Throughout this report evaluation of the interventions under this heading has employed four characteristics of effective departments identified from the work of Harris, Jamieson and Russ (1995). These characteristics are:

- involvement of all pupils in the learning process by providing a variety of tasks which deal with individual, small-group and large-group situations
- encouragement of cooperative learning

- involvement of students in review of the learning process and in action-planning
- development by teachers of formative, motivational forms of assessment

During the second quality week intervention some students worked in stable groups, others in group contexts which appeared to fluctuate with need. Exchange of ideas between groups was normally facilitated by the particular class teacher. AK had this to say about the experience:

> The nature of the tasks lent themselves to group work and group activities. The group work approach encouraged a rationalisation and division of work loads within groups...Students contributed to group activities according to their individual strengths.

However, the existence of groups of students working together in a class room is not necessarily evidence that cooperative learning is occurring. AK continued his evaluation by sounding this warning:

> The down-side was some of the weaker and less motivated students played a minimal - and hopefully not marginal - role...although, or maybe because, there was good cohesion within groups, it is difficult to measure actual individual contributions.

There must, therefore, remain some doubt as to whether all students benefited from cooperative learning during the second quality week intervention. Evidence from other teachers is somewhat mixed. SE, for example, commented that:

> Students tended to work as individuals more than on tourism.

Against this, one might set the following:

> Group work approach to the work is very good. Motivated the mid-range students and even those of low range ability made more effort than the norm. (RS)
>
> Group work...seems to work extremely well. This style of operation allows the students to devise strategies which enable them to divide work up and work towards deadlines. (IF)
>
> It was a pleasure to see the students obviously enjoying being in a 'pro-active' situation and enjoying using their initiative, Even the weaker, less confident students seemed to be 'swept along by the tide' and get involved. (AF)

Finally, those students who participated in the focus groups were involved with varied, realistic, small group tasks.

With regard to the third of Harris, Jamieson and Russ's (1995) characteristics of effective departments, some progress might be claimed in Case Study Three. The idea had become established that the quality-based intervention was a regular part of the Department's scheme of work which was subject to development and revision through, in part, feedback obtained from students by means of the perspective document which followed it. Once again their was also some evidence of 'action-planning' by students in relation to the forthcoming Ministry of Development seminar.

Finally, there was evidence that teachers were increasingly emphasising to students the practical value of these studies in real management and citizenship contexts. SE, for example, noted that:

> The fact that a number of recent advertisements [18] for Brunei companies receiving ISO 9002 certification (when will the first 14000 come through?) helped focus the work

A related point was that other agencies within the college, for example the General Paper Staff, and the Careers Department, were also by this time encouraging students to make use of what they had learned during these interventions.

Teaching and learning: conclusion

In view of the above it seems reasonable to claim qualified, but nevertheless significant, gains in teaching and learning through the second quality week intervention. There was also some evidence that enhancement of teaching and learning had increased incrementally to the extent that:

- there was 'learning-by-doing' by teachers as they became more familiar with the broad method of working employed in all three interventions
- there was 'learning-by-doing' by students who were able to put some of their experiences during the design week intervention to use in the second quality week intervention

The usefulness of adaptive concepts: For the second time in this research 'quality' seemed to have functioned satisfactorily as a means of introducing environmental education into the Maktab Duli management programme with the assent of all stakeholders. There was also some evidence that the use of adaptive concepts 'design' and 'quality' with the same cohort of students had produced cumulative benefits in terms of students' ability to organise and work in groups.

Shortcomings: At this stage of Case Study Three the same issues remained outstanding as at this stage in the previous two case studies. Briefly, these were:

- the internal validity of the students' written submissions
- the need to obtain an overview of the data
- the possibility of further improving understanding of the research setting
- identification of further adaptive concepts

As previously, these became the focus of further data analysis and collection, through processes discussed in Chapter 13.

ENDNOTES TO CHAPTER TWELVE

1. AF was in the throes of a particularly unpleasant and painful divorce at this time, which had the effect of uniting the department's staff around her. This probably heightened collegiality, but it also created a second priority for teachers, and for myself as Head of Department, which was to some extent in competition for time and attention with the second quality intervention.
2. One might add that seeing the course of social events in terms a sequence of 'paradigms' and 'worldviews' seems more like an account of modernity than a 'challenge' to it.
3. An extra day was added at the end to compensate for the day on which some students were attending the Ministry of Industry and Primary Resources seminar. Also, during design week teachers had established their right to extend the intervention by a day or two if they so wished.
4. With the benefit of hindsight, the terms 'problem space' and 'solution space' now seem heuristically useful in giving an account of the continuing research. I did not, however, think of the intervention in these terms at the time.
5. As noted, AK was new to this work. He was new to *all* the department's work, however, so liaising with other teachers to discover established practice was, for him, quite normal.

6. Ad hoc inspections by the Principal or Deputies were not uncommon. These mattered from the point of view of a teacher's renewal of contract or annual bonus. Group work was considered rather avant garde in the Brunei education establishment as a whole. Lecturing, and having students copy from whiteboard or OHP, were always acceptable.
7. IF spoke good Malay and fell in love with South East Asian culture. He was able to develop a very close personal understanding of the groups he taught. In 1998 he converted to Islam and took the name Mohammed Yusof.
8. The whole project had got off to a weak start, as the proposed financial hub of BIMP-EAGA, on the Malaysian island of Labuan, failed to attract enough inward investment.
9. Had this work been seen by the college administration, let alone the Ministries of Education or Industry and Primary Resources, there would have been serious trouble both for the student and for this researcher.
10. There is no mains sewage in Brunei.
11. The focus group activity was in some respects similar to a group interview situation. Indeed, Watts and Ebbutt (1987, p.27) include "classroom discussion" within their definition of group interviewing. The use of the focus groups in this research, however, differed most particularly from the normal practice of group interview researchers in the emphasis placed, not on what was said during the session, but on what the students felt prompted to write anonymously afterwards.
12. It is, of course, interesting that those most likely to volunteer in this case seemed to be, in general, those least advantaged in Brunei society. However, it would clearly be absurd to draw any conclusions on the strength of this single instance.
13. Clearly it is not possible to generalise from the responses of these students to the rest of the sample, except to the extent that doing so may be supported by other data which emerged from this research. The twenty students involved in the focus groups represented only 11 per cent of the total sample. They volunteered for

this extra activity, and may have done so for reasons which they shared with each other, but did not share with those students who did not so volunteer.

14. *Limau manis* are small, dark-green limes. *Mata kuching* are similar to lychees. The words mean "cat's eye". In Malay plurals are normally formed by repeating the word. *Rumah*, for example, means 'house', and *rumah-rumah* means houses. The word *mata* is an exception. It means 'eye'. *Mata-mata* means 'police'.

15. It might be argued that the valuation of intergenerational environmental costs and benefits involves techniques which are far too complex to be comprehended by students at this level. Certainly, even the most reader-friendly attempts to provide an introduction to the matter (see, for example, Pearce and Kerry Turner, 1990, pp.211-225) are likely to be found problematical by non-economists. However, what these complex techniques seek to value, in the end, is individual human preferences. One does not need to be an economist to state one's preferences and, perhaps, rank them.

16. The 'pan-Borneo highway' has been much discussed in Brunei and the East Malaysian states of Sabah and Sarawak. It would run from Kuching in Sarawak, through Brunei and on to Kota Kinabulu or possibly Sandakan in Sabah. A major obstacle to its completion is that although an adequate road bridge has existed for ten years across Brunei's Belait River, the political influence exercised by the owner of an ancient car-ferry continues (at the time of writing) to prevent it from being opened. The matter became a cause of public outrage in Brunei in November 1998 following several accidents in which cars using the ferry found their way into the river.

17. A degree of paternalism is expected of a *ketua kampong*.

18. Corporate achievements in Brunei are often celebrated by the inclusion of large, congratulatory advertisements in the pages of the Borneo Bulletin, typically paid for by the successful firm's suppliers. There had been a spate of these by the time of Case Study Three, which related to the certification to ISO 9000 of local companies.

CHAPTER 13

CASE STUDY THREE: THE PERSPECTIVE DOCUMENT, THE SECOND MINISTRY OF DEVELOPMENT SEMINAR, AND THE 'REVIEW EXERCISE'

The Second Ministry of Development Seminar

At the time of Case Study One (see Chapter 5) there had been great official interest in promoting the international quality standard for environmental management systems, ISO 14000. In particular, a strong lead was being provided by the Minister of Development at that time. It was partly this which made the involvement by students in the ISO seminar possible. By the time of Case Study Three, ISO 14000, though still officially strongly promoted, had slipped somewhat from the centre of attention. It is likely that the reasons for this included the following:

- the Head of The Environment Unit at the Ministry of Development at the time of Case Study One, Hjh. Soraya Dato Paduka Hamid, had left to become Director of a private, joint-venture firm of Environmental Engineers. This firm's main business involved bidding for contacts awarded by the Environment Unit under its new Head, Hjh. Soraya's former Deputy, Pengiran Shamhary Dato Paduka Mustapha. It may or may not be of significance that Hjh. Soraya's new firm was neither ISO 14000 accredited, nor actively seeking such accreditation
- The Minister of Development, who was a relatively energetic and innovative official, had recently received a promotion from the Sultan which, while leaving his job title unaltered, greatly increased his status within the Malay ruling hierarchy. This meant that he was increasingly preoccupied with matters outside his normal brief which had a wider national, or largely ceremonial, significance

- The Ministry of Development had moved into a new building early in 1997. Considerable disruption to working practices appeared to have been caused
- According to Pg. Shamhary himself, the Unit's staffing level was, in April 1997, adequate only to deal with the very large (and increasing) number of communications from external environmental agencies (UNEP, for example) which were received and required a response. Hence, little time was available for promoting or supporting initiatives within the country

Throughout this research, the activities of government agencies are viewed through the same lens of cultural theory as all other institutional and individual behaviour. The above notes on changes at the Brunei Ministry of Development seem to suggest that the day-to-day details of official government policy on this particular, environment-related issue partly depended upon a complex web of social interaction which reached far beyond the immediate context of this research. Cultural theory, as used in this research, does not claim to provide a comprehensive or definitive template for thinking about this complexity. However, through its use of four ideal-typical social rationalities, and its recognition of a range of social scales, it does promote the expectation of complexity. Further, it provides a ready way of thinking about different actors and their roles within any given, complex situation (such as one in which small shifts in the emphasis of government policy are occurring) without failing to recognise either that such roles may change quickly or, more importantly, that a 'way of thinking' about a social phenomenon is not the same as a scientific description of it. The first prediction of a cultural theory approach to complex issues is always that uncertainty will exist.

Thinking about 'the government' as anything other than a discrete and monolithic institution is unusual in environmental education, environmental education research, and, in fact, many other fields. Attempts to explore inside the concept of 'the government', and to relate the findings of such exploration to policy have been made with regard, for example, to environmental management (e.g. Blaikie and Brookfield,

1987), public administration (e.g. Lindblom, 1979) and economic development (e.g. Hirschman, 1958). However, as Shleifer and Vishny (1998) point out, most social analysis has tended to operate with a model of government drawn from one of two broad types. These Shleifer and Vishny characterise as the 'invisible hand model' and the 'helping hand model'. The invisible hand model prescribes a very limited role for governments as the facilitators of market activity. It possesses, as Shleifer and Vishny (1998, p.3) point out, virtually no descriptive power since all governments intervene in social life more than such a model would permit. The helping hand model also began as a prescriptive device, setting forth a role for governments as the correctors of 'market failures', but it has subsequently been further employed in many countries to describe and justify government actions. Assumptions consistent with the invisible hand model may be detected in positivist approaches to environmental education, with their emphasis on citizenship action (e.g. Hungerford, Peyton and Wilke, 1980), and accounts of environmentalism which emphasise the significance of changes in consumer behaviour (e.g. Elkington, 1987). Assumptions consistent with the helping hand model characterise a very wide range of environmental policy proposals, and inform the thinking behind both the ecosocialism of writers on environmental education such as Trainer (1990), Fien (1993) and Huckle (e.g. 1996), and the calls for stringent population control emanating from directions as varied as ecofeminism (Spretnak, 1990) and the biological sciences (Ehrlich and Ehrlich, 1990).

Shleifer and Vishny (1998) propose a third model of government behaviour, 'the grabbing hand'. They write:

> At the root of the grabbing hand analysis are models of political behaviour that argue that politicians do not maximize social welfare and instead pursue their own selfish objectives
> (Shleifer and Vishny, 1998, p.4)

To the extent that this approach permits a degree of dissection of the notion of 'the government' it seems likely to be useful. Shleifer and Vishny (1998) go on to argue, for example, that successful economic development depends less immediately on what the government *does* and more fundamentally on who *joins* the government sector.

> Which activities the most talented people choose can have significant effects on the allocation of resources. When talented people become entrepreneurs, they improve the technology in the line of business they pursue, and productivity and income grow. In contrast, when they become rent seekers, most of their private returns come from redistribution of wealth from others, not from wealth creation
> (Shleifer and Vishny, 1998, p. 55)

Environmentalists, of whatever perspective, would be likely to object to Shleifer and Vishny's analysis on the grounds that it depends on an impossibly narrow definition both of human interests, and of the changes or activities which might promote them. However, in the bathwater lurks a baby: the recognition that models which treat 'the government' as an unproblematic, unitary agent are themselves guilty of an unsupportable oversimplification. Governments are typically, in fact, open systems (Hanna, 1988) with complex internal structures and highly permeable boundaries. Of course, part of their complexity does result from their members' own, narrowly-defined interests and the ways in which these are pursued: but there is likely to be more to it than that. As Schwarz and Thompson (1990) write:

> We are not arguing that policy actors do not *have* self-evident interests; only that this is not *all* they have
> (Schwarz and Thompson, 1990, pp.31-32, original emphasis)

In particular, individuals' institutional loyalties are also likely to be significant. Hence, for example, it might be suggested that Hjh. Soraya's move from a senior government post to a senior private sector post meant a shift from an interest in pursuing hierarchical goals (such as internal promotion) through the enactment of organisational policy (such as the wider adoption of ISO 14000) to an interest in the pursuit of competitive, individualistic goals (higher company profits) through the maintenance or creation of competitive advantage (which would be lost if ISO 14000 too quickly became a requirement for firms awarded government contracts). From the point of view of her replacement at the Ministry of Development, Pg. Shamhary, his own interest in advancing the goals of the Ministry hierarchy may well have been moderated by a cross-cutting loyalty to Hjh. Soraya. Her family stood, as the shared designation 'Dato Paduka' indicates, at approximately the same rank in the protocols of Malay hierarchy as his own. It was very unusual to find a Malay of this rank *principally* employed outside the public sector. Hence, it was not impossible that he felt some pressure to emphasise the pursuit of goals other than ISO 14000 where such emphasis was consistent with the proper execution of his overall brief.

As already emphasised, such an analysis is a source of hypotheses, rather than of facts. Nevertheless, it seems likely to be an advance on the other approaches to analysing the role of government here discussed.

The second Ministry of Development seminar took place on 16 April 1997. Twenty students were invited to attend. This group was chosen by a process of discussion and consensus among teachers. The criteria employed by teachers in proposing or rejecting students for inclusion appeared to be a mixture of factors relating to:

- academic quality of work produced during the second Progressive Plastics intervention
- degree of effort made during the intervention

All teachers attended. All invited students attented. The group was met in the foyer of the new Ministry of Develoment building by the contract officer responsible for the promotion of ISO series standards in Brunei. After a tour of the facilities they were taken to a conference room **[1]**. Here Pengiran Shamhary briefly discussed students' work with them **[2]**, gave a presentation on the work of the Environment Unit, and finally chaired a discussion of approximately 40 minutes involving students, teachers and Environment Unit staff which focused principally on the work of the Unit, and the importance of responsible environmental management in both public and private sectors. The visit conclude with the usual *makan* and reading of the Islamic *Doa Selamat* prayer.

As with the ISO seminar (see Chapter 5) it is only possible to claim limited educational value for this exercise. Problems included, as before:

- that it was not possible to involve more students
- the tendency of students to see their own role as one of Bruneians-at-an-official-function, rather than as one of management-students-being-educated, thus relegating this researcher to a rather marginal status from which little influence on events was possible
- use of the Malay language in most informal discussions, which while clearly not in itself a cause of loss of educational value, made it much harder for this researcher to make any assessment of such value

Against this, the seminar might be argued to be a reasonable approximation to independent student action on an environmental issue, given Brunei's undemocratic political context. Further, comments by teachers clearly suggested that the seminar had served to enhance the perceived significance of the second quality intervention in the eyes of students, including many of those who were not, in the end, invited to attend on the day.

Case Study Three and the Second Perspective Document

As in the previous two case studies dilemma analysis was employed following the completion of the coding of students' written responses into loose networks. Items for a perspective document were derived using procedures identical with those of Case Study One (see Chapter 7). To recap, the purposes of this exercise were:

- to investigate the validity of the second Progressive Plastics/loose networks analysis by means of a 'member check' (Winter, 1982, p.169; Lincoln and Guba, 1985, p.314; Robinson, 1993a, pp.117-120
- to establish the frequency with which each particular tension was felt among the sample of students. The more students who indicated agreement with *both* parts of a tension-statement item, the greater the frequency
- to establish a rough measure of the strength with which a particular tension was felt. Where a student expressed strong agreement with both parts of an item, the tension was deemed to be felt most strongly
- to contribute to improved understanding of the overall research setting through the subsequent identification of possible patterns within the responses
  to advance understanding of processes for the identification of further adaptive concepts. The working hypothesis continued to be that first advanced in Chapter 7, that new adaptive concepts appropriate to the context of this research might profitably be sought in the substance of those items which seemed to be:

1. objects of strongly-felt tension for a large proportion of the students
2. classifiable as 'problems', rather than as 'ambiguities' or 'judgements' **[3]**

As noted in Chapter 11, the second quality perspective document was combined with the design perspective document and issued to students in normal class time on 7 June 1997. It comprised the first 99 items of this combined document (Annex 9). Responses were counted using a tally sheet and aggregated and presented using the spreadsheet software package *Microsoft Excel 5.0* (Annex 10).

Perspective Document responses: analysis

Once again, the word 'tension' is used here to describe a situation in which a student has expressed agreement or strong agreement to one part of a pair of statements, and agreement, strong agreement or 'don't know' to the other. The term 'dilemma' is applied where a student has expressed agreement or strong agreement with both statements in the pair.

Item 7:

Firms should design products which do not harm the environment.

Firms should design products which consumers want to buy.

This item was a dilemma for 94.7 per cent of students, and a tension for 95.3 per cent. This seems a particularly interesting set of responses given that these students had previously worked with the adaptive concept 'design'. How it should be interpreted is an open question. If one accepts, with Robottom and Hart (1993), Greenall Gough and Robottom (1993) and Stapp and Wals (1993), that environmental education, and environmental education research, should be concerned with attempts by students to resolve local environmental problems through participatory and/or emancipatory action research, then this result is anything but encouraging. Following the design intervention, awareness of the issue of conflicting pressures on firms from the perspectives of profitability and environmental preservation seems extremely high, and resolution of that issue nowhere in sight. However, if one considers that these results arise in the context of an established management course for which the promotion of corporate sales was historically and pedagogically a central concern, while environmental preservation most certainly was not (Gorman, 1992; Chua *et al*, 1994), then such awareness might be regarded more favourably.

In fact, this same item appeared (as item 12) in the perspective document which followed the first quality week intervention with the previous cohort of students. In that instance the outcomes were similar:

dilemma: 87 per cent

tension: 93 per cent

These figures, quite clearly, demonstrate nothing about changes in students' thinking or attitudes which may, or may not, have occurred. Nor was it ever an expectation of this research that figures capable of performing such a function would be produced. What the figures do suggest is that, through the use of the adaptive concepts quality and design, students had opportunities to explore locally-significant issues in which different but apparently desirable courses of action seemed incompatible. Further, this took place in an instructional context in which one of those alternatives might have been expected, more typically, to have been privileged over the other.

Item 1

Companies should be responsible for any damage their product may cause in the future.

Consumers are responsible for the safe disposal of unwanted items and packaging.

The outcomes with respect to this item were:

dilemma: 84 per cent

tension: 89.5 percent

The same item had appeared as Item 3 in Case Study One, with the following results:

dilemma: 85 per cent

tension: 91 per cent

It does seem that this item might properly be classified as a 'problem' in the sense that this term is used by Winter (1982), since it clearly bears on choices between possible courses of action, and the perspective an individual might take on such a choice seems to depend on which of the two roles, company manager or consumer,

she or he occupies. However, the students in this research were likely ultimately to occupy both roles.

There seems, therefore, a case for suggesting 'responsibility' (see also Chapter 7) as a possible adaptive concept.

It is tempting, at this point, to search back into the data for instances of the identification by students of tension statements including the words 'responsible' and/or 'responsibility'. For example, these words also appeared in the second quality perspective document in items 11, 25, 86, and 87.

Item 11

Firms have a responsibility to provide education

Firms have a right to expect an educated workforce

dilemma: 58 per cent

tension: 72.5 per cent

Item 25

The public are responsible for pollution by plastic bags

Retail outlets are responsible for pollution by plastic bags

dilemma: 52 per cent

tension: 64 per cent

Item 86

Company directors are responsible only to shareholders

Company directors are responsible to society as a whole

dilemma: 8 per cent

tension: 26 per cent

Item 87

Workers have a responsibility to work safely and avoid accidents

Managers must take responsibility to ensure that accidents do not happen

dilemma: 86.5 per cent

tension: 90 per cent

These percentages are interesting in themselves, perhaps most particularly in relation to item 86, in which students showed a very strong collective preference for the idea that company directors owe responsibility to the public at large, not just to shareholders. However, a word such as 'responsibility' can be used in such a way as to have rather different meanings in different contexts, while pairs of statements which do not include the word may nevertheless imply, to a greater or lesser extent, some sense of its meaning. Hence, all one may say in the present case is that a process of counting has been useful in obtaining an overview of dense qualitative data (Miles and Huberman, 1994, p.253; Silverman, 1993, p.163), and this in turn has suggested a possible adaptive concept, 'responsibility'. Thoughtful further consideration of that qualitative data, including the numerical totals to which it has given rise through the processes of this research, seems likely to be valuable in informing the deployment, should it be attempted, of that adaptive concept. However, it is one thing to claim that the word 'responsibility' has been validly derived from contextualised qualitative data as a possible candidate to fit into an abstract category ('adaptive concept') which has been invented by this researcher as a (still speculative) means of focusing *further* research and/or curriculum interventions. It would be quite another to seek to employ the word retrospectively as a means of grouping, classifying, or reinterpreting existing data. Kaplan (1988) has written:

> Empirical terms determine classes; because of the openness of meaning these classes are only approximations to well-defined sets in the sense of

> mathematical logic, where everything in the universe of discourse definitely belongs to or is excluded from the class. The approximation to a set can be made closer (the term made more precise) by restricting its meaning to what is specifiable by easily observable and measurable indices. The danger is that such classes are only artificial, delimiting a domain which contributes to science little more than knowledge of the characteristics by which it is delimited
> (Kaplan, 1988, p.88)

In this particular instance in this research two classes were identified through an interpretive process involving the use of loose networks. They were:

- corporate responsibility for damage caused by products
- consumer responsibility for disposal of rubbish

As one would expect in qualitative, interpretive research, each of these is only a very loose approximation to a 'well-defined set'. The word 'responsibility' is interesting precisely because it stands for an aspect of the area of apparent overlap between these two imprecisely-defined classes. It may, therefore, provide a route to further explore that area. If so, this is partly because particular understandings of its meaning have developed through the research and its context.

To search the existing data for instances of the word 'responsibility' on the strength of its identification as a potential adaptive concept, however, and then perhaps to seek to use it as a basis for comparisons within, or analysis of that data, would be to fall into precisely the trap identified by Kaplan (1988, p.88). Once decontextualised, the characteristics by which the word 'responsibility' is 'delimited' revert, in effect, to being no more than its particular sequence of 14 letters.

These comments amount to an important general limitation on the uses to which it is proposed that adaptive concepts might be put.

A number of other items indicated rather strong and widespread tensions in the thinking of students. One such was:

Item 30

Rapid scientific and technological development is desirable

Traditional technologies and ways of living should be maintained

dilemma: 67 per cent

tension: 78.5 per cent

A similar item had been used in Case Study One (item 39) with the results:

dilemma: 73 per cent

tension: 86 per cent

It was suggested in consequence of this result in Case Study One that 'technology' might be a suitable candidate to become an adaptive concept (see Chapter 7). A further item in Case Study Three also suggested that this might be so:

Item 35

Technology makes life easier

Technology makes us lazy

dilemma: 79.5 per cent

tension: 86.5 per cent

Another possible adaptive concept, 'value', had emerged during the literature search. A certain amount of further evidence to support its designation as such emerged during the 1997 design and quality interventions, subject to the acceptability of a certain amount of interpretation on the part of this researcher. For example:

Item 32 (second quality intervention)

Careful measurement makes it possible to monitor environmental impacts

Loss of natural beauty is an important environmental impact which cannot be measured

dilemma: 63 per cent

tension: 80.5 per cent

and:

Item 130 (design intervention)

The costs of tourism development should be carefully and accurately calculated

The cost of lost customs, traditions, values, habitats, species and natural beauty cannot be calculated

dilemma: 61 per cent

tension: 78 per cent

Neither of these items specifically mentions 'value', and in neither did an exceptionally large proportion of students record a dilemma. However, both pairs of statements do seem to raise questions about the value of things which might be of interest to an environmental educator. I personally would have considered using 'value' experimentally as an adaptive concept in this context, on the strength of these results, if it had seemed for any particular reason opportune to do so. Such opportunity might have arisen, for example, because of a special interest or enthusiasm expressed by a participating teacher, or because of a concurrent government or college initiative which seemed to involve issues of relative 'value', or because of any contemporary news event which seemed likely to have raised questions of relative 'value' in the minds of students. Such an approach to the use of adaptive concepts would guarantee nothing in terms of outcomes, but might be argued to be a practical step towards environmental education as a collaborative endeavour by students and teachers (Huckle, 1983b).

Some items produced quiet strong evidence of tension, but did not seem to be 'problems' in the sense defined by Winter (1982). This meant that, according to the procedures adopted throughout this research, their claim to be the focus of new possible adaptive concepts was weakened. One such example was:

Item 42

Development requires hard work and competitive business activity

The purpose of development is to make life more comfortable and easier

dilemma: 74.5 per cent

tension: 81 per cent

It might be argued that balancing hard work and ease is a matter of 'skill'. This dilemma might therefore best be classified as a 'judgement'. Further, any claim of the word 'development' to become an adaptive concept was further weakened by the responses to:

Item 42

Development can make life safer.

Development can lead to more crime and the black market

dilemma: 22.5 per cent

tension: 48.5 per cent

Finally, it was perhaps not surprising that some items which produced strong indications of tension in the thinking of students seemed to lead back towards, rather than onward from, the notion of quality as an adaptive concept. This may be illustrated by, for example:

Item 62

Products should be long-lasting and durable

Products should be bio-degradable

dilemma: 69 per cent

tension: 86 per cent

Durability and biodegradability may be seen as qualities of products which constitute part of the differential perception, by different individuals, of their overall quality.

The 'Review Exercise'

The 'review exercise' took place on 15 September 1997. This was almost exactly six months after the second quality week intervention, and almost exactly one month before the students would leave the college on final study leave. The exercise involved a convenience sample **[4]** of 46 students who had participated in both the design week intervention and the second quality week intervention. Its purpose was to provide a rough check of whether students were likely to refer to environmental issues in the context of their management examination. It may be appropriate to repeat that neither the examination syllabus, nor any of the textbooks or materials used by the department (other than those produced in the course of this research), referred to environmental issues other than in the most cursory fashion.

The syllabus did, however, require that students show ability to illustrate their arguments with reference to specific, local examples. With no prompting, guidance or forewarning, students in the sample were therefore asked to state in writing which local examples they would draw on to illustrate their understanding of management, under each of the six headings of the syllabus. The environment was not mentioned at any time during this briefing, which was conducted by this researcher. Thirty minutes was allowed. The six headings were:

- Business and its environment
- People in organisations
- Marketing
- Production
- Finance
- The accounting function

Responses were checked by this researcher to identify instances in which examples of some apparent environmental significance had been used. It was found that 35 of the 46 students (76 per cent) had made some use of at least one environment related example. The following extracts illustrate some of this work. They are presented exactly as written by the students.

Business and its environment: "Tourism in Brunei can be an example of business and its environment. As Brunei is trying to achieve SHuTT by 2003, it will provide everything that is necessary for business activities to take place within the country. Other than that...the unspoilt natural beauty of the country can be used to promote Brunei as a 'green' country and ecotourism can be exercised...Brunei will be a place which values tradition and culture so giving a chance for tourists to experience local lifestyles"

Marketing: "Another hill in Jerudong has disappeared just for the development of that particular area. If that hill and trees were still untouched, there might be a chance for a new niche market to be created"

Production: "The value of natural assets or use of raw materials are calculated in the sense of the quality of the product. The reduction in the quality of the product shows and informed the wearing of assets and products. Environmental damages resulted by the waste from factories are also calculated to see the loss of environment or natural quality of the beautiful scenery of Brunei"

The accounting function: "In relation to the new Jerudong Hotel which is currently in the finishing process, there is a big opportunity cost involved in setting up the tourist attraction...that is the natural beauty of the so called 'stretch beach' **[5]** of Jerudong where local people can enjoy the sea-side and also fish there for their weekly income"

The only claim I would make as a result of the review exercise was that most students appeared to perceive local environmental issues as a legitimate business concern, and to attach importance to them.

The review exercise was the final means by which data were collected in this research.

ENDNOTES TO CHAPTER 13

1. This conference room was equipped with the very latest in conference technology, including individual video monitors at each seat to which Pg. Shamhary's slides, and video clips, were relayed. All this was quite impressive, but may have pushed the (quality) issues at hand from the front of some students' minds. I was not able to establish whether a feature of the conference room in the previous Ministry of Development building - a one-way mirror through which discussants could be secretly observed - had been retained.
2. It had been made available to him in advance.
3. To recap, the three categories are:
    - 'Ambiguities': These are "background awarenesses" (Winter, 1982, p.169) of the complexities of the research setting which do not, however, directly refer to any required course of action on the part of the respondent
    - 'Judgements': Tension exists in a context which requires the respondent to select a course of action. However, achievement of a satisfactory outcome is perceived to be possible provided the difficulties of the situation are handled with sufficient skill
    - 'Problems': Possible or required courses of action appear to be undermined or rendered invalid by the tensions inherent in the situation.

4. These were simply three regular classes who had already finished the syllabus. Their teachers were therefore happy for them to be employed in this way.
5. I had never heard this expression before.

CHAPTER FOURTEEN

CONCLUSIONS AND PERSONAL REFLECTIONS

Rigour and trustworthiness

Cantrell (1993, p.100) has argued that different approaches to educational research require different perspectives for the assessment of their rigour and trustworthiness. That such rigour and trustworthiness are both possible and desirable in interpretive, qualitative, social research she does not doubt, and this is a view which has attracted strong and widespread support (e.g. Miles and Huberman, 1984; Lincoln and Guba, 1985; Robinson, 1993a; Silverman, 1993; Bryman and Burgess, 1994). However, different research approaches, Cantrell (1993) believes, demand substantially different evaluative criteria because they are aiming to make different kinds of contributions to knowledge. The strength of this point seems evident on historical grounds (Husen, 1988, pp.17-18; Cantrell, 1993, pp.82-84), though it appears to be not everywhere unambiguously accepted (see, for example, Smith-Sebasto, in press).

Consideration of the set of research issues broadly encompassed by the terms rigour and trustworthiness has been woven into the fabric of this thesis. In attempting now to draw those threads together, I refer to two sets of categories drawn from the literature. The first seeks to delineate more detailed headings under which to think about issues of rigour and trustworthiness in interpretive educational research, while the second provides a classificatory framework for the outputs of such research.

1. Cantrell (1993), following Lincoln and Guba (1985), suggests that interpretive research should be critically scrutinised according to criteria of:

- credibility. This corresponds to the notion of internal validity. As Zeller (1988, p.322) has written, "an indicator of some abstract concept is valid to the extent that it measures what it purports to measure". Therefore, for example, a student's loose network which showed concern for the preservation of coastal mangroves would be valid if the student genuinely felt such concern, but invalid if that concern had been expressed only for an ulterior purpose, such as obtaining praise from a teacher
- transferability. This corresponds to the notions of external validity (Cantrell, 1993, p.100) and generalisability (Lincoln and Guba, 1985, p.104). In this research external validity would be compromised if, for example, it were subsequently found that the adaptive concept 'quality' failed as a means of introducing environmental education into a similar management programme at a similar college
- dependability. This corresponds to the notion of reliability which, according to Thorndike (1988, p.330), is a measure of "how accurately the test sample represents the broader universe of responses from which it is drawn". Use of the adaptive concept 'quality' would have been shown to be unreliable in introducing environmental education into the management education programme of Maktab Duli if it had succeeded with the 1996 cohort of students but failed with the 1997 cohort
- confirmability. This is concerned with the neutrality of the researcher, and equates to the term 'objectivity'

It should be noted, however, that these terms by no means represent distinct conceptual entities. Credibility (or internal validity) is impossible without dependability (or reliability) (Lincoln and Guba, 1985, p.120). This is to say that truth cannot be established by a method or instrument of uncertain accuracy. Transferability (or external validity) is impossible without credibility (or internal validity) (Lincoln and Guba, 1985, p.115), that is, false understanding of a sample cannot provide true insight into a wider research universe. One practical consequence

of these interrelationships is that terminology is often confusing. For example, Lincoln and Guba (1985, p.104) use the term 'generalisability' as synonymous with 'external validity'; while for Thorndike (1988, p.330), following Cronbach *et al* (1972), 'generalisability' is compounded of both validity and reliability.

2. Marklund and Keeves (1988, pp.189-90) suggest that the outcomes of educational research may be classified under three headings:

- knowledge which is used in an instrumental or applied fashion
- conceptual, or cumulative knowledge
- tangible products for use in schools, homes or other settings

Table Six uses these two sets of headings to organise and re-present some of the principal ways in which attention was paid in this research to the issues raised above. In the light of this table, and of the more detailed discussions of issues of rigour and trustworthiness elsewhere in the text of this thesis, it seems possible to make certain limited claims in terms of the aims of this research.

Achieving the aims of this research

Research aim one: to identify adaptive concepts within the shared context of environmental education, environmental management and economic development

A total of thirty possible adaptive concepts were identified during this research. Of these, twenty-four arose from the initial literature review, and six from the use of loose networks and perspective documents within the research process. An adaptive concept was defined as, *an enabling idea which holds the possibility of being able to facilitate discourse between disparate, or possibly hostile individuals and groups. It is an idea, a property or a value which has established importance in environmental education theory and practice, and is also recognisably significant within the*

TABLE 6:
Aspects of trustworthiness in some outputs of this research

Aspects of trustworthiness	Research outputs: instrumental knowledge	conceptual knowledge	tangible products
credibility	Adaptive concepts 'quality and 'design' successful in introducing environmental education into Maktab Duli management education programme. Credibility increased by triangulation of: analysis of students' loose network analysis; teacher evaluations; criteria drawn from multiple environmental education research paradigms; criteria for teaching and learning drawn from outside environmental education; monthly test/review exercise	1. Interpretive understanding of social context. Credibility increased through use of perspective documents to check loose-network findings with respondents 2. Interpretive understanding of curriculum context (environmental education, environmental management, economic development). Credibility increased by enhancement of teaching and learning	Resource booklets were credible tools of innovation to the extent they were accepted by research participants, and achieved environmental education goals as described. Adaptive concepts, loose networks and perspective documents were credible tools to the extent that they aided the research aims. Students submissions were credible research products to the extent they were deemed appropriate by students, teachers and other stakeholders
transferability	Rules for drawing up loose networks and also for identifying potential adaptive concepts through dilemma analysis. Procedures for evaluating the effectiveness of any particular adaptive concept	1. Interpretive understanding of social context may inform thoughtful use of adaptive concepts in similar social contexts 2. Interpretive understanding of the curriculum context may inform thoughtful use of adaptive concepts in similar curriculum innovations	Thoughtful adaptation to each specific context required
dependability	Use of similar quality materials with second cohort. Precise replication not possible given that an embedded, developing innovation was sought. Re-use and re-evaluation of techniques of coding and member-checking in similar contexts	Exact replication of interpretive understanding of dynamic contexts over time would not be expected. A finding of explicable, developmental change in these contexts would be consistent with dependable analysis	Re-use of research products in identical context not attempted or expected
confirmability	Focus on written data from students. Triangulation by written data from teachers	Strict objectivity not possible. Confirmability of interpretation of contextual factors enhanced by triangulation	Only possible long-term through the establishment of an archive of evidence

literatures of environmental management and economic development (see Chapter 1). It was also suggested (see Chapter 11) that without alteration to this definition it might be possible for a painting, a photograph, or some other symbol to fulfil the role of an adaptive concept. However, this remains a speculative idea.

Research aim two: to use two such adaptive concepts to develop environmental education interventions in a management education programme in Brunei, a developing country. To evaluate these interventions in terms of the effectiveness of teaching and learning

An environmental education intervention was established in this specific management education programme, using the adaptive concepts 'quality' and 'design'. There appeared to be gains in terms of teaching and learning from the points of view of both environmental education and management education. As with any case study, transferability or generalisablity to other cases cannot be demonstrated. However, Adelman, Kemmis and Jenkins (1980, p.60) note that careful generalisation may be possible from the specific instance to the class of such instances, and Robinson (1993a, p.133) has refined this idea by suggesting that generalisability is possible where case study findings can be linked, through confirmation or challenge, to wider, more abstract, pre-existing knowledge claims. It seems likely that this research might usefully inform any attempt to introduce environmental education into management education programmes in other social or curriculum contexts. However, the precise use made of this research's context-specific findings would be a matter for thought and judgement on the part of those involved. As Stenhouse (1988) has written:

> Generalization and application are matters for judgement rather than for calculation, and the task of case study is to produce ordered reports of experience which invite judgement and offer evidence to which judgement can appeal
> (Stenhouse, 1988, p.49)

Research aim three: to make a preliminary evaluation of the usefulness of adaptive concepts as a way of introducing environmental education into such mangement education programmes

In this particular case the adaptive concepts 'quality' and 'design' were found to be effective in the ways, and to the extent, described in earlier chapters. However, it was also noted that these adaptive concepts could be deployed with more or less skill. For example, results from the 'design' perspective document seemed to suggest that the materials used by students during Case Study Two were less than ideal (see Chapter 10). In particular, it was suggested that to be effective materials should as far as possible oblige students to engage with all possible "contradictory knowledges" (Thompson, 1997, p.142) pertaining to the context in which an adaptive concept is being used. Finally, to fully evaluate the usefulness of adaptive concepts one would need to establish a substantial archive of experience of their use. This research offers only a very small first step in that direction. It was not found that an adaptive concept identified during the research process ('design') was to any noticeable extent more successful than one originally identified solely from the literature ('quality'). There was some evidence, however, that benefits in teaching and learning accrued from employing the same adaptive concept ('quality') with successive cohorts of students. That this might be so was most evident from the evaluations of participating teachers. In particular, there were signs that individuals were thinking about adaptation and development of the intervention around its core materials. The following extracts from Case Study Three teacher evaluations illustrate this:

> fine - although my group appreciated the general stuff on ISO (BS), lean production, TQM and the various ISO specification pamphlets. Introductory exercise OK - I did some general stuff on Q.A. and Q.C. (SE)

Quite a lot better than last year. This year with generally a less able class, the projects were a lot better

(RS)

Improvement over last year. Introductory exercise perfect. Group work debateable, good option but still for selected students while others should work alone. More information on Government objectives in this regard is needed

(AL)

Could be a 'fitting' series of tasks at any college. In fact, simplified versions for primary and secondary could be used

(BH)

Loose networks

In Chapter 6 it was argued that a satisfactory coding technique for the data generated through this research should:

- facilitate both 'looking in' and 'looking out', that is, it should re-present data in ways meaningful both to respondents and to this researcher's professional peers, so promoting the identification and elucidation of links both within the data, and between the data and more abstract theoretical knowledge and principles
- facilitate analysis
- permit the derivation of theory
- facilitate data retrieval
- facilitate the ongoing generation of coding categories
- permit the separation and problematisation of this researcher's own preconceptions about the research setting
- permit testing of internal validity

- be based upon simple-to-use rules and procedures

The text of this thesis supports, I believe, a claim that loose networks as used in this research have contributed the achievement of all these purposes, with two qualifications. First, testing for internal validity was not achieved through the loose networks themselves, but through member checking (by means of the perspective documents) and triangulation (by means, for example, of teacher evaluations, monthly test/review exercise data, focus group data). Secondly, loose network coding of teacher evaluation documents was found to be of decreasing value as this research progressed. This is to say that while this researcher found teachers' loose networks very helpful in reflecting upon Case Study One, by the time of Case Study Three it seemed more useful to refer directly to the original, individual documents which teachers had produced. I cannot say why this was so. Two possible reasons might be that:

1. A degree of learning-by-doing on the part of this researcher had taken place. In Chapter Six it was noted that loose network coding of teachers' evaluation reports was mostly for purposes of:

   - identifying connections between ideas made by teachers
   - identifying other possible connections between ideas in the thinking of teachers
   - facilitating comparison between the ideas of different teachers

   and that data reduction and retrieval were in this case (as opposed to that of the students' written data) relatively unimportant. By the end of Case Study Three this researcher was very intimately engaged with the thinking of these teachers. Clearly there was a danger of complacency therefore, and for this reason the teachers' evaluation reports were coded, lest they reveal unpleasant surprises. In the event, they did not do so.

2. An increased independence and sense of ownership of the research innovations on the part of teachers has been noted at several points in this thesis (see especially Chapters 10 and 12). This meant that it made less sense to treat teachers as a coherent group within the research, and more sense to treat them as individuals. Clearly, the main advantages from loose network coding would accrue if they were to be treated as a group.

Dilemma analysis

In this research, dilemma analysis was used to:

- establish the frequency with which tensions identified from the students' loose networks were present in the total student sample
- indicate the relative strengths of those tensions
- facilitate improvements in overall comprehension of both the data and the research setting itself
- aid progress towards the development of standard procedures for the identification of adaptive concepts

The approach used was different from that of Winter (1982) in one important respect. Winter's purpose was to establish distinct profiles for different social groups within the research setting. In this research the purpose was to explore the similarlities and differences between social actors *within* a single social group (the student cohort). For this reason one issue, that of which 'dilemmas' to *exclude* from each group's perspective document in order to increase the chances of whole-group assent, was a major concern for Winter. It was irrelevant in this research, however, since whole group assent was not sought. Simply, therefore, any 'dilemma' that *might* be included in the perspective document by virtue of its having been suggested by students' loose networks, *was* so included.

The perspective document approach did suggest further possible adaptive concepts, and rules by which these might be identified, as well as large quantities of data relating both to the research setting itself, and to the data which this research had produced at earlier stages of analysis (See Chapters 7, 11 and 13).

Adaptive concepts: further thoughts

It is suggested above that two specific adaptive concepts successfully played a fundamental role in the curriculum innovation which is the subject of this thesis. Whether these, or other, adaptive concepts have a possible role in other, more-or-less similar contexts of curriculum innovation remains to be seen. However, the experience of this research suggests to this researcher that any adaptive concept is more likely to be found useful if it is capable, in the specific context under consideration, of meeting an additional, and rather stringent, criterion. This is that it must not only be, 'of established importance in environmental education theory and practice, and also recognisably significant within the literatures of environmental management and economic development', but must also be of fundamental significance to all those people who are stakeholders in the innovation *in their normal, day-to-day, routine activities*. Hence 'quality', for example, was something which *all* the principal stakeholders (including the environmental education academy - this was, after all, qualitative research) would have been likely to have thought and talked about during the periods of 11 - 16 March 1996 and 17 - 24 March 1997, even if there had been no 'quality week' interventions *at all* at those times. That each group of stakeholders would probably have understood something different by the word 'quality' was, of course, precisely its strength as an adaptive concept.

A particular consequence of this is that the term 'sustainable development' itself seems unlikey to be useful as an adaptive concept. Sauve (1998), for example, does identify the apparent power of this term to engage a wide range of social groups in discussion as one of its strengths. Nevertheless, it is one thing for an individual or

group to be interested in a concept, and quite another for them to feel that it is integral to what they do and who they are. The greater the extent to which this latter condition is met, I suggest, the greater is the potential for successful environmental education using that concept as an adaptive concept.

Cultural theory

Cultural theory provided a theoretical basis upon which this research was based. In particular, it was from cultural theory, and the writings of its advocates (especially, James and Thompson, 1989; Schwarz and Thompson, 1990; Thompson, 1990, 1997), that the notion of an adaptive concept developed.

James and Thompson (1989) claim that the framework of competing/complementary rationalities, which they identify as representing the basis of cultural responses to uncertainty and risk (see Chapter 1, also Figure 1), represents enduring, fundamental characteristics of social relationships. This is a big claim. This research entertains no pretensions either to confirm or refute it. However, a hypothesis for which it may be claimed that this research *does* offer some support is that cultural theory is a useful tool by which cultural complexity may be made manageable. Archer (1988) has noted that culture has often tended to be regarded, for purposes of social explanation, as either a dominant independent variable of immense complexity upon which all else depends, or as a largely dependent social characteristic determined by other factors and straightforwardly amenable to purposeful external influence. Cultural theory offers a possible framework for considering aspects of cultural phenomena in environmental education which avoids both the sense of helplessness which the first of these views seems likely to induce, and the oversimplification intrinsic to the second.

This more modest view of the significance of cultural theory leaves open the question, 'what else do individual, group, or institutional cultures have *besides* a

particular organisational rationality?' (see, for example, Chapters 9 and 12). It may, therefore, provide a starting-point for the exploration of culturally-complex situations, without also imposing a limit on the degree of complexity ultimately explored.

The teacher as researcher: this researcher as teacher

During all phases of data collection in this research, this researcher was also a teacher at Maktab Duli. The growth of support for the notion of teacher-as-researcher was described in 1988 as "a significant development" (Stenhouse, 1988, p.50), and again in 1999 as "one of the most interesting and potentially valuable developments in recent years" (Verma and Mallick, 1999, p.182). In environmental education research the involvement of teachers in the research process has been particularly strongly advocated under the banner of participatory, or emancipatory, action research (Robottom, 1987a; Robottom and Hart, 1993). Such action research has, however, been critiqued by Walker (1997), on the grounds that it does not adequately respect knowledge which teachers themselves may bring to the research setting. Robinson (1993a) provides an alternative view of collaborative research in which the researcher retains a degree of separateness from teachers (see Chapter 3).

A feature of interpretive enquiry is that the researcher sets out to discover not only answers, but also appropriate questions. As Taft (1988) has written:

> The investigator is more concerned with discovery than with verification and this requires preparedness to formulate, test, and, if necessary, discard a series of hunches
> (Taft, 1988, p.62)

If one believes, therefore, that teachers are likely to be the source of appropriate *research* questions then all is well with the idea of teacher as researcher. However, it

was noted in Chapter 1 that social problems are not the same thing as social research problems. Both Robottom and Hart (1993, p.45) and Verma and Mallick (1999, pp.185-187) suggest that greater involvement of teachers in the setting of educational research agendas will lead to a focus on more 'appropriate' problems. For Robottom and Hart (1993) these problems concern the resolution of a perceived ecological crisis, while for Verma and Mallick (1999) they relate to a perceived failure of educational research to provide 'value for money' (Hargreaves, 1996). Both these analyses conflate the idea of a *research* problem with that of a *social* problem. In Robottom and Hart's (1993) case this is explicity done. In Verma and Mallick's (1999) work it is tacitly done, and might be argued to result from an unwitting failure adequately to contextualise both contemporary writings on educational research, and their own work (Grace, 1998).

Given the above, it may be most appropriate for a teacher-researcher to have recourse to a research context (in the case of this researcher this was the University of Bath) in which research problems can be treated apart from those social problems which frame the research setting itself. This would be consistent with the view of Robinson (1993b, p.119), who argues for educational research which, though it starts from the theories of practitioners, also offers an 'outsider critique'. Further, it would provide the teacher-researcher with neutral ground from which to reflect upon the inevitable problems (and advantages) of being both observer and responsible participant in the research setting (Stenhouse, 1988, p.50).

Environmental education, sustainable development, and the Abode of Peace

Debates about the meaning, and the possibility, of sustainable development formed an important part of the background to this research at its inception (see Chapter 1). These debates have not yet reached any conclusion. Neither has the question of the proper relationship between environmental education and sustainable development been settled (Jickling and Spork, 1998; Sauve, 1998; Huckle, 1998). Further, though

the value of prepositional forms of environmental education such as *for* the environment, *in* the environment, *about* the environment (Lucas, 1979) has been questioned (Jickling, 1992; Jickling and Spork, 1998; Scott and Oulton, 1999), new ones, including 'education for sustainable development' (Hopkins, Damlamian and López Ospina 1996) have appeared, and continue to attract support.

A number of other aspects to the background of this research were also identified at, or near, the outset. These included:

- the significance for environmental outcomes of policies and processes of environmental management and economic development
- the need for various kinds of sensitivity to the research context (Silverman, 1993)
- the adoption, as foundational to this research, of a coevolutionary view of the relationship between society and the physical environment (Norgaard, 1984)

Finally, of course, the small state of Brunei, and developments within it, formed a significant part of the background to this research. Bruneians call their country 'Darussalam', which means 'the Abode of Peace'. During the period of this research the peace was shaken by cultural turmoil (largely resulting from the actions of members of the Royal family who had adopted what might be termed the 'glossier' aspects of a wealthy Western lifestyle) and environmental catastrophe (largely resulting from the deliberate burning-off of vegetation). It was also, and more insidiously, eroded by processes of economic development and environmental management which were typically conceived in instrumental (not coevolutionary) terms, which were transferred from one cultural context to another with no apparent sensitivity to possible consequences or implications, and which took place under the auspices of a government unswerving in its public commitment to both sustainable development and environmental education.

To despair at all this, however, would in my view be to misperceive the boundaries of the possible. The aims of this research were educational, and were achieved, within the limits described in this thesis, in educational terms. Indeed, it does not seem to me that education has any credible role to play in imposing a plan upon nature.

The experience of this research suggests, however, that many of the young people who participated were, in fact, confronted on a daily basis by two such plans. One of these idealised 'development', while the other idealised 'tradition'.

If it will not do for management education to support the idealisation of 'development', neither will it do for environmental education to support the idealisation of 'tradition'. For many individuals in Brunei, and across Borneo, lifestyles which were practised for all living memory are not threatened but, simply, finished. Choices have to be made today about how to live until tomorrow, in contexts where the rivers *are* silted up and the jungle *has already* disappeared. There is a need for environmental education to break with both idealised pasts and idealised futures, and to focus instead, day-by-day, on the uncertain, complex, present. Personally, I would go further. There was, I suggest, no glorious beginning to our tenure of this planet, and neither will there be a glorious end. There will only be a better journey or a worse one.

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ANNEX 1

International Standard ISO 14000: An overview

History of Development

The ISO 14000 series emerged primarily as a result of the Uruguay round of the GATT negotiations and the Rio Summit on the Environment held in 1992. While GATT concentrates on the need to reduce non-tariff barriers to trade, the Rio Summit generated a commitment to protection of the environment across the world. The environmental field has seen a steady growth of national and regional standards. The British Standards Institution has BS 7750, the Canadian Standards Association has environmental management, auditing, eco-labeling and other standards, the European Union has all of these plus the eco-management and audit regulations, and many other countries (e.g. USA, Germany and Japan) have introduced eco-labeling programs.

After the rapid acceptance of ISO 9000, and the increase of environmental standards around the world, ISO assessed the need for international environmental management standards. They formed the Strategic Advisory Group on the Environment (SAGE) in 1991, to consider whether such standards could serve to:

* Promote a common approach to environmental management similar to quality management;
* Enhance organizations' ability to attain and measure improvements in environmental performance; and
* Facilitate trade and remove trade barriers.

In 1992, SAGE's recommendations created a new committee, TC 207, for international environmental management standards. The committee, and its sub-committees include representatives from industry, standards organizations, government and environmental organizations from many countries. The new series of ISO14000 standards are designed to cover:

* environmental management systems
* environmental auditing
* environmental performance evaluation
* environmental labeling
* life-cycle assessment
* environmental aspects in product standards

Why have these new standards ?

A set of international standards brings a world-wide focus to the environment, encouraging a cleaner, safer, healthier world for us all. The existence of the standards allows organizations to focus environmental efforts against an internationally accepted criteria.

At present many countries and regional groupings are generating their own requirements for environmentla issues, and these vary between the groups. A single standard will ensure that there are no conflicts between regional interpretations of good environmental pactice.

The fact that companies may need environmental management certification to compete in the global marketplace could easily overshadow all ethical reasons for environmental management. Within Europe, many organizations gained ISO9000 Registration primarily to meet growing demands from customers. ISO 9000 quality registration has become necessary to do business in many areas of commerce. Similarly, the ISO 14000 management system registration may become the primary requirement for doing business in many regions or industries.

Who do the standards apply to ?

The standards apply to all types and sizes of organizations and are designed to encompass diverse geographical, cultural and social conditions. For ISO14001, except for committing to continual improvement and compliance with applicable legislation and regulations, the standard does not establish absolute requirements for environmental performance. Many organizations, engaged in similar activities, may have widely different environmental management systems and performance, and may all comply with ISO14001.

What do the standards apply to ?

This is primarily for the company to decide, and to clearly document the extent of coverage. However, limiting coverage to a small [inconsequential] area may provide competitors with an ideal marketing opportunity!.
There does not appear to be a limit to the coverage of the environmental management system in that it can include the organization's products, services, activities, operations, facilities, transportation, etc.
From a slightly different viewpoint, all of the elements in the previous sentence should be considered for environmental impact resulting from current practices, past practices and future practices, ...and should

further be reviewed for their impact under normal, abnormal and emergency conditions.

What does the ISO 14000 Series cover ?

The best way to answer this question is to provide a list of the proposed standards:

Standard Title / Description

14000 Guide to Environmental Management Principles, Systems and Supporting Techniques

14001 Environmental Management Systems - Specification with Guidance for Use

14010 Guidelines for Environmental Auditing - General Principles of Environmental Auditing

Guidelines for Environmental Auditing - Audit
14011 Procedures-Part 1: Auditing of Environmental Management Systems

Guidelines for Environmental Auditing -
14012 Qualification Criteria for Environmental Auditors

14013/15 Guidelines for Environmental Auditing - Audit Programmes, Reviews & Assessments

14020/23 Environmental Labeling

Environmental Labeling - Practitioner
14024 Programs - Guiding Principles, Practices and Certification Procedures of Multiple Criteria Programs

14031/32 Guidelines on Environmental Performance Evaluation

14040/43 Life Cycle Assessment General Principles and Practices

14050 Glossary

14060 Guide for the Inclusion of Environmental Aspects in Product Standards

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General Description of ISO14001

ISO14001 requires an Environmental Policy to be in existence within the organisation, fully supported by senior management, and outlining the policies of the company, not only to the staff but to the public. The policy needs to clarify compliance with Environmental Legislation that may effect the organization and stress a commitment to continuous improvement. Emphasis has been placed on policy as this provides the direction for the remainder of the Management System.

Those companies who have witnessed ISO9000 Assessments will know that the policy is frequently discussed during the assessment, many staff are asked if they understand or are aware of the policy, and any problems associated with the policy are seldom serious. The Environmental Policy is different, this provides the initial foundation and direction for the Management System and will be more stringently reviewed than a similar ISO9000 policy. The statement must be publicised in non-technical language so that it can be understood by the majority of readers. It should relate to the sites within the organisation encompassed by the Management System, it should provide an overview of the company's activities on the site and a description of those activities. A clear picture of the company's operations.

The preparatory review and definition of the organization's environmental effects is not part of a ISO14001 Assessment, however examination of this data will provide an external audit with a wealth of information on the methods adopted by the company. The preparatory review itself should be comprehensive in consideration of input processes and output at the site. This review should be designed to identify all relevant environmental aspects that may arise from existence on the site. These may relate to current operations, they may relate to future, perhaps even unplanned future activities, and they will certainly relate to the activities performed on site in the past (i.e. contamination of land).

The initial or preparatory review will also include a wide-ranging consideration of the legislation which may effect the site, whether it is currently being complied with, and perhaps even whether copies of the legislation are available. Many of the environmental assessments undertaken already have highlighted that companies are often unaware of ALL of the legislation that affects them, and being unaware, are often not meeting the requirements of that legislation.

The company will declare its primary environmental objectives, those that can have most environmental impact. In order to gain most benefit these will become the primary areas of consideration within the improvement process, and the companyÕs environmental program. The program will be the plan to achieve specific goals or targets along the route to a specific goal and describe the means to reach those objectives such that they are real and achievable. The Environmental Management System provides further detail on the environmental program. The EMS establishes procedures, work instructions and controls to ensure that implementation of the policy and achievement of the targets can become a reality. Communication is a vital factor, enabling people in the organisation to be aware of their responsibilities, aware of the objectives of the scheme, and able to contribute to its success.

As with ISO9000 the Environmental Management System requires a planned comprehensive periodic audit of the Environmental Management System to ensure that it is effective in operation, is meeting specified goals, and the system continues to perform in accordance with relevant regulations and standards. The audits are designed to provide additional information in order to exercise effective management of the system, providing information on practices which differ to the current procedures or offer an opportunity for improvement.

In addition to audit, there is a requirement for Management Review of the system to ensure that it is suitable (for the organization and the objectives) and effective in operation. The management review is the ideal forum to make decisions on how to improve for the future.

ANNEX 2

The 'staff questionnaire'

To all staff colleagues at MDPMAMB.
This is a request for help. Next term, all MOB students will be working on quality, in particular international quality standards such as ISO 9000 and ISO 14000. The unit of work I am preparing for them (in conjunction, I should say, with my own studies with Bath University in the UK) requires students to have access to raw data on attitudes to quality and environmental standards within organisations.
I WOULD BE MOST GRATEFUL IF YOU WOULD HELP US BY TAKING FIVE MINUTES before the end of term TO COMPLETE THE FOLLOWING 20 ITEMS. PLEASE THEN RETURN THIS SHEET TO MY PIGEON HOLE.
Simply rate each item on the scale 1-5 by ticking or circling the appropriate number in each case.

1 = strongly agree. 2 = agree. 3 = no opinion. 4 = disagree. 5 = strongly disagree.

Thank you for your help.
Steve Gough.

1 = Strongly agree
2 = Agree
3 = No opinion
4 = Disagree
5 = Strongly disagree

- Business should be about exploiting natural resources for the benefit of the human race. 1 2 3 4 5

- Management teachers should avoid discussion of controversial business issues. 1 2 3 4 5

- Environmental standards should be set by law for all businesses and organisations. 1 2 3 4 5

- Local business should be encouraged to expand as much and as quickly as possible. 1 2 3 4 5

- Managers should concentrate on being efficient and profitable. They should leave environmental matters to the Government. 1 2 3 4 5

- Schools and colleges should have a recycling policy. 1 2 3 4 5

- Non-traditional subjects like Management should not be taught in sixth-form colleges. 1 2 3 4 5

- I would prefer to buy from companies with environmentally-friendly policies, even if the price was a little higher. 1 2 3 4 5

- To achieve quality products should be a central concern of modern business. 1 2 3 4 5

- If foreigners want to save the rainforests they should compensate tropical countries for the loss of logging revenue. 1 2 3 4 5

- Companies should be responsible for damage caused by their products, however far in the future such damage occurs. 1 2 3 4 5

- Western business and management has much to learn from traditional Malay and Chinese business practice. 1 2 3 4 5

- Schools and colleges should conduct regular waste-audits. 1 2 3 4 5

- All development should be sustainable. 1 2 3 4 5

- It would not be appropriate for a college like MDPMAMB to have an environmental policy and action plan. 1 2 3 4 5

- "Big business" is a threat to freedom. 1 2 3 4 5

- All large organisations should have an environmental standards officer. 1 2 3 4 5

- Americans and European countries are right not to buy from suppliers in developing countries whose environmental performance is poor. 1 2 3 4 5

- Economic growth and development have serious environmental and social disadvantages. 1 2 3 4 5

- An important aspect of production quality is avoidance of waste or environmental damage. 1 2 3 4 5

Thank you! ***Steve.***

Annex 3

The quality week booklet

QUALITY

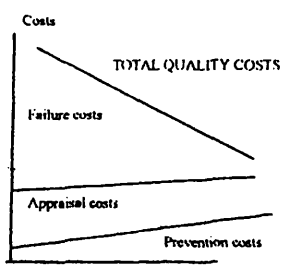
ISO 9000 AND ISO 14000 IN BRUNEI DARUSSALAM

Instructions: This booklet is a special unit of work on QUALITY. Quality is part of MOB syllabus sections 3 (marketing) and 4 (production). In 1996, quality is a business issue of particular importance, both internationally and here in Brunei.

This booklet contains 5 pages of information and 4 exercises -to be completed over a period of 5 days. The exercises will be collected and marked. The information and exercises are relevant to your monthly test for March. You are encouraged to discuss your answers with other students. Please work in groups of 2-4 students.

TQM

Total quality management (TQM) aims not to detect faulty products but to prevent them from occuring at all.
Research has shown that in manufacturing the cost of faulty work can equal 10% of sales turnover. Although TQM is costly to implement, because of the appraisal costs of checking materials, processes, products and suppliers, and the prevention costs of running a TQM system, total costs fall as the failure cost of faulty work is eliminated.
A key feature of TQM is the use of team work, through quality circles and quality teams.



Moving L to R on horizontal axis shows increasing quality.
Failure costs fall faster than appraisal and prevention costs rise.
Total quality related costs fall.

ISO 9000

ISO 9000 is an international standard set by the International Standardization Organisation in Geneva. If a company is accredited to ISO 9000 its customers can be sure that:

- it has installed a quality management system which is regularly checked (audited) by an independent agency.
- its products are of a consistent and specified quality.
- it has permanent quality control and management procedures.

The Ministry of Development promotes the PBD (Piawai Brunei Darussalam) ISO 9000 series of standards through its Construction Planning and Research Unit.

ISO 14000

This standard builds on ISO 9000 to ensure that quality products are not produced at the expense of the environment. ISO 14000 commits companies to undertake a review of their environmental performance, to comply with local and international law, and to establish a process of continuous improvement in environmental performance.
A most important feature is that ISO 14000 companies are required to choose other ISO 14000 companies as suppliers where possible. Many Asian countries sell to the EU and USA, and may well need ISO 14000 to keep this business. Other advantages include:

- marketing advantage
- reduced danger of expensive legal liability for environmental damage
- reduced cost of waste
- improved health and safety
- improved social responsibility
- reduced cost of meeting new legal requirements in the future.

Example: *Mercury soap* is a product banned in many countries. It is poisonous. This product *could* be manufactured to ISO 9000 and then marketed unethically. It could *not* be manufactured to ISO 14000.

WHAT MAKTAB DULI STAFF THINK

52 Staff were kind enough to respond to an MOB Department survey on quality, management and the environment. Here are some of the results.

	strongly agree	agree	no opinion	]	disagree	strongly disagree
environmental standards should be set by law for all businesses and organisations...	26	18	1	]	5	1
I would prefer to buy from companies with environmentally-friendly policies, even if the price was a little higher...	13	26	6	]	5	0
to achieve quality products should be a central concern of modern business...	17	25	5	]	4	1
companies should be responsible for damage caused by their products, however far in the future such damage occurs...	15	25	5	]	5	1
all development should be sustainable...	16	27	6	]	2	0
Americans and Europeans are right not to buy from suppliers in developing countries whose environmental performance is poor...	3	17	13	]	16	2
an important aspect of production quality is avoidance of waste or environmental damage...	22	23	1	]	2	3

Principle 4

In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

ISO 1400 Draft. October 1994. Appendix A

Step 6

Many customers, or international/national product conformity assessmen t schemes, require you to demonstrate that your quality system conforms t o one of the ISO 9000 external QA models. This is a growing trend worldwide.For some products it is a regulatory requirement; for other products it is a marketplace expectation.

Guidance Document: Road Map to IS) 9000 for Negara Brunei Darussalam. Ministry of Development. October 1994

TYPICAL RESPONSIBILITIES FOR ENVIRONMENTAL QUALITY MANAGEMENT SYSTEMS.

Establish overall direction
President, CEO, Board of Directors

Develop environment policy
President, CEO, Chief Environment Manager

Monitor overall performance
Chief Environment Manager
Environment Committee

Assure compliance with external regulations
Senior Operating Manger

Assure internal compliance with company environmental management system
All managers, Chief Environment Manager

Assure continual improvement
All managers

Identify customer expectations
Sales and marketing staff

Identify suppliers' expectations
Purchasers, Buyers

Develop and maintain accounting procedures
Finance/Accounting Managers

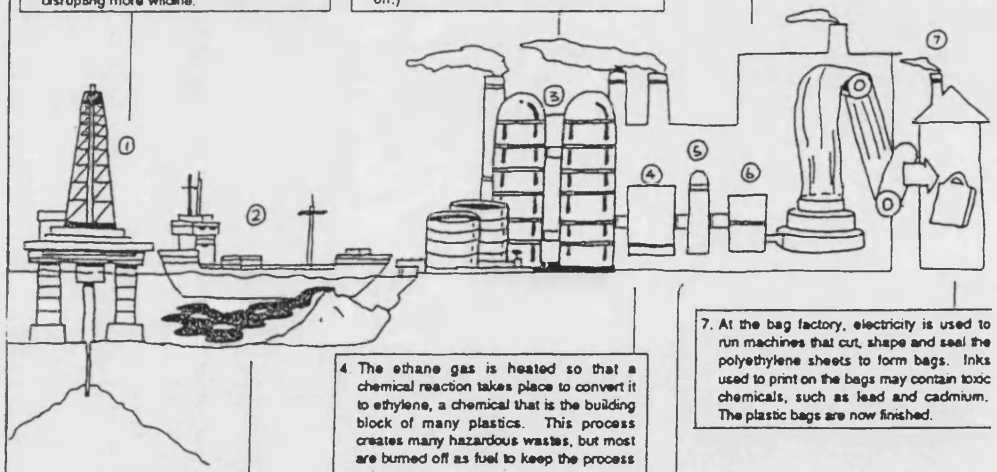
Source: Draft ISO 14000. October 1994

HOW PLASTIC BAGS ARE MADE

1. Plastics begin as oil or natural gas. Both oil and gas are taken from below the earth's surface, where they occur naturally but in limited quantities. Drilling for these resources may disrupt natural wildlife habitats. And, as today's reserves are used up, we will need to explore new areas, disrupting more wildlife.

3. At the refinery, oil and natural gas are refined into heating and transportation fuels. Ethane gas, a waste product from this process, is used to make plastics and other chemicals. (Otherwise it is burned off.)

6. Polyethylene is heated to form a hollow tube, and blown up with air like a balloon. The double sheet of polyethylene is then stored on large rollers. All these processes require energy obtained from burning fossil fuels such as oil. Pollutants, including sulphur dioxide, nitrogen oxides, carbon monoxide and dust are released into the air.



7. At the bag factory, electricity is used to run machines that cut, shape and seal the polyethylene sheets to form bags. Inks used to print on the bags may contain toxic chemicals, such as lead and cadmium. The plastic bags are now finished.

4. The ethane gas is heated so that a chemical reaction takes place to convert it to ethylene, a chemical that is the building block of many plastics. This process creates many hazardous wastes, but most are burned off as fuel to keep the process going.

2. Transporting oil and natural gas from the drilling sites required energy. It also presents the possibility of environmental damage from accidental spill, like that from the *Exxon Valdez* off the coast of Alaska.

5. When combined with other chemicals, the ethylene building blocks join together to form polyethylene -- the plastic from which plastic bags are made. The polyethylene may be mixed with additional chemicals that add strength to the plastic, or perhaps colour it. Some of the chemicals needed for these reactions are known as carcinogens--knewn to cause cancer. Waste water from the factory carries some of the chemicals to streams where they may be toxic to fish and other wildlife. Some of these chemicals are also released into the air.

EXERCISE 1: PROGRESSIVE PLASTICS SDN BHD.

Progressive Plastics, a joint venture company, are setting up a plant to manufacture plastic bags at the Serasa Industrial Area. You have been appointed as "local managerial advisor" to report on policy options for the new plant.

Progressive plastics: New plant location

Reception by ASEAN CEOs of the Standards

Despite Fears, CEOs See "Green" Standards as Necessary

ISO 14000 and other environmental requirements may dictate the terms of doing business in the future.

With or without the trade implications of ISO 14000 ASEAN business leaders realize the need to minimize adverse environmental impact of present production and consumption patterns in the region and they welcome, though with some degree of trepidation, the emerging standards as essential to sustain growth.

Need More Information on ISO 14000

The ASEAN audiences expressed interest to know more about ISO 14000 and about green concepts and programs such as product stewardship, life-cycle product planning, and eco-labelling -

Special to

ISO 14000

Prospects and Implications for Trade

by Christopher L. Bell and James L. Connaughton, Sidley & Austin, Washington, D.C.

(Condensed version of an article published by the *Journal of Environmental Law & Practice* and presented by Mr. Bell before the ASEAN EIP Conference on "The Implications of Emerging International Environmental Standards for ASEAN Industry" in Manila, Jakarta, and Singapore during October 1994.)

International environmental standards are currently being developed that will direct companies how to manage, measure, improve, and communicate the environmental aspects of their operations. The standards will influence the design and manufacture of products, selection of raw materials, packaging and marketing, and the type of environmental data gathered and communicated to governments and the public. Failure to conform could severely restrict trade for companies that manufacture or sell products or services abroad.

Published by the ASEAN Environmental Improvement Project, an element of the US-Asia Environmental Partnership

Exercise 1: Your task

Using the information in this booklet, your MOB notes, the results of your discussions with the other members of your group and your local knowledge, write a short report for your Chief Executive Officer.

In your report, explain why you think Progressive Plastics should consider seeking ISO 9000 and SO 14000 certification. Points you might mention include:

- possible cost savings
- improved relations with local people
- meeting requirements of the Brunei Government, especially the Ministry of Development
- meeting reqirements of customers in export markets.

Conclude your report by stating any steps which the company should take <u>immediately</u> if these standards are to be adopted.

EXERCISE 2: PROGRESSIVE PLASTICS SDN BHD.

Progressive Plastics, a joint venture company, aresetting up a plant to manufacture plastic bags at the Serasa Industriol Area

As a Government Officer, you have been appointed by the Ministry of Development to ensure that the new plant meets Ministry Requirements.

4.31 The subject of sustainable development is a important issue... there is a general awareness of the urgent need for environmental protection and conservation.

Negara Brunei Darussalam Sixth National Development Plan 1991-1995

PDB ISO 9004:1994 identifies the following phases in the life cycle of a product to which a quality management system should apply:
marketing and market research: product design and development: process planning and development: purchasing: production, or provision of services: verification: packaging and storing: sales and distribution: installation and commissioning: technical assistance and servicing: after sales: disposal or recycling at end of useful life.

Exercise 2: Your task

Using the information in this booklet, your MOB notes, the results of discussion within your group and your local knowledge, design a short questionaire (10-15 questions) to be completed by the senior management of Progressive Plastics and returned to the Ministry of Development.

The purpose of your questionaire is to discover whether the new plant will conform to Ministry requirements.

Aspects which you might consider are:
- compliance, or intended future compliance with ISO standards.
- proposed manufacturing processes.
- proposed health and safety measures.
- waste disposal.
- disposal of the finished product at the end of its useful life.
- training of staff.

What happens to used plastic bags in Brunei?
In your opinion, has the invention of plastic bags improved living standards in Brunei Darussalam?

surveys commissioned by the Ministry of Development have identified increased pollution by waste - especially plastics, empty cans and construction site debris - as an eyesore. Sungai Brunei, in particular, is not the clean and green tropical paradise it once was. This is where the Clean Up The World concept is appropriate.

Clean Ups are carried out by groups of volunteers working together to remove dumped junk from designated sites, recycling and reusing the material wherever possible, and disposing of the rest in a responsible manner. Sites are often public areas, such as beaches, waterways, parks, markets and roadsides. Clean Up Day is also a time to tackle major problems that require detailed planning, such as removing dumped cars and other heavy objects from waterways and parklands.

BORNEO BULLETIN, SAT/SUN 26/27 AUGUST 1995

"In the case of development along Sungai Brunei, Environmental Impact Assessment or EIA needs to address the inevitable impact on downstream use. The majestic view of Kampong Ayer could be adversely disfigured with a poorly planned riverside development."

quoted from ENVIRONMENTAL IMPACT ASSESSMENT by Dr. M.A. Badri, SENI BINA BRUNEI July-September 1995.

EXERCISE 3:PROGRESSIVE PLASTICS SDN.BHD.

Progressive Plastics, a joint-venture company, are setting up a plant to manufacture plastic bags at Serasa Industrial Area.

The company has taken a full page advertisement in the Borneo Bulletin to promote its GREEN image. Several readers have written to the paper to complain about the advertisement. They say that a company making plastic bags cannot possibly be green. Plastic bags, they say, are already a major source of pollution in Sungai Brunei.

Exercise 3: Your task

Using the information in this booklet, discussion with other students and you own local knowledge:

Write a letter of your own to the editor of the Borneo Bulletin.

Explain, for the benefit of the paper's readers, the difference between a manufacturing process which does not cause harm, and a product which does not cause harm.

Say which of these would be dealt with by ISO 9000 and which by ISO 14000.

Finally, say whether you agree with the company, or the angry letter-writers, giving your reasons.

BRUNEIANS

USED TO MANAGE PERFECTLY WELL

WITHOUT PLASTIC BAGS, BOTTLES AND CONTAINERS.

TRADITIONALLY, RATTAN BAGS WERE USED. STRING,

CARDBOARD AND PAPER WILL ROT AWAY IN TIME. AND

CAN BE RECYCLED. PLASTICS CERTAINLY ARE USEFUL.

SOMETIMES THEY CAN BE RECYCLED TOO.

BUT UNLESS THEY ARE DISPOSED OF

PROPERLY, FUTURE GENERATIONS WILL INHERIT A

LAND COVERED IN GARBAGE. NO ONE WANTS THAT.

Ministry of Development

Clean up Kampong Ayer

"GREEN" MARKETING IS GOOD BUSINESS

UNDER FIRE FROM environmentalists for its disposable diapers, Procter & Gamble pledges to spend $20 million per year to develop composting infrastructure. Coca-Cola starts using recycled plastic in its two-liter soda bottles. McDonald's makes a $100-million recycling commitment. We have entered the age of environmental marketing.

Forward-looking marketers are identifying and seizing new environmentally related business opportunities ranging from pollution prevention and more efficient technologies to environmental education and green-product promotion. They add the environment to the standard mix of decision-making variables. No matter what the subject is—product and packaging design and development, labeling and advertising, or promotional strategies—the "green" marketer takes environmental considerations into account.

Environmental marketing is also about a change in perspective. It demands a new set of procedures for implementing strategies that arise out of environmental-impact consideration, resulting in a fundamental change in how we do business.

It is not enough to make environmental claims about a product or a package—even if they are truthful—if the manufacturer has a negative or suspect environmental record. Such claims will inevitably be viewed as attempts to deliver a message about the manufacturer's overall environmental commitment. If the two communications are perceived by consumers as being inconsistent, even apparently innocuous environmental product or packaging claims run the risk of backfiring.

The environment needs the help of businesspeople and consumers alike. But that's not the only reason for business to get involved. It's also a smart business strategy.

In survey after survey, consumers have expressed strong concerns about the environment, along with a willingness to purchase products they believe will contribute to a healthier planet. Although much of this concern is still latent, which is to say that consumers often don't put their money where their mouths are, the potential is strong. Green consumerism is already a substantial movement, and it promises to become even more significant.

Not only do environmental marketing strategies often provide a short-term competitive edge, they also offer solid long-term benefits in the form of goodwill and market positioning. With parity among products the rule rather than the exception, highlighting a product's environmental attributes can provide

BY WALTER CODDINGTON

WORLD EXECUTIVE'S DIGEST / NOVEMBER 1992

Condensed from "Environmental Marketing: Positive Strategies for Reaching the Green Consumer" by Walter Coddington. Copyright 1992 by McGraw-Hill, Inc., New York, NY 10020. U.S.A. All rights reserved

Walter Coddington is the founder of Coddington Environmental Management, Inc., the first full-service marketing agency dedicated to helping companies become more productive and visible in protecting the environment.

EXERCISE 4: PROGRESSIVE PLASTICS AND OTHER DEVELOPMENT.

Progressive plastics foreign joint venture partner is a well-known multi-national corporation.
As a promising local manager, you have been commissioned by international head office to write a "scenario" of the likely future of development in Brunei Darussalam.

YOUR TASK:
Using the information in this booklet, discussion with other members of your group, your MOB notes and your local knowledge, write a brief account of what you expect Brunei to be like in the year 2020.
Are there any dangers in the process of development? Can ISO standards for business help avoid such dangers? Are there any other steps business should, or should have to, take?

SCHEDULE

Column 1 Industries	*Column 2 Products*
Aircraft Catering Service	Various types of food for airlines.
Cement Finish Mill	Cement.
Pharmaceutical	Various types of medicines, vitamins tablets, syrups etc.
Aluminum Wall Tiles	Aluminum wall tiles and other decorative tiles.
Rolling Mill Plant	Manufacturing/fabricating iron and steel, steel bars and angle iron, U-channel, etc.
Industrial Chemicals	Various types of chemicals for oil and other industries including corrosion inhibitors, bactericides, demulsifiers, gas inhibitors, scale inhibitors, oxygen scavengers and detergents manufactured or blended in Brunei.
Shipyards	Ship repair and maintenance.
Tissue	Tissue paper, napkin.
Textile	Various types of clothing.
Canning, Bottling and Packaging	Various types of canned, bottled and packaged foods and drinks.

THE coastal zone in Brunei is the most productive eco-system.

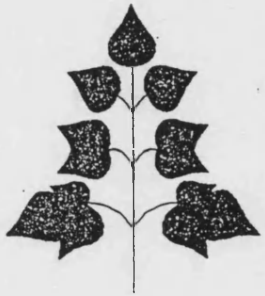
At the present time, the country's natural resources, apart from oil and gas, are not yet heavily exploited.

There are an estimated 20 million tonnes of silica sand deposits which are potentially useful for glass production. The government has an ambitious target of becoming self-sufficient in rice.

Brunei's economy is, however, moving into a new era, by embracing a strategy of diversification rather than depending on oil. Fisheries and agriculture will play an increasingly important role in the economy.

List of Industries which have been Declared Pioneer Industries

Industries specified in Column 1 of the schedule below and the products specified against such industries in Column 2 of the schedule below shall be pioneer industries and pioneer products respectively



Most development has taken place along the coastal belt.

Pioneer Industry

An industry can be given pioneer status if the following requirements are met:

a) The industry can be a kind not previously carried on in Brunei Darussalam on a commercial scale; it must be suitable to the economic requirements and development of the nation, and there should be favourable prospects for further developing the industry to provide for exports; or;

b) There are insufficient facilities in the nation to carry on the industry on a suitable commercial scale and it is expedient and in the public interest to encourage the development or establishment of the industry.

i) Exemption from corporate income tax

ii) Exemption from taxes on imported capital goods

iii) Exemption from taxes on imported raw materials

Ministry of Development

SUSTAINABLE DEVELOPMENT FOR HEALTH.

The United Nations has these health goals for the year 2000.

immunize **ALL** children against the **worst diseases.**

reduce the number of children dying before age 5, worldwide, to less than 70 per 1000.

eliminate starvation.

reduce moderate malnutrition by **50%**.

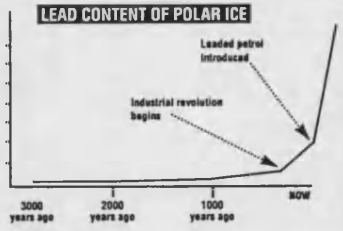
give everyone access to **safe water.**

BUT - on present trends, world supply of fresh drinking water will **halve** by 2000.
(there are problems with the other goals too.)

% of surface runoff on different surfaces:

jungle - 2%
cleared sites - 85%
towns - 98-100%

runoff wastes water, wastes soil & nutrients, & pollutes the rivers.



USING UNLEADED PETROL IS A STEP IN THE RIGHT DIRECTION. LEAD IS A POISON.

Brunei is lucky. It rains a lot. But even so, water can be polluted & wasted by unsustainable development

clean up Kampong Ayer...

sustainable development:
conserving nature, conserving tradition.

BRUNEI'S DEVELOPMENT PLAN AIMS TO IMPROVE THE LIVING AND WORKING ENVIRONMENT, WHILE MAINTAINING TRADITIONAL SOCIAL VALUES AND WAYS OF LIVING...

these industries are expected to grow in Brunei:

electricity, gas and water.
community, social and personal sevices.
transport, storage, communications.
wholesale/retail trade.
restaurants and hotels.

will lifestyles change as they do?

Ministry of Development

clean up Kampong Ayer...

NEW IS NOT ALWAYS BEST.

unsustainable development can mean :

pollution.

poverty now.

for some, poverty later.

for most, loss of traditional values.

loss of natural beauty.

spread of illness and disease.

the environment we live in

natural system: human impact upon the environment has been no greater than any other species.

modified system: human impact greatest, but no cultivation. eg. naturally regenerating forest, range land, or fish stocks.

cultivated system: human impact is greatest and the environment is cultivated. eg. farmland, plantations, sown pasture.

built system: the environment is dominated by roads, airports, docks, dams, oil-wells, buildings and so on...

degraded system: the environment has suffered loss of *diversity, productivity* and *habitability.*

ANNEX 4

Sample 'Pre-Test' Form

Your name Edmadinawati Hj Ahmad (68) Your teacher and set Mr A. Lauzon BIK 3

Please read the attached page about Butra Djajanti Cement Sdn.Bhd. You will see that Butra Djajanti sees "environmental awareness and protection" as an important aspect of quality control. In the spaces below, briefly say why you think environmental awareness and protection are important to each of the following:-

- The Butra Djajanti company itself:
  It is important to keep the company safe from pollution because it might affect the health of the workers itself and also the company's. If they did not aware of this, their company could be shut down or no customers would want to buy from them.
- The Brunei Government :
  It is important to the Brunei Government because if the environmental is being polluted, then Brunei will be effected ~~and tourists~~ and all the trees will die since Brunei are rich in forests.
- Butra Djajanti's customers:
  People wouldn't consume their goods from a polluted company. It can effect their health ~~and~~ and since it is an only cement factory in Brunei, the customer should expect a clean environment in that factory.
- People who live at Kampong Masjid Lama (see map):
  It is important for the people who lived there as they breathe the air around it. It ~~also~~ too will affect their health and also their water supply and also the river along it.
- Other citizens and residents of Brunei Darussalam:
  The other citizens and residents would think it important because they need a clean environment in Brunei to live. If one factory pollutes it, then it would be unhealthy for them to live here in Brunei.

PLEASE TICK THE CIRCLE IF YOU HAVE HEARD OF "ISO 9002" BEFORE

EVALUATION REPORT

26.7.96

To Richard, Steve, Brett and Andre.

While your U6 are on study leave perhaps I can ask you to complete an evaluation of the work your students did on quality and quality/environmental management systems for business earlier in the year. I am enclosing a copy of the materials and the other stuff that was distributed at the seminar.

Anything you write is strictly confidential.

You know, of course, that this is connected with my PhD. What I am trying to find out is whether it is possible to improve the content and delivery of a mainstream subject (in the opinions of students and teachers of that subject, and employers or other parties with an interest) while at the same time developing a valid contribution to a cross-curricular educational theme (environmental education). By "valid" I mean "consistent with the literature". The phrase, "improve the content and delivery" is crucial since that is part of my job, and my justification for the work. If I find a strong feeling that the work we all did was irrelevant to the course I will discontinue the exercise, or try something radically different. If you thought it had merit I shall try to improve the unit for next year, taking account of your comments.

This work, I should say, is qualitative rather than quantitative. Your opinions will be accepted at face value, not analysed for hidden meaning or psychological significance.

Please write as discursively and as critically as you like. Please comment on aspects I have not mentioned below if you wish.

It would be great if I could have this back by the time the Mock Exam marking starts to appear.

ANNEX 5

Case Study One Staff Evaluation Report Preface

Please do not write your name, form, or any other information about yourself on this document!

Completing the items which follow will help the planning of the ISO STANDARDS exercise for next year, and with the development of new units.

All the statements were suggested by students in their work on ISO this year. They have been arranged to show how difficult these issues are.

Please circle one number for each statement.

1 = STRONGLY AGREE
2 = AGREE
3 = DON'T KNOW
4= DISAGREE
5 = STRONGLY DISAGREE

Thanks!

ANNEX 6

Case Study One Perspective Document

Part 1: The Private Sector

1	
The private sector will grow in Brunei	**1 2 3 4 5**
There will be a need for more Government control.	**1 2 3 4 5**
2	
Companies should be free to compete.	**1 2 3 4 5**
Companies should show social responsibility and support Government campaigns.	**1 2 3 4 5**
3	
Companies should be responsible for any damage their product may cause in the future.	**1 2 3 4 5**
Consumers are responsible for the safe disposal of unwanted items and packaging.	**1 2 3 4 5**
4	
Firms need to educate customers about sustainability.	**1 2 3 4 5**
Firms need to respond to pressure from "green" consumers	**1 2 3 4 5**
5	
Wildlife habitats should be protected.	**1 2 3 4 5**
For economic reasons, firms need to be based in the eco-sensitive coastal zone.	**1 2 3 4 5**
6	
Muara Port is an excellent business location.	**1 2 3 4 5**
Muara Port is in an ecologically-sensitive area.	**1 2 3 4 5**

7	
Many businesses need rivers to dispose of waste.	**1 2 3 4 5**
Fishing, tourism and other industries need clean rivers.	**1 2 3 4 5**
8	
The introduction of ISO standards may reduce costs.	**1 2 3 4 5**
The introduction of ISO standards may increase costs.	**1 2 3 4 5**
9	
There will be more privatisation.	**1 2 3 4 5**
There will be more Government activity, for example in providing agricultural training.	**1 2 3 4 5**
10	
Forward planning is essential.	**1 2 3 4 5**
Forward planning is difficult because there are so many unknowns.	**1 2 3 4 5**
11	
The point of privatisation is to pass power to private companies.	**1 2 3 4 5**
Private companies which cause pollution should be punished.	**1 2 3 4 5**
12	
Firms should design products which do not harm the environment.	**1 2 3 4 5**
Firms should design products which consumers want to buy.	**1 2 3 4 5**
13	
Business should concentrate on rapid response to customer wants.	**1 2 3 4 5**
Business should concentrate on long-term planning and improvement.	**1 2 3 4 5**
14	
A firm is "green" if it is trying to improve its environmental performance through a process of continual review and action.	**1 2 3 4 5**
"Green" means "calm" and "peaceful".	**1 2 3 4 5**
15	
Companies should build wildlife reserves.	**1 2 3 4 5**
Companies should seek out cost savings.	**1 2 3 4 5**
16	
Firms can obtain a marketing edge if they obtain a "green" image.	**1 2 3 4 5**
Customers may reject a firm's products if they believe it is only seeking a green image in order to obtain a marketing edge.	**1 2 3 4 5**
17	
Firms have a responsibility to provide education.	**1 2 3 4 5**
Firms have a right to expect an educated workforce.	**1 2 3 4 5**
18	
The private sector is at the forefront of modernisation.	**1 2 3 4 5**
New is not always best.	**1 2 3 4 5**
19	
Small firms build better relations with local people.	**1 2 3 4 5**
Successful small firms grow into bigger ones.	**1 2 3 4 5**

20

ISO 14000 companies must use other ISO 14000 companies as suppliers where possible.	1 2 3 4 5
It is wrong to make environmental considerations a condition of doing business.	1 2 3 4 5

21

It is important that businesses are truthful.	1 2 3 4 5
Businesses may need to conceal information for competitive reasons.	1 2 3 4 5

22

Firms should develop safe processes.	1 2 3 4 5
Firms should develop emergency procedures.	1 2 3 4 5

23

Compliance with ISO 14000 will improve quality because of the introduction of an environmental management system.	1 2 3 4 5
Compliance with ISO 14000 will reduce quality because firms will be able to use only raw materials which can be extracted with minimum environmental impact.	1 2 3 4 5

Part 2: Resources

24

Human-produced resources (eg. infrastructure) are necessary for business development.	1 2 3 4 5
Human-produced resources are made by depleting natural resources.	1 2 3 4 5

25

The forest is a great natural asset.	1 2 3 4 5
The forest must be cleared to make way for development.	1 2 3 4 5

26

Temburong is a rich source of resources for development.	1 2 3 4 5
Temburong is valuable because it is unspoiled.	1 2 3 4 5

27

Free flows of information are required for the development of private-sector business, for example through the internet.	1 2 3 4 5
Conservation of tradition requires information flows to be controlled.	1 2 3 4 5

28

Forests can be preserved by opening National Parks and recreational sites.	1 2 3 4 5
Use by people is the main source of damage to forests.	1 2 3 4 5

29

Keeping waterways clean is a priority.	1 2 3 4 5
Silting of rivers following land clearance for building and industrialisation is inevitable.	1 2 3 4 5

Part 3: Plastics

30

Plastics have raised living standards. **1 2 3 4 5**

Plastics have caused a deterioration in the standard of the environment we live in. **1 2 3 4 5**

31

The development of a plastics industry would contribute to development. **1 2 3 4 5**

Pollution from plastics manufacture may damage other industries such as tourism and fisheries, so limiting growth. **1 2 3 4 5**

32

Discarded plastic bags pollute Sg. Brunei and snag water-taxi propellers. **1 2 3 4 5**

Plastic bags have reduced congestion on Sg. Brunei, as their extra convenience leads to fewer trips to market being made by consumers. **1 2 3 4 5**

33

Plastic bags should have "green" slogans, or instructions for disposal printed on them. **1 2 3 4 5**

Inks used to print on plastic bags are toxic. **1 2 3 4 5**

34

The public are responsible for pollution by plastic bags. **1 2 3 4 5**

Retail outlets are responsible for pollution by plastic bags. **1 2 3 4 5**

35

Plastics manufacture at Serasa would mostly be of concern to local people. **1 2 3 4 5**

Plastics manufacture at Serasa would be of concern to people across national boundaries. **1 2 3 4 5**

36

Paper bags are environmentally friendly because they do away with the need to manufacture plastic bags. **1 2 3 4 5**

Plastic bags are environmentally friendly because they do away with the need to cut down trees to make paper. **1 2 3 4 5**

Plastic bags can improve food hygiene. **1 2 3 4 5**

Part 4: Oil and Gas

37

Industrial diversification will reduce dependency on oil and gas. **1 2 3 4 5**

Industrial diversification will mean more oil and gas are needed. **1 2 3 4 5**

38

It is important to diversify away from oil and gas. **1 2 3 4 5**

There is plenty of oil and gas left. **1 2 3 4 5**

Part 5: Technology

39

Rapid scientific and technological development is desirable.	**1 2 3 4 5**
Traditional technologies and ways of living should be maintained.	**1 2 3 4 5**

40

New technologies will create new jobs.	**1 2 3 4 5**
New technologies will cause more unemployment.	**1 2 3 4 5**

41

Careful measurement makes it possible to monitor environmental impacts.	**1 2 3 4 5**
The environment is a matter for individual values which cannot be measured.	**1 2 3 4 5**

42

Only experts can judge environmental impacts.	**1 2 3 4 5**
Judging environmental quality is a matter for the population as a whole.	**1 2 3 4 5**

43

New technology will make improvements in quality possible.	**1 2 3 4 5**
Quality improvement efforts should focus mostly on people.	**1 2 3 4 5**

44

New technology leads to better crops and breeds of livestock.	**1 2 3 4 5**
New technology causes wastes which are harmful to crops and livestock.	**1 2 3 4 5**

45

Technology makes life easier.	**1 2 3 4 5**
Technology makes us lazy.	**1 2 3 4 5**

46

Technology and development are the main source of human well-being.	**1 2 3 4 5**
The sea is the most important source of food.	**1 2 3 4 5**

47

Progress depends on new technology.	**1 2 3 4 5**
Progress can be made by not wasting natural materials (eg. prawn skins) which can be useful.	**1 2 3 4 5**

Part 6: Lifestyles

48

Traditional social values should be maintained.	**1 2 3 4 5**
Rapid social development is desirable.	**1 2 3 4 5**

49

Development benefits local people, bringing jobs and prosperity.	**1 2 3 4 5**
Development can damage the local area.	**1 2 3 4 5**

50

There is a need to share National resources such as Sg. Brunei.	**1 2 3 4 5**
In the era of modern technology, money has become the most important thing to many people.	**1 2 3 4 5**

51

Traditional methods, ways and products should be preserved.	1 2 3 4 5
Rattan bags are not as convenient as plastic bags.	1 2 3 4 5

52

Environmental damage is inevitable as living standards rise.	1 2 3 4 5
The quality of the environment is an important aspect of living standards.	1 2 3 4 5

53

Development will lead to better health-care infrastructure.	1 2 3 4 5
Development causes pollution and stress which worsen health.	1 2 3 4 5

54

Local people support industrialisation.	1 2 3 4 5
Industrial development should be kept away from local kampongs.	1 2 3 4 5

55

Local people expect firms to show respect for the environment.	1 2 3 4 5
Firms should offer financial incentives to local people to encourage them to recycle their products.	1 2 3 4 5

56

It is a feature of the modern world that people are becoming more commercially and technologically-minded.	1 2 3 4 5
Commerce and technology are important aspects of traditional Bruneian lifestyles.	1 2 3 4 5

57

Development requires hard work and competitive business activity.	1 2 3 4 5
The purpose of development is to make life more comfortable and easier.	1 2 3 4 5

58

Development can make life safer.	1 2 3 4 5
Development can lead to more crime and the black market.	1 2 3 4 5

59

ISO standards are necessary to conserve the environment.	1 2 3 4 5
Changes in the behaviour of individuals are necessary to conserve the environment.	1 2 3 4 5

60

People should treat the Earth with respect.	1 2 3 4 5
The Earth is there for people to make use of.	1 2 3 4 5

Part 7: New industries

61

New industries are needed to achieve development	1 2 3 4 5
New industries are needed to repair and prevent environmental damage caused by development.	1 2 3 4 5

62

The growth of new industry leads to increased energy demands.	1 2 3 4 5
New industries will develop energy saving technologies.	1 2 3 4 5

63

An important reason for development is to achieve self-sufficiency. 1 2 3 4 5

An important aspect of development is the promotion of joint-ventures with foreign companies. 1 2 3 4 5

64

Privatisation is necessary to encourage competition. 1 2 3 4 5

Private firms should respect and preserve community values. 1 2 3 4 5

65

The development of tourism requires rapid expansion of infrastructure, such as roads and buildings. 1 2 3 4 5

Tourists will come because they are fascinated by Brunei's history, wildlife and forests. 1 2 3 4 5

66

Tourism can be beneficial, bringing profits to the country. 1 2 3 4 5

Tourism can be harmful, introducing undesirable foreign habits. 1 2 3 4 5

67

Brunei should have a recycling centre. 1 2 3 4 5

Recycling may not always be economic. 1 2 3 4 5

68

Tourism can exploit Brunei's attractive beaches. 1 2 3 4 5

There is a need to improve Brunei's beaches by removing rubbish. 1 2 3 4 5

69

Multinational corporations can provide a market for local business. 1 2 3 4 5

Multinational corporations can do work which could otherwise have been done by Bruneian companies. 1 2 3 4 5

70

Agricultural production will grow. 1 2 3 4 5

Soil erosion caused by land clearance will increase. 1 2 3 4 5

Part 8: Growth

71

Rapid growth requires rapid depletion of natural resources. 1 2 3 4 5

Sustainable growth requires controlled depletion of resources. 1 2 3 4 5

72

Sustainable development is Government policy. 1 2 3 4 5

The achievement of sustainable development depends on the behaviour of firms and citizens. 1 2 3 4 5

Oil and gas production is ultimately unsustainable. 1 2 3 4 5

73

Development causes people to forget about the natural environment. 1 2 3 4 5

Development leads to increased environmental awareness. 1 2 3 4 5

74

Brunei must avoid following the West. 1 2 3 4 5

Brunei must catch up with the West. 1 2 3 4 5

75
A good environment has lots of tall trees. 1 2 3 4 5
A good environment has lots of tall buildings. 1 2 3 4 5
76
Uses should be found for every part of the land. 1 2 3 4 5
Natural resources should be preserved for the sake of future generations. 1 2 3 4 5
77
Growth will mean more tall buildings. 1 2 3 4 5
Growth will mean more squatter settlements. 1 2 3 4 5
78
Growth will improve the quality of life. 1 2 3 4 5
Growth will increase the cost of living. 1 2 3 4 5
79
Consumer spending will increase. 1 2 3 4 5
It is important to avoid materialism. 1 2 3 4 5
80
Growth will occur because Brunei is a target for Western business expansion. 1 2 3 4 5
Growth will occur because Bruneian entrepreneurs will undertake more business activity. 1 2 3 4 5
81
Brunei will become wealthier. 1 2 3 4 5
More individuals will get into debt. 1 2 3 4 5
82
Urbanisation destroys the landscape. 1 2 3 4 5
Urbanisation can improve the landscape. 1 2 3 4 5
83
Shop houses will be replaced by sky-scrapers. 1 2 3 4 5
Shop houses are part of the traditional way of life and should be conserved. 1 2 3 4 5

Part 9: Products

84
Products should be long-lasting and durable. 1 2 3 4 5
Products should be bio-degradable. 1 2 3 4 5
85
More cars on the roads is a sign of better living standards. 1 2 3 4 5
More cars on the roads means more congestion and air pollution. 1 2 3 4 5
Building railways would improve living standards by reducing car use. 1 2 3 4 5
86
Products which are recyclable, reuseable and bio-degradable cause no harm to the environment. 1 2 3 4 5
Such products may be manufactured by highly polluting processes. 1 2 3 4 5

87

Manufacturing processes which cause no pollution and use resources sustainably cause no harm to the environment. 1 2 3 4 5

Such processes may be used to make products which damage the environment. 1 2 3 4 5

88

Brunei has plenty of unexploited resources. 1 2 3 4 5

It is important to use resources sparingly. 1 2 3 4 5

89

Packaging is essential to promote products. 1 2 3 4 5

Packaging is often inessential and wasteful. 1 2 3 4 5

Part 10: Trade

90

Bruneian business should comply with Bruneian regulations. 1 2 3 4 5

Bruneian business should comply with international regulations. 1 2 3 4 5

91

ASEAN business leaders are concerned about the environmental impacts of present production and consumption patterns. 1 2 3 4 5

Business leaders make their profit by responding to present production and consumption patterns. 1 2 3 4 5

92

Development will lead to less foreign imports. 1 2 3 4 5

Development will lead to more foreign investment. 1 2 3 4 5

93

Free trade will lead to competition which will drive local firms out of business. 1 2 3 4 5

Free trade will act as a spur to make Bruneian firms efficient and successful. 1 2 3 4 5

94

Values should be important in the development process. 1 2 3 4 5

It is wrong to make environmental performance a condition for trade. 1 2 3 4 5

95

Free trade is desirable. 1 2 3 4 5

Self-sufficiency in rice is desirable. 1 2 3 4 5

Part 11: Human resources

96

ISO standards require firms to provide more training for staff. 1 2 3 4 5

ISO standards require firms to involve staff in decision-making. 1 2 3 4 5

97

Firms should train their workers in order to be more competitive. 1 2 3 4 5

Firms should cut costs - including those of training - to be more competitive. 1 2 3 4 5

98

Development will mean more skilled workers are needed.	**1 2 3 4 5**
Development should mean fewer foreign workers are needed.	**1 2 3 4 5**

99

Development will lead to a more highly-educated population.	**1 2 3 4 5**
Development requires a more highly-educated population.	**1 2 3 4 5**

100

An educated workforce is needed to attract multi-national companies.	**1 2 3 4 5**
Multi-national companies should provide training for locals.	**1 2 3 4 5**

101

Development requires more training provided by the Government.	**1 2 3 4 5**
Development will reduce dependence on the Government.	**1 2 3 4 5**

102

Business needs to develop a spirit of cooperation and teamwork among the workforce.	**1 2 3 4 5**
Business needs to develop a spirit of competition among the workforce.	**1 2 3 4 5**

103

The meaning of the phrase "clean and green" is obvious.	**1 2 3 4 5**
This phrase means different things to different people.	**1 2 3 4 5**

Thank you very much for your help.

ANNEX 7

Case Study One Perspective Document Responses

Item numbers correspond to those used in Annex 4

Item	1	2	3	4	5	1+1	1+2	2+1	2+2	1+3	2+3	3+1	3+2	Total	Dilemmas	Tensions
1	60	77	6	1	2	3	45	6	30	8	28	0	4	146	84	124
	9	79	39	19	0									146		
2	26	80	20	19	2	15	6	37	37	3	5	9	8	147	95	120
	71	59	8	3	3									144		
3	106	28	5	6	2	63	35	11	16	3	2	3	1	147	125	134
	77	57	5	6	1									146		
4	47	89	7	2	2									147		
	76	63	4	2	2	dilemmas based on second pair of items only								147		
	26	72	38	9	1	13	13	17	40	0	14	3	24	146	83	124
	36	80	28	2	1									147		
5	96	43	5	0	3	15	26	4	11	46	23	0	2	147	56	127
	19	39	74	13	2									147		
6	13	75	40	17	2	2	4	2	17	6	52	0	4	147	25	87
	4	26	108	7	2									147		
7	2	13	18	51	63	2	0	8	5	0	0	11	6	147	15	32
	90	48	4	1	1									144		
8	19	52	43	30	2	2	6	0	9	1	13	0	5	146	17	36
	5	46	50	36	9									146		
9	12	79	46	10	0	6	6	8	52	1	10	4	37	147	72	124
	17	104	16	8	1									146		
10	82	58	4	1	2	5	43	2	24	13	15	0	1	147	74	103
	7	70	32	33	4									146		
11	10	70	39	24	4	3	3	40	23	3	2	12	19	147	69	105
	71	55	7	8	4									145		
12	95	46	5	0	1	40	47	8	33	4	1	0	4	147	128	137
	49	83	5	8	2									147		
13	41	93	11	1	1	19	20	25	60	1	8	1	8	147	124	142
	45	88	11	1	2									147		
14	44	77	18	5	3	11	13	4	34	6	20	1	5	147	62	94
	16	55	33	38	2									144		
15	14	57	61	13	0	6	5	5	38	3	12	4	38	145	54	111
	16	88	35	6	0									145		
16	21	64	50	11	0	2	10	4	18	4	23	1	9	146	36	71
	8	40	55	38	5									146		
Item	1	2	3	4	5	1+1	1+2	2+1	2+2	1+3	3+1	2+3	3+2	Total	Dilemmas	Tensions
17	12	80	37	18	1	6	6	9	62	0	3	4	25	148	82	114
	20	106	13	7	1									147		
18	16	86	41	4	1	7	8	32	43	0	9	7	28	148	90	134
	49	81	11	6	1									148		
19	55	72	18	2	1	11	28	6	45	6	1	10	12	148	90	119
	19	89	20	20	0									148		
20	25	69	41	9	2	1	4	0	10	12	2	16	3	146	15	48
	3	18	48	57	22									148		

21	41	78	16	10	2	8	22	15	41	6	1	18	9	147	86		120
	23	83	31	8	1									146			
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	28	79	19	17	2									145		
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Item	**1**	**2**	**3**	**4**	**5**	**1+1**	**1+2**	**2+1**	**2+2**	**1+3**	**3+1**	**2+3**	**3+2**	**Total**	**Dilemmas**	**Tensions**
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	21	67	29	18	8									143		

ANNEX 8

Case Study Two Students' Booklet

DESIGNING A MARKETING MIX FOR THE TOURISM INDUSTRY IN BRUNEI DARUSSALAM

This 9 page booklet contains the information you need to complete your marketing project, but you may also refer to the marketing section of your textbook if you wish. You should work in groups of 3 - 4 students. Members of each group are encouraged to discuss their work between themselves. Group members may submit identical work, or different work. You have 6 days. Please write your FULL name, your teacher's name and your MOB Block on every piece of paper. Some students will be carrying on extra work on this topic at the same time.

What you have to do: The Brunei Government Ministry of Industry and Primary Resources (MIPR) has set up a Joint Consultative Committee on Tourism as part of the drive to make Brunei the Service Hub for Trade and Tourism (SHuTT) of BIMP-EAGA by the year 2003. This committee includes representatives of Government, Travel Agents, Construction Firms, Local People, Tour Operators, Airlines, Hotel Chains, Restaurant Chains, Environmental Groups, the Chamber of Commerce, and Brunei's partners in BIMP-EAGA.
As Managing Director of [illegible] marketing consultancy registered in Brunei, you have been commissioned by this committee to produce the following:

1. A detailed PROJECTION for the Brunei coastal area in the year 2003.
2. An appropriate marketing mix for the Brunei tourism industry to the year 2003.

Details of these two tasks are provided below.

TASK 1

The Brunei Government (your client) has the following goals:

1. Development and diversification.
2. Achievement of SHuTT.
3. The preservation of the natural environment.
4. The preservation of traditional culture and values.
5. The reduction of unemployment.

To meet these goals, what will the Brunei coastline look like in 2003? Who will be using it? How should the interests of shipping, tourism, industry, fishing, local kampongs and wildlife be balanced?

TASK 2

Your answer should be set out in terms of the 4 "Ps". Some questions you might consider (you don't have to answer them all!) are given here. There are probably many others. Please be as original as you like.

Product: What market segments should be aimed at? Should any niche markets be targeted? Are the ideas of product development and product life-cycle significant? Who will the tourists be? How long will they come for? What will they do? Where else will they go? How will they get around? Why will they like it? What will we do if they don't like it? How will they get here? Why will they come again and bring their friends? What if they don't? Is SWOT analysis useful? Is Critical Path Analysis useful?

Price: Do we offer one product and one price-range or many products and many price-ranges? What are our costs? Can we reduce them? Should pricing policy be full cost? or contribution? or should we go for price discrimination/market skimming/prestige pricing/penetration pricing/loss leading? Does the price charged by tourism firms cover the full cost of tourism to Bruneians? Can it be made to?

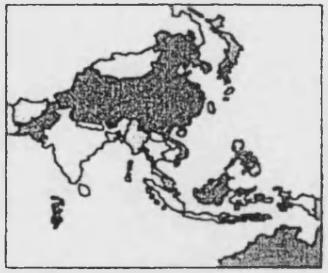
Promotion: Who are our target market? How should we reach them? What do we tell them?

Place: Where will the tourists come from? Where, in Brunei, will they go? What will they expect? What will they get?

PLANNING FOR TOURISM IN BRUNEI DARUSSALAM

Brunei is just too small, in population and size, to promote itself specifically, as a single entity...That is why Brunei has called for a promotion of the Borneo island as a whole, and the region itself specifically, as a single destination with Brunei as its gateway. The Brunei Government has a 3-point strategy in its promotional drive:

a. promote Brunei as an entity separate from other (foreign) provinces
b. include Sabah and Sarawak in that promotion venture
c. then, promote the BIMP-EAGA region as a whole, with Brunei as the hub or gateway.



the tourism venture...aims to promote Brunei as a "premium, ultimate eco-tourism destination; unpolluted, safe, friendly and a good place to relax"...Brunei is "a mystical place, rich in culture and tradition"

Selected target markets of such promotion drives, initially are ASEAN, Japan, Hong Kong, Taiwan, Australia, Germany and the United Kingdom.

There is nothing more that can be said about the Kampung Ayer or the Jerudong Park that many people do not know, but what about the Ulu Temburong National Park or Brunei's rustic inland villages, far from the urban areas?

"At present we are still a bit short of accommodation facilities...The new Jerudong Resort Hotel should add a few more hundred to Brunei's present capacity of around 1200 (hotel) rooms, and recently, a cheap-rate hostel opened in Kampung Sungai Buloh to cater to budget travellers.
Massive campaigning will only begin after everything - the infrastructure, the accommodation facilities, the manpower required, other tourist-care services etc. - is already in place...

There are many problems hindering the full development of the tourism industry here in Brunei...The lack of awareness by potential visitors regarding the attractions in Brunei is one; a poor public transportation system, and an underdeveloped general infrastructure are also contributory factors.
And then there is almost no involvement in the industry at grassroot level, plus the lack of coordination between government agencies in undertaking the venture.
Yet, the whole country stands to benefit from a full-fledged tourist industry...The public, for instance, would benefit from an improved quality of life, and a general good image of the country overseas; they would also gain from an improved infrastructure and utilities that come together with the industry, better job prospects, and environmental preservation.
The private sector, on the other hand, stands to gain from a growing economy, and the need for more tourist-care enterprises. As for the Government, they would gain from an improved economy overall...

ALL QUOTES ON THIS PAGE ARE FROM THE 1997 BRUNEI YEARBOOK

BRUNEI IN THE TOURISM SYSTEM

THE Ministry of Communications has undertaken an uphill task of upgrading the quality of the country's service sector to international standards.

Its vision is to ensure that services at the airport, post offices and those provided by the private sector such as hotels and restaurants are first class in quality while conforming to international norms.

The ministry believes that it must pursue these efforts to ensure that Brunei will not just be a Service Hub for Trade and Tourism but the best service centre in the region, a senior official said on Tuesday.

"Our vision by the next century is to see more people travel, do business and communicate through Brunei. Therefore the services we are going to provide must remain competitive and of high international standard," observed Dato Malai Haji Ali, the Permanent Secretary at the Ministry of Communications.

BORNEO BULLETIN 16 JANUARY 1997

The (Brunei) authorities embarked on campaigns to encourage people to switch to public transportation like buses and taxis, rather than depending on the car all the time...

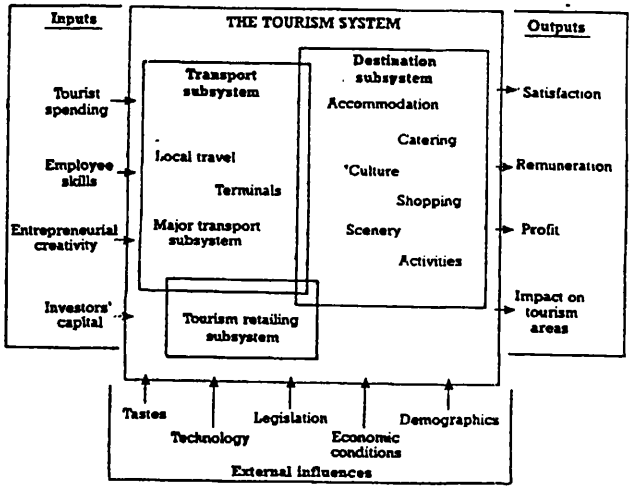
On 9th January 1996, the Brunei United Chamber of Commerce signed a memorandum of understanding with Sabah's Ho Wah Genting Berhad as part of moves to form a pan-Borneo bus service linking Kota Kinabalu in Sabah, Brunei, Sarawak and Pontianak in Indonesia.

It is the government's plan to develop an airport city which will have all the amenities within the vicinity of the of the airport area for globe-trotting travellers who pass through the airport.

One of the steps towards this vision is the building of a hotel which will have more than 100 rooms, a business centre and conference room and shops.

Over the past year, the country's national carrier, Royal Brunei Airlines has expanded its services to 27 destinations in the Far East, Australia, Europe and Middle East. The airline's strategy is to link popular Asian and Australian business and leisure destinations to major European centres, via its Brunei hub.

Each tourist destination has a unique range of features with which it tries to attract visitors, but the marketing challenge they face is that each potential visitor has a very wide choice amongst destinations...the challenge for destination managers is to attract a sufficient, regular flow of visitors who will enjoy its particular mix of climate, attractions, activities, costs and quality, its overall style...
the destination matures, often very rapidly, and it becomes more open to outside influences: the values and expectations of its visitors increasingly drive local entrepreneurs decisions...the expectations of the wider community begin to encompass aspects of their visitors' behaviour...the effect is...an increasing acceptance of changes in the character and nature of the destination's social, moral and personal relationships. [Laws 1991]



BRUNEI'S COASTAL TOURISM ATTRACTIONS

"Brunei Darussalam has 33 islands which occupy a small land area of 7,939 hectares or 1.4 per cent of the total land area. Two islands are situated offshore while the others are in the major rivers and in the inner Brunei Bay. The islands though small and largely uninhabited, play a major role in providing an undisturbed environment or breeding grounds for endangered species. On a few islands with sandy beaches, turtle nesting has been sighted. Most of the islands have a substantial population of long-nosed monkeys and a variety of birds. The long-nosed monkey, considered a vulnerable and endangered breed, is found only on Borneo island. These islands also nurture the flying fox or fruit bat. It has been proposed that these islands be designated as reserves or conservation areas for their bio-diversity, pristine nature and the presence of rare animal breeds. If rationally exploited and managed, they could be used for eco-tourism, research and education." Brunei Yearbook; 1997

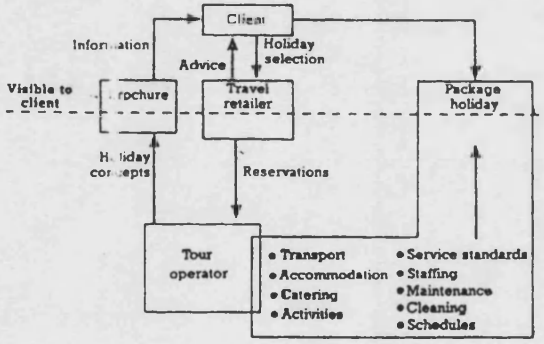
The coast is particularly alluring to the tourist seeking a sunlust holiday. Tourism is therefore a significant agent adding to the stresses already imposed upon fragile coastal resources...Resort development changes the shoreline configuration by dredging, the construction of groynes and sea-walls and the building of marinas. It causes habitat loss, pollution by storm-water run-off, siltation problems and can disrupt food chains with consequences for inshore fishing...
Cater and Goodall; 1992

There are 18,814 hectares (3.2% of total land area) of mangroves in Brunei...These mangroves play a very significant role as the hatcheries and nurseries of marine life...an unusual wildlife system affording a valuable opportunity for education, scientific study and eco-tourism.
A major proportion of the existing mangrove has, however, been allocated to specific activity such as protected and forest reserve areas, brackish water pond aquaculture and human occupancy projects.
Brunei Yearbook; 1997

"Brunei Bay is home to one of the most well preserved coastal mangroves of the world. Historically, the bay has been an arena for traditional fisheries...the bay opens to the South China Sea, where oil exploration and production is going on in both Brunei Darussalam and Malaysian waters. Add to this the tanker traffic in the sea and what we have at hand is a valuable but vulnerable resource." Dr.Pangiras Michael; UBD; in Brunei Shell and the Environment; 1996

Wetland ecosystems...absorb floodwaters and regulate floods...absorb nutrients and retain sediment, thus purifying water supplies; and they buffer wind and wave action, helping to protect many coastal areas from storms. In addition to these ecological services many wetlands yield a range of products which can be harvested sustainably...Many also support important populations of wildlife, including many endangered species, and are a major recreational and tourist resource. In the past these multiple benefits were poorly recognised, and major development projects often sought to maximize the use of only one resource. IUCN/UNEP/WWF; 1991

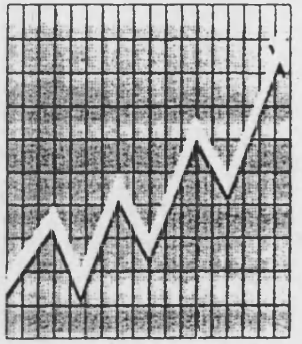
The tourist travels to the producer's location, i.e. destination, to consume the holiday product. Tourism is therefore dependent upon the attractive power of the destination's primary resources. Such resources are natural, e.g. beautiful scenery and wildlife, or people-made, either historical artifacts, cultural features, theme parks, or hallmark events such as the Olympic Games...Tourists must travel to and within the destination and have somewhere to stay to experience these primary resources. Destinations therefore provide secondary resources, e.g. accommodation, transport facilities and service infrastructure. Such physical development restructures the destination environment...Tourist behaviour can have adverse consequences, both deliberate and unintentional, for the sustainability of the destination environment. Furthermore, the presence of tourists generates extra waste.
Cater and Goodall; 1993



Blueprint of a package tour

Guidelines to aspiring destinations

1. Make residents aware of the advantages of tourism, demonstrating economic benefits and encouraging them to share tourists' resources and amenities.
2. Base tourism planning on goals identified by local residents so that they can maintain their lifestyle, keep developments within local carrying capacity, and match the pace of change with local desires.
3. The images used in the promotion of attractions should be endorsed by residents.
4. Co-ordinate public and private efforts to maintain local opportunities for recreation.
5. Retain respect for traditions and lifestyles through local involvement in tourism development.
6. Local capital, enterprise and labour should be invested in local tourism developments.
7. Broad-based community participation in tourism events should be encouraged, as it is local residents homes that are being put on display.
8. Destinations should adopt themes which reflect history and local lifestyles and enhance local pride in the community.
9. Mitigate local growth problems before increasing tourism activity as tourism is an agent of change.
[Laws; 1991]



Each destination has a tourism carrying capacity. This suggests a tolerance limit which, if exceeded, leads to an unacceptable degree of damage to the character and quality of the destination environment or the tourist's experience and satisfaction.
Cater and Goodall;1992

Segments in the mass travel market

1. **"Relaxation and physical recreation" including nature lovers and beach-oriented people.**
2. **"Sightseeing and culture", including the wandering tourist who may adopt either a "nodal mode", based at one touring centre, or prefer a "linear tour", moving from hotel to hotel.**
3. **"Visiting friends or relatives".**
4. **"Special interests" including study, sport, health, religion and conventions.**

[Laws; 1991]

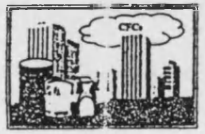
DEVELOPMENT, TOURISM AND THE ENVIRONMENT

"Tourism suggests holidays in the sun on sandy beaches and visits to distant places with grand scenery or alluring culture and history. Tourism has major economic, social and environmental impacts for destinations. Its growth creates problems, especially where fragile and remote environments are visited. Environmental degradation follows and the despoiled destinations become less attractive". Cater and Goodall; 1992

impacts of development on the environment

ENERGY:

- Buildings are huge energy users.
- Most power generation produces 'greenhouse gases' such as carbon dioxide which contribute to global warming and diminish our natural reserves of fossil fuels



PRODUCTS AND BUILDING MATERIALS:

- Many products and building materials have unexpected properties which harm the environment.
- One example is CFCs which accentuate depletion of the ozone layer.

BUILDING OPERATIONS:

- Construction and operational activities carried on within buildings can often lead to the depletion of natural resources.
- Production of materials in buildings may involve environmentally damaging extraction methods, resulting in loss of land, minerals, forests and other resources.

WASTE:

- The careless generation or disposal of waste can be a major cause of environmental pollution
- Problems associated with waste can range from litter to serious chemical contamination of land or water

[illegible] Ministry of Development, Negara Brunei Darussalam 1995

"Numerous studies have pointed out the high foreign exchange leakage of tourism-generated income; as much as two-thirds of the money tourists spend goes to foreign-owned tour operators, airlines, hotels and pays for imported food and drink. Little money goes to local people who tend to be employed in the lower paid...tourist jobs and bear the brunt of the adverse impacts, including disrespectful tourist behaviour...the erosion of cultural and spiritual values, and extensive environmental degradation.
The Ecologist; 1994

There is probably no other economic activity which transects so many sectors, levels and interests as tourism.
Cater;1995

Tourism is the world's number one industry today. It contributes 11% to the world's GDP, while around 11% of the world's population is involved in the trade. The workforce is projected to increase...by the year 2005 to 350 million, from the present figure of 204 million.
The world's gross output from the industry is expected to increase 170% in a decade...The Asia-Pacific region is projected to lead in the tourism industry by that time.
At present Brunei is getting around 400,000 visitors in a year...hopes to increase to 1 million in the year 2000.
Brunei Yearbook,1997

Examples of mixed outcomes for environment and development

(i) WIN / WIN
Example: Increased fuel efficiency
Environmental impact: Reduce CO_2 emissions per passenger km
Impact on other interests: Reduction of costs to firm

(ii) WIN / LOSE
Example: Designation of National Parks
Environmental impact: Conservation
Impact on other interests: Local population excluded from traditional activities

(iii) LOSE / WIN
Example: Coastal development
Environmental impact: Environmental degradation
Impact on other interests: Short term profit maximisation

(iv) LOSE / LOSE
Example: Destruction of coral reef for building material and access
Environmental impact: Beach erosion
Impact on other interests: Loss of attraction

ECO-TOURISM AND SUSTAINABLE DEVELOPMENT

Brunei Darussalam offers vast land and a variety of facilities throughout all four districts of the country. The majority of the 12 industrial sites presently developed are ready and available for occupation. Large expanses for agro-forestry and aquaculture are also available...Brunei Darussalam gives priority to ensuring the stability of the natural environment. As such, all sites are free from pollution and are ecologically well-balanced. The Government philosophy is for sustainable development. **Brunei Yearbook;1997**

Resource 24 Paradise lost?

The protection of the environment is an essential part of tourism development. Without adequate environmental protection tourism development in particular, and development prospects in general are undermined, compromising the present and future prospects of tourism organisations, tourist guests, and host destinations alike.

Given the multitude of interests involved, however, a completely sustainable outcome is likely to remain more of an ideal than a reality.

Cater: 1995

Indeed, tourism to the "unspoilt, pristine wilderness" of a national park is internally contradictory. To generate substantial revenue - whether for conservation, foreign exchange, tour companies or local people - the number of tourists has to be large. That implies a greater impact on the local culture and the environment.

The Ecologist: 1994

Tourism Development, water use and waste disposal

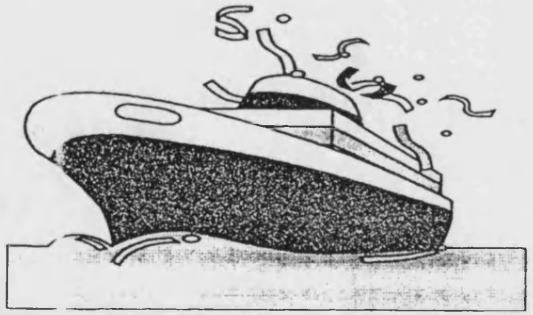
Management and protection of water supplies is critical and should involve:

- reafforestation of deforested and barren areas;
- reduction of paving in urban areas;
- control of soil erosion to prevent runoff;
- restrictions on the drainage of wetlands;
- construction of appropriate water storages (mosquito breeding locations result from poor removal of waste water and the use of unscreened storage tanks) ;
- establishment and protection of recharge areas (excessive extraction of groundwater has caused saltwater intrusion in the aquifers, soil subsidence and soil salinity; pollution of groundwater through poorly placed waste stabilisation ponds; poor planning of waste disposal systems, including sewerage);
- conservation of surface run-off (the uncontrolled use of pesticides, herbicides, fertilisers; excessive use of detergents containing phosphates and other plant nutrients).

"Can we not invest in marine resource development, which are renewable? Can we not promote eco-tourism, for which Brunei has unlimited potential? I think you can. Brunei now lives on oil but Brunei will go on as long as she accepts sustainable development. Development that relies on sustainability of resources to develop and increase the welfare of its people. I am sure it is possible. What it needs is the whole support of its people and commitment of its leaders.

Dr. Bapak Emil Salim: Brunei Ministry of Development/BSP Environment Lecture 1995

OTHER DEVELOPMENT PROJECTS IN BRUNEI: Do these help the growth of tourism? Might some of them hinder it?



Merg ang Beach Park Feasibility Study

...to p epare a Landscape Conservation and Management Plan for some ix kilometers of forested coastline between Muara and Berak as. Meragang Beach has been designated for recreational use in the Muara Local Plan, and the surrounding area contains attrac ive natural features, the historic Brooketon Colliary site, and A pi-Api wetlands. With the development of Meregang Reset ement Scheme some 9,000 people will be living in close proxi ity to these features creating substantial demand for open space and recreation facilities.

CMP- lamzah Sdn. Bhd. Information Booklet

- Closed circuit cement milling is controlled by advanced computer systems to ensure that all cement is produced to the same high standard.
- Plant designed to produce at least 600,000 tonnes per year of cement.
- Completion of jetty in September 1995 will allow efficient export of excess cement.
- Efficient delivery of raw materials using Djajanti's 12,000 tonne ships.

Promotional leaflet of Butra Djajanti Sdn.Bhd: Serasa Industrial Area

In tandem with the development and promoting of the East Asean Growth Area, Brunei Darussalam conceived and launched the vision to make itself the Service Hub for Trade and Tourism (SHuTT) by the year 2003.

It is improving its transportation systems and communication networks rapidly to serve trade and tourism better.

Its 24 hour port service and consignment facilities serves as a hub for the region whereby business people could use it for importing goods into their area or export them to other parts of the world.

Brunei Yearbook. 1997

In the revegetation trials, successfully completed at abandoned drilling sites at Lahi, fast growing tree species were planted at the sites. In a short period of time, tree cover increased dramatically restoring the aesthetic balance of the area and controlling soil erosion. In addition, the protection afforded by the crown of the trees and nutrients provided by the foliage of the trees have stimulated undergrowth and it is expected that in due course of time, the endemic species of the locality will take over and eventually restore the balance of the ecosystem. The success of this experiment has prompted BSP to make revegetation an integral part of its abandonment policy.

Joppe Kramwinckel: Head, Environmental Affairs: Brunei Shell Petroleum

ENVIRONMENTAL AUDITING: A TOOL FOR TOURISM FIRMS

Tourists are consumers of "environment" and tourism is, therefore, an environment-dependent industry reflecting the availability and quality of...the physical environment (including both natural and built heritage elements). Tourist destinations, tourism firms and the tourists themselves would appear to share a common interest...in the conservation of these environmental resources.

Environmental auditing, a relatively new concept originally developed as a business management tool in manufacturing industry...provides a means to evaluate the operational phase of tourism activities...There are commercial benefits for tourism firms such as...

1. ***cost savings from more efficient use of resources and more efficient minimisation of waste...***
2. ***early identification of potential environmental problems, leading to cheaper insurance, fewer law-suits and reduced costs of clean-ups...***
3. ***the development of benchmarks of good environmental practice. e.g. the International Hotels Environment Initiative (1993) for developing environmental guidelines...***
4. ***an improved corporate image, e.g. Ramada International is positioning its corporate image as "the hotelier of environmental integrity"...making it easier to obtain finance capital and develop the business.***
5. ***marketing advantages...there is strong evidence of peoples' concern for the environment in the latest market research...***
6. ***acquiring the confidence of investors and regulators as well as customers and the community and the recruitment of better motivated and higher quality employees.***

A firm's environmental policy will cover:
1. compliance with environmental legislation.
2. reduction of any negative environmental impacts.
3. the development of environmentally-friendly products.
4. sustainable resource use, including waste reduction, choice of environmentally harmless inputs and safe disposal of waste where recycling is not possible.
5. fostering an understanding of environmental issues among employees and customers.

Examples of environmental auditing practice by a tourism firm.

* an international hotel chain ensures that all its hotels meet the same environmental standards.
* a car hire firm evaluates its vehicle fleet with respect to type, usage, repair and maintenance, and disposal.
* a hotel checks the energy efficiency of its air-conditioning, waste-recycling and disposal systems.
* a restaurant chain reviews its purchasing policy to increase use of local products.
* An airline checks and reduces its use and storage of CFCs and halons (which damage the ozone layer).
* a tour operator considers whether preferential employment opportunities can be offered to local people, and issues briefing packs to tourists about respect for the destination's natural and cultural environment.
* a tour operator reviews the impact of package holidays on a destinations resources.

As a minimum tourism firms should use the *best available technology not entailing excessive cost* **(BATNEEC).**

However, current best environmental practice in the hotel and airline industries goes beyond this, and comes close to the *precautionary principle*, under which waste disposal, pollution and business practices are controlled even before there is clear scientific proof of an environmental problem.

This page adapted from GOODALL, 1995

ANNEX 9

The Design Week and Second Quality Week Combined Perspective Document

Please do <u>not</u> write your name, form, or any other information about yourself on this document!

Completing the items which follow will help the planning of the TOURISM and ISO STANDARDS exercise for next year, and with the development of new units.

All the statements were suggested by students in their work on Tourism and ISO this year. They have been arranged to show how difficult these issues are.

<u>Please circle one number for each statement.</u>

1 = STRONGLY AGREE
2 = AGREE
3 = DON'T KNOW
4= DISAGREE
5 = STRONGLY DISAGREE

Thanks!

1	
Companies should be responsible for any damage their product may cause in the future.	**1 2 3 4 5**
Consumers are responsible for the safe disposal of unwanted items and packaging.	**1 2 3 4 5**
2	
Wildlife habitats should be protected.	**1 2 3 4 5**
For economic reasons, firms need to be based in the eco-sensitive coastal zone.	**1 2 3 4 5**
3	
Muara Port is an excellent business location.	**1 2 3 4 5**
Muara Port is in an ecologically-sensitive area.	**1 2 3 4 5**
4	
Many businesses need rivers to dispose of waste.	**1 2 3 4 5**
Fishing, tourism and other industries need clean rivers.	**1 2 3 4 5**
5	
The introduction of ISO standards may reduce costs.	**1 2 3 4 5**
The introduction of ISO standards may increase costs.	**1 2 3 4 5**
6	
Forward planning is essential.	**1 2 3 4 5**
Forward planning is difficult because there are so many unknowns.	**1 2 3 4 5**
7	
Firms should design products which do not harm the environment.	**1 2 3 4 5**
Firms should design products which consumers want to buy.	**1 2 3 4 5**

8	
Business should concentrate on rapid response to customer wants.	**1 2 3 4 5**
Business should concentrate on long-term planning and improvement.	**1 2 3 4 5**
9	
A firm is "green" if it is trying to improve its environmental performance through a process of continual review and action.	**1 2 3 4 5**
"Green" means "calm" and "peaceful".	**1 2 3 4 5**
10	
Firms can obtain a marketing edge if they obtain a "green" image.	**1 2 3 4 5**
Customers may reject a firm's products if they believe it is only seeking a green image in order to obtain a marketing edge.	**1 2 3 4 5**
11	
Firms have a responsibility to provide education.	**1 2 3 4 5**
Firms have a right to expect an educated workforce.	**1 2 3 4 5**
12	
Small firms build better relations with local people.	**1 2 3 4 5**
Successful small firms grow into bigger ones.	**1 2 3 4 5**
13	
ISO 14000 companies must use other ISO 14000 companies as suppliers where possible.	**1 2 3 4 5**
It is wrong to make environmental considerations a condition of doing business.	**1 2 3 4 5**
14	
It is important that businesses are truthful.	**1 2 3 4 5**
Businesses may need to conceal information for competitive reasons.	**1 2 3 4 5**
15	
Compliance with ISO 14000 will improve quality because of the introduction of an environmental management system.	**1 2 3 4 5**
Compliance with ISO 14000 will reduce quality because firms will be able to use only raw materials which can be extracted with minimum environmental impact.	**1 2 3 4 5**
16	
Human-produced resources (eg. infrastructure) are necessary for business development.	**1 2 3 4 5**
Human-produced resources are made by depleting natural resources.	**1 2 3 4 5**
17	
The forest is a great natural asset.	**1 2 3 4 5**
The forest must be cleared to make way for development.	**1 2 3 4 5**
18	
Temburong is a rich source of resources for development.	**1 2 3 4 5**
Temburong is valuable because it is unspoiled.	**1 2 3 4 5**
19	
Free flows of information are required for the development of private-sector business, for example through the internet.	**1 2 3 4 5**
Conservation of tradition requires information flows to be controlled.	**1 2 3 4 5**

20	
Forests can be preserved by opening National Parks and recreational sites.	**1 2 3 4 5**
Use by people is the main source of damage to forests.	**1 2 3 4 5**
21	
Keeping waterways clean is a priority.	**1 2 3 4 5**
Silting of rivers following land clearance for building and industrialisation is inevitable.	**1 2 3 4 5**
22	
Plastics have raised living standards.	**1 2 3 4 5**
Plastics have caused a deterioration in the standard of the environment we live in.	**1 2 3 4 5**
23	
The development of a plastics industry would contribute to development.	**1 2 3 4 5**
Pollution from plastics manufacture may damage other industries such as tourism and fisheries, so limiting growth.	**1 2 3 4 5**
24	
Discarded plastic bags pollute Sg. Brunei and snag water-taxi propellers.	**1 2 3 4 5**
Plastic bags have reduced congestion on Sg. Brunei, as their extra convenience leads to fewer trips to market being made by consumers.	**1 2 3 4 5**
25	
The public are responsible for pollution by plastic bags.	**1 2 3 4 5**
Retail outlets are responsible for pollution by plastic bags.	**1 2 3 4 5**
26	
Plastics manufacture at Serasa would mostly be of concern to local people.	**1 2 3 4 5**
Plastics manufacture at Serasa would be of concern to people across national boundaries.	**1 2 3 4 5**
27	
Paper bags are environmentally friendly because they do away with the need to manufacture plastic bags.	**1 2 3 4 5**
Plastic bags are environmentally friendly because they do away with the need to cut down trees to make paper.	**1 2 3 4 5**
28	
Industrial diversification will reduce dependency on oil and gas.	**1 2 3 4 5**
Industrial diversification will mean more oil and gas are needed.	**1 2 3 4 5**
29	
It is important to diversify away from oil and gas.	**1 2 3 4 5**
There is plenty of oil and gas left.	**1 2 3 4 5**
30	
Rapid scientific and technological development is desirable.	**1 2 3 4 5**
Traditional technologies and ways of living should be maintained.	**1 2 3 4 5**

31	
New technologies will create new jobs.	**1 2 3 4 5**
New technologies will cause more unemployment.	**1 2 3 4 5**
32	
Careful measurement makes it possible to monitor environmental impacts.	**1 2 3 4 5**
Loss of natural beauty is an important environmental impact which cannot be measured.	**1 2 3 4 5**
33	
Only experts can judge environmental impacts.	**1 2 3 4 5**
Judging environmental quality is a matter for the population as a whole.	**1 2 3 4 5**
34	
New technology leads to better crops and breeds of livestock.	**1 2 3 4 5**
New technology causes wastes which are harmful to crops and livestock.	**1 2 3 4 5**
35	
Technology makes life easier.	**1 2 3 4 5**
Technology makes us lazy.	**1 2 3 4 5**
36	
Technology and development are the main source of human well-being.	**1 2 3 4 5**
The sea is the most important source of food.	**1 2 3 4 5**
37	
Traditional methods, ways and products should be preserved.	**1 2 3 4 5**
Rattan bags are not as convenient as plastic bags.	**1 2 3 4 5**
38	
Environmental damage is inevitable as living standards rise.	**1 2 3 4 5**
The quality of the environment is an important aspect of living standards.	**1 2 3 4 5**
39	
Local people support industrialisation.	**1 2 3 4 5**
Industrial development should be kept away from local kampongs.	**1 2 3 4 5**
40	
It is a feature of the modern world that people are becoming more commercially and technologically-minded.	**1 2 3 4 5**
Commerce and technology are important aspects of traditional Bruneian lifestyles.	**1 2 3 4 5**
41	
Development requires hard work and competitive business activity.	**1 2 3 4 5**
The purpose of development is to make life more comfortable and easier.	**1 2 3 4 5**
42	
Development can make life safer.	**1 2 3 4 5**
Development can lead to more crime and the black market.	**1 2 3 4 5**
43	
ISO standards are necessary to conserve the environment.	**1 2 3 4 5**
Changes in the behaviour of individuals are necessary to conserve the environment.	**1 2 3 4 5**

44

People should treat the Earth with respect.	1 2 3 4 5
The Earth is there for people to make use of.	1 2 3 4 5

45

New industries are needed to achieve development	1 2 3 4 5
New industries are needed to repair and prevent environmental damage caused by development.	1 2 3 4 5

46

The growth of new industry leads to increased energy demands.	1 2 3 4 5
New industries will develop energy saving technologies.	1 2 3 4 5

47

An important reason for development is to achieve self-sufficiency.	1 2 3 4 5
An important aspect of development is the promotion of joint-ventures with foreign companies.	1 2 3 4 5

48

Privatisation is necessary to encourage competition.	1 2 3 4 5
Private firms should respect and preserve community values.	1 2 3 4 5

49

Rapid growth requires rapid depletion of natural resources.	1 2 3 4 5
Sustainable growth requires controlled depletion of resources.	1 2 3 4 5

50

Sustainable development is Government policy.	1 2 3 4 5
The achievement of sustainable development depends on the behaviour of firms and citizens.	1 2 3 4 5
Oil and gas production is ultimately unsustainable.	1 2 3 4 5

51

Development causes people to forget about the natural environment.	1 2 3 4 5
Development leads to increased environmental awareness.	1 2 3 4 5

52

Brunei must avoid following the West.	1 2 3 4 5
Brunei must catch up with the West.	1 2 3 4 5

53

A good environment has lots of tall trees.	1 2 3 4 5
A good environment has lots of tall buildings.	1 2 3 4 5

54

Uses should be found for every part of the land.	1 2 3 4 5
Natural resources should be preserved for the sake of future generations.	1 2 3 4 5

55

Growth will mean more tall buildings.	1 2 3 4 5
Growth will mean more squatter settlements.	1 2 3 4 5

56

Growth will improve the quality of life.	1 2 3 4 5
Growth will increase the cost of living.	1 2 3 4 5

57

Consumer spending will increase.	1 2 3 4 5
It is important to avoid materialism.	1 2 3 4 5

58

Growth will occur because Brunei is a target for Western business expansion.	**1 2 3 4 5**
Growth will occur because Bruneian entrepreneurs will undertake more business activity.	**1 2 3 4 5**

59

Brunei will become wealthier.	**1 2 3 4 5**
More individuals will get into debt.	**1 2 3 4 5**

60

Urbanisation destroys the landscape.	**1 2 3 4 5**
Urbanisation can improve the landscape.	**1 2 3 4 5**

61

Shop houses will be replaced by sky-scrapers.	**1 2 3 4 5**
Shop houses are part of the traditional way of life and should be conserved.	**1 2 3 4 5**

62

Products should be long-lasting and durable.	**1 2 3 4 5**
Products should be bio-degradable.	**1 2 3 4 5**

63

Products which are recyclable, reuseable and bio-degradable cause no harm to the environment.	**1 2 3 4 5**
Such products may be manufactured by highly polluting processes.	**1 2 3 4 5**

64

Manufacturing processes which cause no pollution and use resources sustainably cause no harm to the environment.	**1 2 3 4 5**
Such processes may be used to make products which damage the environment.	**1 2 3 4 5**

65

Brunei has plenty of unexploited resources.	**1 2 3 4 5**
It is important to use resources sparingly.	**1 2 3 4 5**

66

Packaging is essential to promote products.	**1 2 3 4 5**
Packaging is often inessential and wasteful.	**1 2 3 4 5**

67

ASEAN business leaders are concerned about the environmental impacts of present production and consumption patterns.	**1 2 3 4 5**
Business leaders make their profit by responding to present production and consumption patterns.	**1 2 3 4 5**

68

Development will lead to less foreign imports.	**1 2 3 4 5**
Development will lead to more foreign investment.	**1 2 3 4 5**

69

Free trade will lead to competition which will drive local firms out of business.	1 2 3 4 5
Free trade will act as a spur to make Bruneian firms efficient and successful.	1 2 3 4 5

70

Values should be important in the development process.	1 2 3 4 5
It is wrong to make environmental performance a condition for trade.	1 2 3 4 5

71

Free trade is desirable.	1 2 3 4 5
Self-sufficiency in rice is desirable.	1 2 3 4 5

72

ISO standards require firms to provide more training for staff.	1 2 3 4 5
ISO standards require firms to involve staff in decision-making.	1 2 3 4 5

73

Firms should train their workers in order to be more competitive.	1 2 3 4 5
Firms should cut costs - including those of training - to be more competitive.	1 2 3 4 5

74

Development will mean more skilled workers are needed.	1 2 3 4 5
Development should mean fewer foreign workers are needed.	1 2 3 4 5

75

Development will lead to a more highly-educated population.	1 2 3 4 5
Development requires a more highly-educated population.	1 2 3 4 5

76

An educated workforce is needed to attract multi-national companies.	1 2 3 4 5
Multi-national companies should provide training for locals.	1 2 3 4 5

77

Development requires more training provided by the Government.	1 2 3 4 5
Development will reduce dependence on the Government.	1 2 3 4 5

78

Business needs to develop a spirit of cooperation and teamwork among the workforce.	1 2 3 4 5
Business needs to develop a spirit of competition among the workforce.	1 2 3 4 5

79

The meaning of the phrase "clean and green" is obvious.	1 2 3 4 5
This phrase means different things to different people.	1 2 3 4 5

80

Hazardous substances should be directly controlled by the Government	1 2 3 4 5
Hazardous substances should be controlled through the price mechanism.	1 2 3 4 5

81

Development and a clean environment are goals that go together.	1 2 3 4 5
Development and a green environment are goals that contradict each other.	1 2 3 4 5

82

More foreign investment and a clean environment are goals that go together. **1 2 3 4 5**

More foreign investment and a clean environment are goals that contradict each other. **1 2 3 4 5**

83

People in remote areas are lucky still to be using traditional methods. **1 2 3 4 5**

People in remote areas are unfortunate in not always having access to modern methods. **1 2 3 4 5**

84

The development of a plastics industry in Brunei would contribute to diversification. **1 2 3 4 5**

The plastics industry depends on oil and gas by-products for its raw materials. **1 2 3 4 5**

85

Environmental resources, such as rivers and forests, should be used in whatever way produces the best return. **1 2 3 4 5**

Environmental resources are impossible to value in money terms, because part of their value is emotional, cultural or spiritual. **1 2 3 4 5**

86

Company directors are responsible only to shareholders. **1 2 3 4 5**

Company directors are responsible to society as a whole. **1 2 3 4 5**

87

Workers have a responsibility to work safely and avoid accidents. **1 2 3 4 5**

Managers must take responsibility to ensure that accidents do not happen. **1 2 3 4 5**

88

Reductions in pollution should be achieved by modern technology. **1 2 3 4 5**

Reductions in pollution should be achieved by changes in lifestyle. **1 2 3 4 5**

89

Quality management systems emphasise competition. **1 2 3 4 5**

Quality management systems emphasise teamwork and cooperation. **1 2 3 4 5**

90

Worrying about wildlife may lead to reduced profits. **1 2 3 4 5**

Worrying about profits may lead to reduced wildlife. **1 2 3 4 5**

91

Household rubbish may be disposed of by putting it in a reused plastic bag. **1 2 3 4 5**

When household rubbish is put in a plastic bag it is still there - plus the bag! **1 2 3 4 5**

92

Development increases well-being. **1 2 3 4 5**

Development increases the incidence of illnesses such as heart disease. **1 2 3 4 5**

93

We should use the forests to benefit future generations. **1 2 3 4 5**

We should leave the forests alone to conserve them for future generations. **1 2 3 4 5**

94

Growth will mean Bruneians can have better cars.	1 2 3 4 5
Sustainable growth requires more use of public transport.	1 2 3 4 5

95

There should be more clean up campaigns.	1 2 3 4 5
When clean up campaigns are finished, rubbish soon reappears.	1 2 3 4 5

96

The expansion of high-technology agribusiness will reduce species diversity.	1 2 3 4 5
Preservation of species diversity is a fundamental goal of agricultural development.	1 2 3 4 5

97

The cheapest method of land clearance is to clear and flatten completely.	1 2 3 4 5
Soil erosion from cleared, flattened land raises its costs.	1 2 3 4 5

98

Public transport to remote areas is too costly to provide.	1 2 3 4 5
Public transport to remote areas would bring many benefits.	1 2 3 4 5

99

Development will mean more jobs.	1 2 3 4 5
Development will mean fewer jobs.	1 2 3 4 5

100

Part of Brunei's tourism appeal is that it is the "Abode of Peace"	**1 2 3 4 5**
Brunei is peaceful because it receives few tourists.	**1 2 3 4 5**

101

Brunei must change to suit tourists.	**1 2 3 4 5**
Brunei is attractive to tourists as it is.	**1 2 3 4 5**

102

Tourism is a way of diversifying from oil and gas.	**1 2 3 4 5**
Brunei's oil and gas wealth is part of its appeal to tourists.	**1 2 3 4 5**

103

Natural habitats must be preserved.	**1 2 3 4 5**
Roads and railways must be built through natural habitats so that tourists can see them.	**1 2 3 4 5**

104

Tourists must be able to enjoy themselves as they wish.	**1 2 3 4 5**
Tourists must respect Bruneian values and traditions.	**1 2 3 4 5**

105

Islands in Sg. Brunei are valuable because they provide an undisturbed environment.	**1 2 3 4 5**
Islands in Sg. Brunei are valuable because they can be exploited and managed.	**1 2 3 4 5**

106

Muara and Serasa should provide beach attractions to tourists.	**1 2 3 4 5**
Muara and Serasa should provide industrial and commercial facilities.	**1 2 3 4 5**

107

Tourists are attracted by traditional activities like fishing, craft work and cooking.	**1 2 3 4 5**
Jobs in tourism will replace traditional ways of earning a living.	**1 2 3 4 5**

108

Tourists will not visit areas where the natural environment has been damaged.	**1 2 3 4 5**
Tourists are a major cause of damage to the natural environment.	**1 2 3 4 5**

109

Tourism revenues will replace oil and gas revenues in the long run.	**1 2 3 4 5**
Tourist expenditures are often on imported goods and services.	**1 2 3 4 5**

110

Tourist numbers must be kept low to minimise damage to coastal and jungle ecosystems.	**1 2 3 4 5**
Tourist numbers must be maximised to earn the greatest possible revenue.	**1 2 3 4 5**

111

Tourism needs to cater to foreign cultures.	**1 2 3 4 5**
Tourists want to experience local culture.	**1 2 3 4 5**

112

Tourists should be kept apart from local people.	**1 2 3 4 5**
Tourists should be encouraged to make friends with local people.	**1 2 3 4 5**

113

Brunei's tourism industry should target wealthy foreigners.	1 2 3 4 5
Brunei's tourism industry should target backpackers.	1 2 3 4 5

114

Tourism will create new jobs for Bruneians.	1 2 3 4 5
The tourism industry will need to import many foreign service workers.	1 2 3 4 5

115

Tourism threatens Brunei's cultural heritage.	1 2 3 4 5
Tourism will help to preserve Brunei's cultural heritage.	1 2 3 4 5

116

Brunei's beaches are untouched by civilisation.	1 2 3 4 5
Brunei's beaches need cleaning up.	1 2 3 4 5

117

Tourists will be interested to buy food at hawker stalls.	1 2 3 4 5
Hawker stalls should be replaced by shopping malls.	1 2 3 4 5

118

Tourist sites should be kept away from industry.	1 2 3 4 5
Tourism is an industry.	1 2 3 4 5

119

Tourism requires an unspoiled marine environment.	1 2 3 4 5
Tourism requires marinas and watersports facilities.	1 2 3 4 5

120

Development of tourism requires Brunei to spend money.	1 2 3 4 5
Development of tourism requires foreigners to spend money.	1 2 3 4 5

121

Tourism requires unspoiled jungle.	1 2 3 4 5
Tourism requires golf courses.	1 2 3 4 5

122

Eco-tourists want to see animals in their natural environment.	1 2 3 4 5
There should be a new and expanded zoo.	1 2 3 4 5

123

The wishes of the tourist customer come first.	1 2 3 4 5
The wishes of local people come first.	1 2 3 4 5

124

The tourism industry should be carefully planned and regulated by the Government.	1 2 3 4 5
The tourism industry should be left to the private sector.	1 2 3 4 5

125

Brunei is a unique tourist destination.	1 2 3 4 5
Brunei faces competition from many Asian countries offering cultural, leisure, sporting and coastal attractions.	1 2 3 4 5

126

The proposed Brunei Airport City should cater for the expensive end of the market exclusively. **1 2 3 4 5**

The proposed Brunei Airport City should cater for the cheap end of the market. **1 2 3 4 5**

127

Tourism will improve the quality of life through improved infrastructure, utilities and revenues. **1 2 3 4 5**

Tourism will worsen the quality of life through damage to nature. **1 2 3 4 5**

128

Establishing a "cultural village" will help to preserve Brunei's culture. **1 2 3 4 5**

Establishing a "cultural village" will turn Brunei's culture into history. **1 2 3 4 5**

129

The attraction of Belalong is its remoteness. **1 2 3 4 5**

When a place has many visitors it is no longer remote. **1 2 3 4 5**

130

The costs of tourism development should be carefully and accurately calculated. **1 2 3 4 5**

The cost of lost customs, traditions, values, habitats, species and natural beauty cannot be calculated. **1 2 3 4 5**

131

Traditional Bruneian artefacts such as BERTUKANG PERAK, EMAS, MENENUN KAIN and KETUKAN LOGAM, also musical instruments such as TAWAK-TAWAK and GENDANG BALIK are part of the national heritage and should be kept in Brunei. **1 2 3 4 5**

Such items should be made for sale to tourists. **1 2 3 4 5**

132

Mangroves are a potential tourist attraction. **1 2 3 4 5**

Mangroves should be kept undisturbed and free of tourists as they provide an important habitat and hatcheries for endangered species. **1 2 3 4 5**

133

The aim is to attract large numbers of tourists **1 2 3 4 5**

Brunei should promote itself as a place of peace, solitude and rest. **1 2 3 4 5**

134

Tourist accommodation should be built using recycled materials. **1 2 3 4 5**

Tourist accommodation should be built in the most cost-effective way. **1 2 3 4 5**

135

Transportation for tourists should be environmentally-sensitive (eg. electric cars). **1 2 3 4 5**

Transportation for tourists should be cost effective, making use of cheap petrol and diesel. **1 2 3 4 5**

136

Tourists should be encouraged to "have a go" at traditional Bruneian dances and music-making.	1 2 3 4 5
Traditional dances and music should be treated with respect as they are part of the national heritage.	1 2 3 4 5

137

Brunei should develop its own tourism industry.	1 2 3 4 5
Foreign investment in Brunei tourism should be encouraged.	1 2 3 4 5

138

Tourists visiting Temburong require facilities to make them safe and comfortable at all times.	1 2 3 4 5
Tourists visiting Temburong expect a sense of adventure and remoteness from civilisation.	1 2 3 4 5

139

Tourists want to see Brunei as it really is.	1 2 3 4 5
Tourists want Brunei to be as they imagined it.	1 2 3 4 5

140

Education should teach Bruneians how to exploit their environment.	1 2 3 4 5
Education should teach Bruneians how to conserve their environment.	1 2 3 4 5

141

Insisting on traditional values will put tourists off.	1 2 3 4 5
Insisting on traditional values will earn the respect of tourists.	1 2 3 4 5

142

Part of Brunei's attraction is that it goes its own way, ignoring fashions elsewhere.	1 2 3 4 5
Brunei cannot afford to ignore the global growth of tourism.	1 2 3 4 5

143

Eco-tourism should be developed throughout Brunei.	1 2 3 4 5
Eco-tourism should be restricted to Temburong.	1 2 3 4 5

144

Port facilities should be developed in each of Brunei's 4 districts.	1 2 3 4 5
Port facilities should be centred at Muara.	1 2 3 4 5

145

Coastal tourism will reduce Brunei's unemployment.	1 2 3 4 5
Coastal tourism will put fishermen out of work.	1 2 3 4 5

146

Coastal development will increase Brunei's exports.	1 2 3 4 5
Coastal development will create a need to import fish.	1 2 3 4 5

147

The tourism industry should target visitors on short stop-overs.	1 2 3 4 5
The tourism industry should target visitors for minimum 10-day visits.	1 2 3 4 5

148

Tourist accommodation in Brunei should be mostly luxury hotels.	1 2 3 4 5
Tourist accommodation in Brunei should be mostly stilt houses on the rivers so that tourists can experience local lifestyles.	1 2 3 4 5

149

Tourists should be free to explore Brunei by themselves. **1 2 3 4 5**

Tourists should be restricted to guided tours. **1 2 3 4 5**

150

Birds, fish and animals can be preserved in bird parks, underwater worlds and zoos. **1 2 3 4 5**

Animals are only really "preserved" if they are free to roam in their natural habitats. **1 2 3 4 5**

151

Indigenous peoples leading traditional lifestyles are an attraction to tourists **1 2 3 4 5**

Indigenous peoples leading traditional lifestyles must make way for progress of which tourism is a part. **1 2 3 4 5**

152

Conserving nature means leaving it alone. **1 2 3 4 5**

Conserving nature means blending it with modern facilities and technologies. **1 2 3 4 5**

153

Eco-tourists and cultural tourists are separate market segments. **1 2 3 4 5**

Eco-tourists and cultural tourists are strongly overlapping market segments. **1 2 3 4 5**

154

Eco-tourism has a key role to play in Brunei's development. **1 2 3 4 5**

Ecotourists want to visit places that are not developed. **1 2 3 4 5**

155

The alcohol ban is an opportunity to promote healthy local alternative drinks. **1 2 3 4 5**

The alcohol ban is a disadvantage to the development of business tourism. **1 2 3 4 5**

156

Undisturbed jungle is ideal for research. **1 2 3 4 5**

Undisturbed jungle is ideal for 4 X 4 rallying. **1 2 3 4 5**

157

Brunei can be profitable as a tourist destination. **1 2 3 4 5**

If the full cost of tourism development is taken into account, Brunei is unlikely to be profitable as a tourist destination. **1 2 3 4 5**

158

Tourists require clean beaches. **1 2 3 4 5**

Tourists produce a lot of rubbish. **1 2 3 4 5**

159

Land clearance creates jobs and incomes. **1 2 3 4 5**

Land restoration creates jobs and incomes. **1 2 3 4 5**

160

Modern lifestyles are more convenient. **1 2 3 4 5**

Traditional lifestyles like PADIAN and PUKAT are more relaxing. **1 2 3 4 5**

161

Traditional fishing methods are inefficient because they do not catch enough fish.	**1 2 3 4 5**
Traditional fishing methods are more efficient because they avoid overfishing.	**1 2 3 4 5**

162

Brunei should market itself as an escape from city life.	**1 2 3 4 5**
More malls, flyovers, and roads should be built.	**1 2 3 4 5**

163

Some forest must be preserved in its natural state for tourists.	**1 2 3 4 5**
"Being preserved" is not a natural state for a forest.	**1 2 3 4 5**

164

Tourists should be able to watch displays of traditional silversmithing.	**1 2 3 4 5**
Silversmithing is traditionally a secret craft known only to those in Kampong Sungai Kedayan.	**1 2 3 4 5**

ANNEX 10

The Design Week and Second Quality Week Combined Perspective Document Responses

Item numbers correspond to those in Annex 9

Item	1	2	3	4	5	1+1	1+2	2+1	2+2	1+3	3+1	2+3	3+2	Item	Total	Dilemmas	Tensions
1	77	80	5	9	2	37	36	30	42	1	1	5	3	1	173	145	155
	72	85	9	6	1										173		
2	118	42	0	2	2	19	35	4	8	47	0	19	0	2	164	66	132
	25	44	70	21	11										171		
3	22	89	36	25	1	1	4	3	25	12	0	44	4	3	173	33	93
	5	45	95	24	1										170		
4	3	15	11	61	83	2	0	9	4	0	6	0	3	4	173	15	24
	110	51	4	4	1										170		
5	16	71	51	28	5	0	1	1	17	2	1	10	8	5	171	19	40
	8	54	55	46	7										170		
6	85	78	3	2	2	14	41	4	40	5	1	12	0	6	170	99	117
	20	85	21	40	4										170		
7	100	65	0	4	2	50	49	19	44	0	0	1	0	7	171	162	163
	71	96	1	5	0										173		
8	48	103	10	10	0	20	21	22	69	2	0	7	9	8	171	132	150
	45	108	10	5	2										170		
9	46	93	21	5	2	7	19	10	39	5	2	12	7	9	167	75	101
	22	69	28	35	11										165		
10	22	84	53	10	1	1	5	3	31	3	1	16	10	10	170	40	70
	5	50	56	49	7										167		
11	22	103	23	21	2	8	9	17	66	3	1	6	14	11	171	100	124
	29	105	14	22	1										171		
12	43	93	19	13	1	17	20	14	54	2	1	14	12	12	169	105	134
	33	100	21	13	2										169		
13	30	69	57	12	1	2	4	1	4	5	1	15	4	13	169	11	26
	5	17	43	60	42										167		
14	62	64	19	21	3	10	33	7	44	8	5	9	9	14	169	94	125
	29	102	24	8	4										167		
15	35	95	29	7	0	1	5	4	17	7	0	19	5	15	166	27	58
	5	32	47	62	18										164		
16	42	99	20	5	1	6	17	4	37	6	2	24	6	16	167	64	102
	13	62	45	35	10										165		
17	134	28	3	3	3	3	17	0	5	12	0	2	2	17	171	25	41
	5	28	17	61	60										171		

Item	1	2	3	4	5	1+1	1+2	2+1	2+2	1+3	3+1	2+3	3+2	Item	Total	Dilemmas	Tensions
18	32	77	26	24	13	20	10	30	39	0	5	3	16	18	172	99	123
	81	70	7	8	2										168		
19	53	87	24	5	1	8	19	7	39	10	0	23	5	19	170	73	111
	16	64	54	29	5										168		
20	79	80	7	4	3	12	36	7	31	5	1	18	3	20	173	86	113
	26	76	27	41	3										173		
21	110	52	7	3	0	5	35	3	18	33	0	23	2	21	172	61	119
	9	57	61	34	7										168		
22	19	75	47	27	4	6	5	16	40	2	3	11	24	22	172	67	107
	31	85	32	18	3										169		
23	12	83	44	27	2	7	3	26	40	0	16	6	12	23	168	76	110
	68	76	13	12	4										173		
24	72	88	6	3	3	3	14	1	17	26	0	38	1	24	172	35	100
	4	34	72	33	25										168		
25	57	94	10	9	3	18	14	5	53	5	0	14	2	25	173	90	111
	24	72	30	37	7										170		
26	25	88	42	12	3	6	5	1	24	7	0	43	6	26	170	36	92
	8	40	90	25	7										170		
27	23	82	34	23	6	4	6	6	28	1	1	12	4	27	168	44	62
	14	45	37	58	16										170		
28	71	57	29	10	3	1	14	0	18	9	0	12	8	28	170	33	62
	4	46	45	61	14										170		
29	66	63	26	10	5	1	3	1	4	12	0	24	1	29	170	9	46
	3	9	52	60	46										170		
30	50	96	15	11	0	17	20	17	61	4	0	9	7	30	172	115	135
	35	94	18	18	5										170		
31	43	84	15	26	3	8	9	8	38	4	1	13	6	31	171	63	87
	26	68	27	39	13										173		
32	32	110	20	5	2	16	7	23	61	5	3	11	10	32	169	107	136
	48	83	22	9	7										169		
33	4	33	40	77	17	0	1	2	20	2	4	7	15	33	171	23	51
	28	86	44	8	2										168		
34	36	89	27	19	2	10	11	4	46	3	0	19	3	34	173	71	96
	17	71	44	26	9										167		

Item	1	2	3	4	5	1+1	1+2	2+1	2+2	1+3	3+1	2+3	3+2	Item	Total	Dilemmas	Tensions
35	73	89	6	3	0	42	22	17	55	1	0	8	3	35	171	136	148
	59	83	10	13	5										170		
36	27	82	37	19	3	9	12	12	34	0	3	16	18	36	168	67	104
	27	71	33	33	4										168		
37	52	82	18	12	4	6	18	8	37	8	1	18	8	37	168	69	104
	16	73	33	40	10										172		
38	20	73	38	27	10	12	5	18	47	0	6	4	23	38	168	82	115
	50	98	14	8	0										170		
39	7	74	67	23	1	2	2	17	31	1	7	6	33	39	172	52	99
	35	72	24	31	9										171		
40	46	106	13	4	2	6	19	3	35	13	0	43	2	40	171	63	121
	9	58	73	26	4										170		
41	70	88	10	3	1	33	28	7	60	2	0	9	1	41	172	128	140
	40	92	20	16	2										170		
42	17	59	46	45	6	5	5	7	22	3	3	19	20	42	173	39	84
	25	74	48	20	6										173		
43	51	94	20	2	1	17	19	17	50	11	2	20	7	43	168	103	143
	37	77	43	10	1										168		
44	105	57	5	3	2	37	37	7	32	12	1	8	3	44	172	113	137
	45	75	21	17	12										170		
45	30	117	18	7	1	12	9	14	60	3	1	24	4	45	173	95	127
	27	75	40	26	3										171		
46	31	114	19	4	3	5	10	1	44	8	0	51	3	46	171	60	122
	6	60	75	26	2										169		
47	30	84	35	21	1	16	10	5	51	3	1	20	22	47	171	82	128
	25	99	37	8	0										169		
48	35	92	26	18	0	23	10	18	62	1	2	6	18	48	171	114	140
	49	96	13	6	1										165		
49	11	61	34	47	19	4	5	3	41	1	1	13	9	49	172	53	77
	14	103	41	9	1										168		
50	24	111	29	4	1	5	5	9	43	11	4	39	5	50	169	62	121
	18	55	70	21	3										167		
51	35	94	14	24	4	13	8	13	40	1	1	8	4	51	171	74	88
	30	69	24	36	11										170		

Item	1	2	3	4	5	1+1	1+2	2+1	2+2	1+3	3+1	2+3	3+2	Item	Total	Dilemmas	Tensions
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	28	70	40	23	8										169		
53	55	78	24	13	2	2	5	0	11	4	0	5	4	53	172	18	31
	2	21	26	79	42										170		
54	16	56	51	38	4	12	3	31	20	0	27	2	20	54	165	66	115
	92	66	5	4	1										168		
55	20	86	18	36	11	4	3	4	26	2	1	9	3	55	171	37	52
	11	39	26	56	35										167		
56	35	97	22	12	6	22	9	9	79	1	0	6	13	56	172	119	139
	40	99	15	14	2										170		
57	38	106	14	11	2	15	11	13	59	7	0	19	7	57	171	98	131
	34	86	31	14	4										169		
58	27	74	54	13	2	17	8	6	47	2	3	16	30	58	170	78	129
	31	93	37	7	1										169		
59	21	53	81	11	5	3	7	4	18	4	4	15	19	59	171	32	74
	16	51	73	24	6										170		
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	5	55	55	44	12										171		
61	15	71	42	34	10	1	5	7	28	1	4	10	22	61	172	41	78
	19	82	28	33	9										171		
62	59	95	8	5	4	32	14	21	51	9	1	17	2	62	171	118	147
	62	71	32	5	2										172		
63	61	75	15	16	4	7	11	2	20	15	0	28	4	63	171	40	87
	12	45	65	34	13										169		
64	31	81	32	22	5	2	6	3	22	11	0	23	9	64	171	33	76
	9	55	52	40	14										170		
65	30	95	35	8	4	12	12	4	60	5	3	19	16	65	172	88	131
	25	91	37	11	6										170		
66	72	82	5	11	1	9	11	4	23	3	2	17	0	66	171	47	69
	16	41	27	66	21										171		
67	38	77	42	11	3	9	21	1	46	7	4	24	19	67	171	77	131
	16	93	50	7	3										169		
68	25	72	29	38	7	16	5	9	54	1	3	4	15	68	171	84	107
	32	104	20	13	1										170		

Item	1	2	3	4	5	1+1	1+2	2+1	2+2	1+3	3+1	2+3	3+2	*Item*	*Total*	*Dilemmas*	*Tensions*
69	13	62	52	41	3	3	6	6	26	2	1	17	19	69	171	41	80
	17	87	50	14	3										171		
70	39	97	25	9	0	6	10	4	27	7	2	24	5	70	170	47	85
	13	42	44	53	13										165		
71	22	69	62	17	0	10	5	7	37	2	10	17	19	71	170	59	107
	32	73	50	13	2										170		
72	32	112	18	5	2	15	14	4	87	2	0	11	4	72	169	120	137
	21	106	25	14	2										168		
73	56	103	6	3	4	9	16	1	25	7	0	20	1	73	172	51	79
	12	42	33	73	12										172		
74	45	102	13	11	0	14	9	9	37	3	3	21	5	74	171	69	101
	26	59	31	49	6										171		
75	38	100	20	10	3	26	9	11	68	2	1	7	8	75	171	114	132
	40	97	20	11	1										169		
76	38	99	20	13	2	25	12	11	78	0	2	2	11	76	172	126	141
	40	113	8	5	2										168		
77	24	94	29	20	4	9	8	5	39	5	0	21	13	77	171	61	100
	20	80	40	28	4										172		
78	78	71	15	3	3	23	26	2	42	6	0	8	8	78	170	93	115
	27	80	21	33	7										168		
79	35	92	31	9	4	5	13	8	33	6	1	22	15	79	171	59	103
	18	71	40	33	9										171		
80	58	70	26	13	2	6	13	1	14	16	0	27	3	80	169	34	80
	8	36	71	35	20										170		
81	69	65	12	18	4	8	15	2	22	15	2	19	3	81	168	47	86
	15	55	42	47	12										171		
82	31	66	37	27	6	3	10	2	17	3	0	19	4	82	167	32	58
	10	47	58	44	8										167		
83	20	78	31	39	2	6	5	5	37	1	0	10	14	83	170	53	78
	15	83	30	38	5										171		
84	21	83	49	18	0	8	11	7	59	0	2	6	28	84	171	85	121
	18	110	22	16	5										171		
85	31	66	23	40	10	13	7	11	30	4	4	12	8	85	170	61	89
	47	63	35	21	2										168		

Item	1	2	3	4	5	1+1	1+2	2+1	2+2	1+3	3+1	2+3	3+2	Item	Total	Dilemmas	Tensions
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	27	66	50	18	2										163		
87	58	98	6	8	1	45	11	28	64	0	0	2	4	87	171	148	154
	78	84	2	3	3										170		
88	52	76	19	17	4	26	12	8	44	6	1	13	5	88	168	90	115
	36	73	35	24	0										168		
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	38	106	19	6	0										169		
90	9	59	43	50	9	3	3	6	39	0	2	4	6	90	170	51	63
	21	73	40	30	4										168		
91	21	96	25	21	6	10	6	11	54	3	4	17	6	91	169	81	111
	29	84	36	18	4										171		
92	14	77	53	20	4	3	6	4	35	2	1	20	20	92	168	48	91
	13	74	48	29	5										169		
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	61	69	16	17	4										167		
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	21	96	37	12	2										168		
95	66	93	8	1	1	23	29	15	49	4	1	11	12	95	169	116	144
	40	82	21	21	4										168		
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	18	83	52	10	1										164		
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	23	75	55	10	3										166		
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100	42	90	29	5	0	4	11	3	17	3	2	7	7	100	166	35	54
	9	36	37	68	17										167		
101	28	69	20	38	11	1	14	8	40	2	1	6	9	101	166	63	81
	27	89	19	29	6										170		
102	55	80	24	6	1	15	16	2	41	10	2	23	8	102	166	74	117
	20	68	43	27	7										165		

Item	1	2	3	4	5	1+1	1+2	2+1	2+2	1+3	3+1	2+3	3+2	Item	Total	Dilemmas	Tensions
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	12	48	32	58	15										165		
104	19	66	23	55	5	10	7	26	35	2	6	3	13	104	168	78	102
	74	79	6	3	3										165		
105	60	80	20	4	3	6	9	0	31	7	0	20	4	105	167	46	77
	8	45	40	53	22										168		
106	54	90	9	10	1	8	23	0	41	6	1	19	2	106	164	72	100
	10	76	31	38	9										164		
107	41	84	27	11	3	4	18	5	41	6	1	21	13	107	166	68	109
	11	80	40	34	2										167		
108	34	78	23	23	9	2	7	1	15	4	2	21	3	108	167	25	55
	6	28	48	71	13										166		
109	29	80	44	8	4	6	8	2	40	6	2	23	10	109	165	56	97
	10	67	64	17	5										163		
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	15	83	39	29	0										166		
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	58	91	7	9	3										168		
113	18	52	17	61	18	2	5	1	26	3	0	7	2	113	166	34	46
	4	48	58	48	8										166		
114	38	108	12	4	2	2	6	0	23	2	0	19	5	114	164	31	57
	3	37	27	74	22										163		
115	9	55	40	52	8	3	3	5	20	2	1	11	16	115	164	31	61
	18	76	39	25	3										161		
116	5	31	60	53	19	3	2	12	14	0	22	4	29	116	168	31	86
	70	80	10	4	0										164		
117	17	91	36	15	4	0	4	2	9	0	2	19	10	117	163	15	46
	9	32	35	76	11										163		
118	33	71	30	27	3	18	10	15	39	3	8	9	15	118	164	82	117
	55	78	18	10	2										163		
119	45	83	26	9	2	29	10	7	60	2	2	10	8	119	165	106	128
	38	84	26	13	2										163		

Item	1	2	3	4	5	1+1	1+2	2+1	2+2	1+3	3+1	2+3	3+2	Item	Total	Dilemmas	Tensions
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	33	78	34	14	4										163		
121	39	97	16	10	3	8	13	2	48	5	2	17	3	121	165	71	98
	12	68	33	45	7										165		
122	57	93	10	2	1	15	16	8	51	5	4	10	2	122	163	90	111
	27	71	18	39	6										161		
123	10	59	44	45	6	2	5	11	26	0	2	8	13	123	164	44	67
	26	80	37	18	1										162		
124	47	99	12	4	1	3	6	4	18	6	0	22	2	124	163	31	61
	10	29	37	78	10										164		
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	10	61	42	42	7										162		
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	19	81	29	20	7										156		
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	14	53	46	35	10										158		
136	45	97	13	4	0	27	14	21	63	0	3	10	5	136	159	125	143
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Item	1	2	3	4	5	1+1	1+2	2+1	2+2	1+3	3+1	2+3	3+2	Item	Total	Dilemmas	Tensions
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	48	87	16	7	2										160		
139	60	81	8	12	1	14	12	0	30	13	1	26	2	139	162	56	98
	18	52	44	37	10										161		
140	14	48	30	45	25	10	2	8	36	1	6	2	13	140	162	56	78
	63	81	11	4	2										161		
141	7	32	49	57	14	1	3	5	11	2	5	6	16	141	159	20	49
	40	71	37	11	1										160		
142	13	51	51	39	4	2	8	11	31	2	5	6	23	142	158	52	88
	26	90	28	11	4										159		
143	47	76	19	19	0	3	5	2	13	5	0	12	0	143	161	23	40
	6	25	35	70	25										161		
144	29	65	31	32	3	8	9	10	24	0	1	6	7	144	160	51	65
	24	66	29	39	3										161		
145	18	77	35	26	6	3	5	4	21	1	4	8	6	145	162	33	52
	12	40	32	66	10										160		
146	23	80	44	12	3	7	9	1	31	3	0	17	7	146	162	48	75
	8	56	54	40	3										161		
147	14	76	42	28	1	6	6	5	39	0	2	14	11	147	161	56	83
	17	70	40	29	4										160		
148	4	50	27	77	3	2	2	3	33	0	3	6	9	148	161	40	58
	18	84	26	34	0										162		
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	12	50	32	59	8										161		
150	31	80	17	27	6	10	8	13	40	4	2	18	8	150	161	71	103
	42	69	29	17	3										160		
151	43	89	19	6	3	7	18	3	29	8	1	22	6	151	160	57	94
	13	56	40	40	11										160		
152	31	62	36	29	3	0	3	1	15	5	1	14	5	152	161	19	44
	7	32	49	58	15										161		
153	13	64	57	19	6	2	4	2	18	3	0	24	2	153	159	26	55
	6	32	96	24	1										159		

Item	1	2	3	4	5	1+1	1+2	2+1	2+2	1+3	3+1	2+3	3+2	Item	Total	Dilemmas	Tensions
154	28	104	19	6	1	8	7	9	46	5	0	32	2	154	158	70	109
	17	58	52	29	2										158		
155	51	72	14	13	10	6	7	5	25	6	0	8	3	155	160	43	60
	23	41	25	45	26										160		
156	71	76	9	3	0	5	11	8	11	18	0	19	2	156	159	35	74
	13	24	46	51	25										159		
157	47	91	14	7	1	4	11	2	29	20	1	39	3	157	160	46	109
	8	49	72	29	2										160		
158	57	88	8	6	0	7	16	6	35	9	1	22	3	158	159	64	99
	15	59	35	39	11										159		
159	16	72	38	23	9	5	6	1	45	1	0	11	4	159	158	57	73
	16	68	46	25	2										157		
160	22	101	24	7	5	6	4	9	39	4	2	22	6	160	159	58	92
	18	52	45	40	4										159		
161	7	70	41	34	9	5	2	8	34	0	1	14	15	161	161	49	79
	23	76	40	17	5										161		
162	13	56	49	37	4	2	7	4	25	1	5	12	26	162	159	38	82
	21	80	32	23	3										159		
163	49	85	12	11	1	7	11	1	19	10	0	41	1	163	158	38	90
	9	39	61	40	8										157		
164	35	95	21	5	2	7	11	2	25	9	1	41	2	164	158	45	98
	11	43	68	33	5										160		

ANNEX 11

Supplementary Pages Included in the Second Quality Week Booklet

ISO 9000: THE BASIS FOR ISO 14000

By following the strict specifications in ISO 9000 our product quality can be better assured and technically upgraded. Better health and safety regulations help to provide our factory workers with a greater sense of security. Although the additional costs of appraisals and preventions may be considerable, they can however be offset by reduction in failure costs and, on the other hand, increase in our sales revenue.

As our customers become more quality conscious, it becomes necessary to focus our attention on this aspect of production to avoid the risk of losing market share.

Ng Yick Wei

Companies already ISO 9000 registered

These companies are in the best position to implement the environment standard...ISO 9000 put in place all of the procedures needed to maintain the quality of the products and the integrity of the processes needed to maintain that quality. BS 7750 puts in place the procedures to ensure that the quality achieved and its supporting processes do not harm the environment. ISO 9000 deals with the processes which support quality; BS 7750 deals with the processes which support the elimination of damage to the environment. A number of the methods and controls are common to both.

Source: Rothery, 1993, "BS7750"

note that ISO 14000 is derived from BS 7750

These are among the things that we should do to achieve these standards:

- inform all managers of their new responsibilities.
- Ask for reports on safety...machinery inefficiencies, discharge of waste and any personnel problems.
- Organise quality control circles.
- Train or re-train workers...

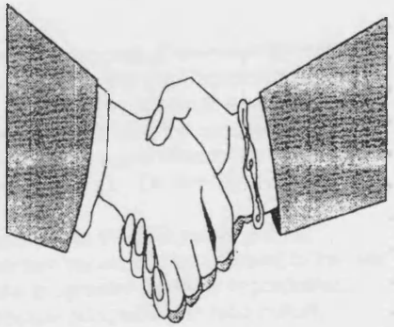
A good and safe manufacturing process...should have regularly monitored the progress of the company in terms of its safety, legality and quality...

A good and safe product is reusable or recyclable...Lastly, a safe product is bio-degradable.

Mardini b Eddie

ISO 9000 is a commitment to quality and to assure your customers or clients that you are providing what you and they have agreed is the product or service.

Marinna Hj Mahar



ISO 14000: DEVELOPMENT, AND THE FUTURE

Countries that have achieved universal basic education are likely to consider upper-secondary and higher education the priorities for new public spending... Economic analysis has shown...that the average social rates of return to general secondary education are much higher than those to highly specialised vocational secondary education...This result is consistent with the constant and rapid changes in technology and labour markets that call for flexible, "trainable" workers able to aquire new skills as technology changes. The preferable way to achieve this goal is to emphasise learning skills and attitudes rather than specific, job-related skills that are best taught in specific job settings.
Source: Priorities and Strategies for Education; World Bank; 1995

Eco-tourism in Temburong...is a unique opportunity for a highly profitable venture. ...modernisation will also affect the lives of people and the landscape.
Marinna Hj Mahar

Instead of having just oil and gas, Brunei will have other big industries: community, social and personnel services, transport, storage, communications, wholesale/retail trade, restaurants and hotels.
Lifestyles will change...the economy will be dominated by the private sector. As Brunei will be under heavy construction, there are likely dangers, for example pollution. Businesses which have ISO standards will support Government programmes for a cleaner environment... educate their customers about the need for environmental concern...support events like "Clean Up the World...have eco-labelling...start recycling used up products.
Diane Hj Yusof

In the process of development I think Brunei will lose its natural beauty...the environment will be dominated by roads, airports, buidings and so on...ISO 14000 would be able to ensure that the products are not made at the expense of the environment. **Alvina Chin**

The market will be saturated, and only those with good management and planning will survive. No matter how, Brunei will stay with its image of clean and green country.
Kon Nyet Moi

Within the process of development some businesses would identify suitable projects and partners throughout the ASEAN region...By applying the concept of ISO 14000...reducing or eliminating the dangers in development. **Dk. Noraizan**

In addition to the ISO series another important aspect of management in the near future is...greater flexibility in production - especially adaptability to local culture.
Ng Yick Wei

ISO 14000: SOME QUESTIONS

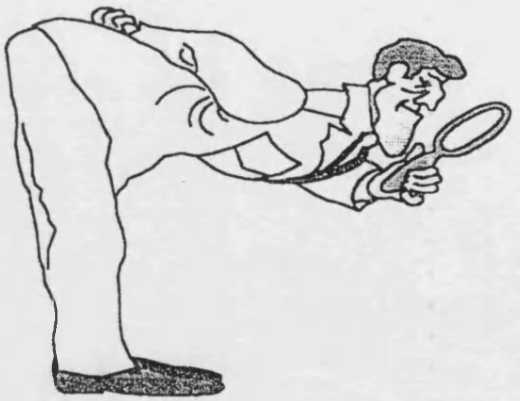
As one shrewdly perceptive lawyer recently asked us: "If my client has $100,000 that could be spent either on upgrading pollution control equipment or on implementing ISO 14000, why pick ISO 14000? Which one would do a better job of keeping them out of jail? Good question.
Despite the hype...Environmental Management according to ISO 14001...is not a magic potion. It will not save the world, nor will it save your company, nor the Board of Directors... The single fact that a company is registered to ISO 14001 will probably mean little in court. Nor is it intended to. However, if the company takes the opportunity ISO 14001 presents to develop an exemplary EMS program, and follows it diligently, that will mean something in court.

Source: McCallum and Fredricks, 1995, Hazardous Materials Management

Maktab Duli students were asked to comment on the kinds of questions the Brunei Ministry of Development might reasonably ask of a joint venture wishing to establish a plant to manufacture plastic bags near the mouth of Sungai Brunei

What procedures will you use to reduce hazards during the production of ethylene?
What steps do you take to overcome the problem of waste toxic chemicals?
Do you help workers who are unable to work because of incidents that occur in your premises?
Do you have a ready emergency team?
To prevent workers from endangering themselves throughout the manufacturing process what measures have been taken? **Dk Siti Mu'izzah**

Do you intend to obtain ISO 9000 and ISO 14000 certification?
At the end of the finished products useful life...how do you treat its disposal?
How do you train your staff?
Do you emphasise health, safety and quality measures?
Dyg Diane Awg Hj Md Yusof



Why has Progressive Plastics chosen to locate their plant in Brunei at the Serasa Industrial Area?
Are there any plans for future expansion?
Rosnani

Does your new plant have strategic quality planning?
Will you...carry out inspection of the air in the surrounding environment to ensure that it is healthy?
Kon Nyet Moi

Will your company be interested in producing bags with alternative raw materials which are bio-degradable?
Give details of any accidents which have occured in your plants.
Dk Noraizan Pg Hj Hussain