

ENVIRONMENTAL EDUCATION : A QUEST FOR THE FUTURE

INAUGURAL LECTURE
DELIVERED AT RHODES UNIVERSITY
on 20 March 1991

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FRONTIERS IN ENVIRONMENTAL EDUCATION

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Mr Vice-Chancellor, colleagues, ladies and gentlemen.

My aim tonight is to outline the origins and concept of Environmental Education and to suggest some directions in which we should be moving in southern Africa. Before embarking on this topic however, it is appropriate to acknowledge those whose work has built the Department to what it is today, as well as others to whom I owe a debt of gratitude. This will also provide a perspective for the directions in which the Department is moving, one of which is hopefully to become a centre for the study of Environmental Education in southern Africa.

I want to begin by paying tribute to my colleagues in the Department of Education for their professionalism and dedication to their students, much of it achieved in the evenings and over weekends. Not many in this audience will be aware that the Department of Education was started as far back as 1914. R.F. Currey (1) records that the Council decided to launch a new department under a professor but that, due to financial constraints, Mr. A.B. Fitt could only be appointed at lecturer level. In 1925 when the first Principal of Rhodes, Sir John Adamson, a retired Director of Education in the Transvaal, was appointed, his post also included that of Professor of Education. Prof. Danny Morton, who will be remembered by some in this audience, was appointed from 1936. He occupied the Chair for 34 years to be followed by Prof. Koos Gerber from 1970 to 1977. Arthur Noble, who unfortunately cannot be with us this evening, was Professor and Head of Department until 1985 and was followed by Alan Penny in 1986. Prof. Ray Tunmer acted as Head of Department from mid 1987 to the end of 1988.

It is also customary on such occasions to pay tribute to those whom one perceives to have had a major influence on one's career. In the first instance I owe much to my parents who, although with relatively little formal education themselves, believed firmly in the value of a broad education and whose sacrifices for their children in this respect were beyond calculation. When I see the sacrifices which many parents of limited means today make for their children's future, I understand some of the expectations and pressures which accompany this. I have been there. To my father in particular I owe the beginning of an interest in the natural environment and social issues. He taught me as a small boy not only about the stars and birds, but about the fair

distribution of wealth and the equality of all people, issues which are central to Environmental Education. Most importantly I watched him practise what he taught me.

Two of my senior high school teachers should also be singled out in what was otherwise a school career in which I am tempted to recall George Bernard Shaw's observation that 'Schooling merely interfered with his education'. No doubt there is often some congruence between the two, but that should not be taken for granted. Dawie Marquard, founder of NUSAS, polymath and sporting enthusiast, taught me about Mathematics, Logic and Politics and encouraged my love for the natural environment by assuring me that spending time in the open veld was every bit as important as participating in sport. Joe Barry, in addition to opening my eyes to the pleasures of Shakespeare and Wordsworth introduced me to the ideas of Marx and Thomas Aquinas, John Stuart Mill and Plato. They were among the few teachers I had who never assaulted me, but lent me books to read and challenged every statement I made or wrote. I remember them with deep affection.

Among my university lecturers I recall best Peter Tyson, now the Deputy Vice-Chancellor at Wits, who introduced me to the complexities of environmental issues and Colin Webb, now Vice Principal at the University of Natal, whose erudite lectures and critical insights have remained a model to emulate. At tertiary level however one teacher above all stood out. To Jack Niven, Professor Emeritus of Education at the University of Natal, I owe much of what I know about the discipline of education, of professionalism and of the development and maintenance of academic standards. Like Pascal he taught that one of the most moral things a person could do was to think clearly. He taught me too that one does not throw students into the deep end, even at senior post graduate level, but works with them to form permanent bonds of professionalism and belief in the value of academic standards. What deficiencies I have are not through lack of example on his part.

From its inception the emphasis of the Department of Education at Rhodes has lain in the post-graduate professional preparation and development of teachers. The Secondary Teachers Certificate of the 1920s evolved into our present HDE, the basic structure of which, but fortunately not the content, is today governed by statute. Supervision of practice teaching has always been an integral part of this programme. Gradually over the years and in tandem with the international growth of the discipline of education, more and more students of these courses returned to Rhodes University for further study in Education. In

this context special tribute must be paid to Arthur Noble for his development in two inter-related areas.

The first was his emphasis on the importance of 'method work' in pre-service teacher training - being able to teach competently and professionally in one's subject areas. The second was the expansion of the B.Ed. programme and the introduction of the M.Ed. by coursework and half-thesis which served the advanced professional needs of senior educationists. Emphasis lay in the theoretical advancement of school related subjects and was directed as much to educational decision makers as to senior classroom teachers. The impact of these programmes on education particularly in the Southern and Eastern Cape and Transkei area has been enormous and our graduates are to be found in the highest echelons of the profession. Here too, much of the credit for this must go to Prof. Ray Tunmer, whose capacity for teaching, eloquence in the lecture room and dedication to his students will echo in the chambers of education long after he has gone into his well deserved retirement at the end of this year. Also to Mr. Ken Durham for the gentle but demanding rigour which he has brought to the programme. As he too retires at the end of this year I wish to express personal appreciation to him too for the ever ready guiding hand which he lent me as I found my way through a university very different from the one I had come from.

Education is not a static phenomenon however and the demand for high level and relevant academic qualifications and skills has shifted emphasis to new areas -growth areas if you like - required by both educational decision makers and practising teachers at all levels. Thus the B.Ed. now increasingly emphasises critical analysis and includes a component on the Methodology of Research while the coursework M.Ed. has grown to include Computers in Education, English Second Language and Environmental Education. Other developments and needs which are either currently being addressed or will need to be in the near future are Educational Management, Educational Planning, Adult Education and specialist post-graduate work in Primary Education. These 'market demands', for we are increasingly aware of them as such, reflect both the deficiencies of our past educational thinking in South Africa and the needs for our future if our educational system is to be revitalised and liberated from the sterile, moribund and oppressive dogmas which have dominated it for the past 40 years. By emphasising critical, analytical and creative skills we as a Department must play our part in never again allowing this to happen.

It is on one of these 'growth areas' in education, Environmental Education, that I wish to direct most of what I have to say tonight. I propose to start by offering a brief operational definition followed by an outline of the origin

and historical development of the subject internationally and in South Africa, then to return to a more detailed examination of the concept as it is currently understood. Finally I will speculate on what Environmental Education should be concerning itself with in southern Africa.

Environmental Education is a worldwide socio-ecological phenomenon of many dimensions. It is a sophisticated and holistic concept embracing ecological knowledge and understanding, total people-environment relationships, ethics, politics, psychology, sociology and public participation in decision making. It aims primarily to educate about human interaction with the environment. The bottom line of concern is human behaviour towards the environment.

The earliest origins can be traced to ancient Egypt, Greece, India and China. In Egypt the pharaoh Ikhnoton is reputed to have sent scribes to teach farmers not to plant crops too close to the banks of the Nile as the natural vegetation was more likely to prevent erosion of the banks and ultimately loss of productive farmland - a lesson yet to be learned by many farmers in South Africa! Theophrastus, a student of Aristotle, regarded by some as the father of ecology, argued for a form of integrated environmental management including public education in areas such as resource utilization and sustained yields. In China, public education programmes to encourage re-forestation were in operation 4 000 years ago.

The modern concept of Environmental Education however, has its roots in the industrial revolution, initially in Britain, Europe and North America, but subsequently globally. In a world perceived by some poets, philosophers, sociologists and educationists of the nineteenth century as becoming rapidly engulfed in mass production and widespread squalor, the disciplines which they represented began to find common concerns. The pioneer sociologist, LePlay for example, considered the study of botany to be a significant aid in understanding the nature of society and the term 'ecology' (the study of our home) was coined by the philosopher-biologist Haeckel in 1874. Added to these were the critical rumblings of writers such as Ruskin, Spenser, Thoreau, Wordsworth and Engels, the latter's prescient concern being primarily for future generations. Wordsworth (2), in protesting the intrusion of railways into the countryside wrote:

"Is then no nook of English ground secure
From rash assault? ...

Plead for the peace, thou beautiful romance
Of nature; and, if human hearts be dead,
Speak, passing winds; ye torrents, with your strong
And constant voice, protest against the wrong ..."

The writings of naturalists such as Darwin, Muir and Audubon added both fuel and substance to these concerns, while educationists such as Pestalozzi, Froebel and R.W. Emerson followed the example of Rousseau in advocating the importance of nature study in a child's education.

The major figure of the nineteenth century in terms of the actual practice of environmental education was Patrick Geddes who lived from 1854-1933, a Scottish professor of botany and student of LePlay sociology. Dissatisfied with school and university learning and teaching methods and appalled by Britain's spreading slums and conurbations (a situation not unlike that faced by South Africa today), he dedicated himself to the improvement of both environment and education. Undoubtedly the founding father of modern Environmental Education, Geddes' strength lay in his holistic view and, unlike so many of his contemporaries who were concerned only for the rural environment, he foresaw the importance and necessity of beauty and function in towns and cities. In terms of educational methodology many of the elements of the best of present day enlightened teaching were germinal to his thinking.

Geddes' philosophy and practices found expression in the writings of educational theorists such as John Dewey, Sir John Adams and J.W. Adamson, who in their turn helped to ensure that during the interwar years of the twentieth century teachers were introduced to the idea that learning for young children at least took place through contact with the environment. What this in effect meant in many cases was a shift in emphasis from the use of abstract to concrete situations and the fostering of educational skills and growth through the study of nature, although this approach was neither then nor now (witness much of current education in South Africa) universally accepted as the following American satire, published in 1904 (3), illustrates;

"They taught him how to hemstitch, and they taught him how to sing,
And how to make a basket out of variegated string.
And how to fold a paper so he wouldn't hurt his thumb;
They taught a lot to Bertie - but he couldn't do a sum.
They taught him how to mould the head of Hercules in clay,
And how to tell the difference 'twixt the blue bird and the jay,
And how to sketch a horsie in a little picture frame,
But, strangely, they forgot to teach him how to spell his name."

A further major step was taken with the publication in 1938 of Cons and Fletcher's Actuality in the Classroom which dealt with the idea of bringing the environment into the classroom not only in the form of samples and specimens, but as the postman, forester or conservation officer. This approach, far from competing with the 'nature' element in learning, complemented it and set the tone for much subsequent classroom practice.

Environmental Education in the modern idiom first reached South Africa in the early 1970s. Prior to this, efforts had been concentrated very largely on educating (with apparently limited success) about soil erosion, and what was termed until the late seventies, 'conservation education'. 'Conservation education' as a movement tended to concentrate on 'conservation as the wise use of (mainly) natural resources' and basic ecology, and seldom concerned itself with the political, social or even the built environment. Conservation education today continues to constitute a significant and integral part of Environmental Education, but is clearly only a part of it.

Another concept which, during the 1980s was confused with Environmental Education was that of 'outdoor education'. The two ideas do overlap to some extent, but are addressed by entirely different theoretical perspectives. Some conservative educationists in South Africa were alarmed by the socio-political connotations of Environmental Education and saw a possibility of sanitising the idea by conflating it with outdoor education which was perceived to be free of such notions - other than those which were acceptably patriotic.

Stimulated by the increasing interest engendered by international developments, the first International Conference on Environmental Education in South Africa took place in 1982. This five day conference, which had representatives from four continents, was a landmark. Not only was it the first time that a wide spectrum of South Africans concerned with Environmental Education issues had come together to discuss common concerns, but it also saw the formation of the Environmental Education Association of Southern Africa (EEASA) which has subsequently played a significant catalytic, developmental and co-ordinating role.

EEASA started the first regular publication in Environmental Education in Southern Africa and has convened or co-ordinated numerous workshops, seminars and conferences over the past eight years. It has also liaised with government departments, conservation agencies, non-government environmental organisations and liberation movements in South Africa and in neighbouring countries. EEASA has from the start actively promoted the idea that the people of southern Africa have much more in common than that which is used to create divisions between them and that the better we collectively care for our environment the better future all of us are likely to have.

A pioneering role in the practice of Environmental Education in South Africa has also been played by other non-government conservation organisations and state conservation agencies. The Wildlife Society of Southern Africa and others

The first half of the twentieth century also saw both in Europe and America a slow but steady increase in popular support for environmental causes, sometimes, as in the new USSR, finding expression in political ideology and in others such as in Britain, the USA and to a lesser extent South Africa, in public societies formed to further particular causes such as wildlife, landscapes, historical sites and architecture. Many of these societies became significant pressure groups involving themselves with educational as well as political activities.

The years of the Second World War proved to be an important period of incubation of ideas and plans for better environmental management including Environmental Education - a process made easier in many parts of the world by the post-war enthusiasm for socialism. The late forties and the fifties saw some countries writing environmental conservation into their constitutions (although as one notes with hindsight in Eastern Europe this did not guarantee its practice!), the establishment of 'national parks' in many parts of the world and the establishment of several international agencies concerned with environmental issues and Environmental Education. Most notable among these were the International Union for the Conservation of Nature and Natural Resources (IUCN), the World Wildlife Fund and UNESCO.

A milestone in the development of Environmental Education on a global scale was the 1972 UN Conference on the Human Environment which led to the establishment of the United Nation Environment Programme - UNEP - which, together with UNESCO, organised the first Intergovernmental Conference on Environmental Education at Tbilisi in the USSR in 1977. This conference, at which some 70 governments and 30 international non-government agencies were represented, resulted in a declaration of 12 principles - now referred to as the 'Tbilisi Principles of Environmental Education' (4) - which provide the foundation for the practice of Environmental Education on a global, national and regional scale. These developments were supported by the publication in 1980 of the IUCN/UNESCO sponsored World Conservation Strategy (5) (currently being revised with a contribution by this Department of Education) and by various international commissions and reports on the global environment of which the 1980 Brandt Report (6), the 1982 Global 2000 Report (7) and the 1987 World Commission on Environment and Development (the Brundtland Commission) (8) are among the most significant. A 1987 International Conference on Environmental Education held in Moscow re-affirmed the Tbilisi Principles as sound guidelines for the development of national Environmental Education programmes.

Any account of the development of Environmental Education in South Africa would not be complete without mention of a number of other important initiatives. In 1989, after years of resistance from conservatives in some of our education departments, a White Paper on Environmental Education (9) was tabled in the tricameral parliament. Notwithstanding some scepticism and the limited acceptance of this document among sections of our society who had no say in its compilation it is important to note that it unequivocally embraces the 'Tbilisi Principles' and the internationally accepted concept of Environmental Education, which I will shortly elaborate upon. Another important group of initiatives emanate from the expressed, and published (10, 11), concern of several 'liberation movements' about environmental issues and the need for Environmental Education. The African National Congress is, for example, reported to be considering an 'Environmental Charter' to parallel the Freedom Charter. The potential positive consequences of such a document can hardly be overestimated. Others too, such as the Pan African Congress and Azapo are actively addressing the issue. Likewise community development agencies and initiatives such as literacy programmes and food production schemes have increasingly over the past three years involved themselves with Environmental Education in one form or another. Mention also needs to be made of the innovative and viable Environmental Education programmes operating in some of our neighbouring countries such as Swaziland, Botswana and Zimbabwe. We and they have much to share with each other.

In summary, it is probably fair to state that while Environmental Education got off to a relatively slow start in South Africa, and has until recently enjoyed only limited state recognition or public financial support, that this has now changed quite dramatically as awareness of existing or impending environmental problems gain wide recognition.

Let us turn to a more detailed examination of the concept. It is useful to start by paying some attention to the terms 'environment' and 'education' and in doing so to ask you to accept for discussion purposes, three premises which arise from them. The term 'environment' poses something of a problem in that although it normally denotes immediate surroundings, it has in the past decade acquired a more specialised meaning in ecological usage to describe the sum total of all the external conditions which may influence any organism, including humans. Although it was not always so this concept of the total complex of inter-relationships making up the physical, biological and socio-political surroundings is now widely accepted.

had by the 1970s recognised the importance of educating people about their environmental responsibilities and had begun to set up programmes to put these ideas into effect. The Society's Umgeni Valley Project, started in Natal in 1973, has played a major and innovative role in the development of Environmental Education in South Africa and is today a model for the 1990s. It is a matter of regret that the close co-operation which developed between the Wildlife Society of Southern Africa, the Natal Parks Board and the Natal Education Department was not repeated in the other three provinces. More doctrinaire education departments either declined to embrace Environmental Education or eschewed educational co-operation with conservation agencies and the private sector. Some set up their own internally controlled and racially exclusive 'outdoor' education programmes such as the 'Veld Schools' in the Transvaal.

It is however, in the 'national states', 'homelands' and 'black' areas of South Africa that Environmental Education programmes have often been most successful at the grassroots level. This is not as surprising as it might seem at first, bearing in mind that when environments become degraded, impoverished or polluted, history has repeatedly shown that it is invariably the poor and the dispossessed who suffer the most. They are least equipped to cope with environmental stress and its consequences upon their lives.

Two of the most successful programmes in southern Africa are those in the territory of Bophuthatswana and in Soweto. In Bophuthatswana there is very close co-operation between the Department of Education, the Bophuthatswana National Parks Board and teacher training institutions. So close has the co-operation been that there is accumulating evidence of environmental awareness, concern and action in the most remote villages and schools of the territory. The National Environmental Awareness Council (NEAC) started in Soweto in 1974 and, notwithstanding the political and social turmoil in South Africa over the past 15 years, has grown both in popular support and effectiveness. As with the Umgeni Valley Project tens of thousands of teachers, children and young people have been exposed to the ideas of Environmental Education, often with direct and tangible benefits to their communities.

Environmental Education at tertiary level, for teachers and decision makers, was pioneered in Bophuthatswana in the early 1980s both at the University, where undergraduate and post-graduate courses are offered, and in all five Colleges of Education where a three year programme is offered. Several other universities and Colleges of Education in South Africa offer various courses in Environmental Education, the most comprehensive being here at Rhodes University.

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The first premise is that we depend for our well-being and probably our survival as a species upon the effective functioning of the basic principles of ecology; those which ensure the provision of air, food, water, shelter and warmth.

The second premise is that as a result largely of past and present human-environment interaction, the world is faced with a large number of environmental problems. These are well documented and range across such issues as the greenhouse effect, the accelerating loss of species of plants and animals, and hence genetic diversity, to the disposal of nuclear and toxic waste, poverty, desertification and a looming shortage of fresh water. The thread running through all of them is of human health and well-being and 'quality of life' however we may construe that term. These problems occur on different scales and are perceived with varying degrees of abstraction or immediacy by those who identify them or suffer as a consequence of them. Whether or not an environmental issue is perceived to be important does not however diminish the potential effects if nothing is done about it. Global warming and its consequences is an example which, although potentially serious for all of us, is at best a vague issue to most of humankind and a non issue to many. To be realistic however, probably the overwhelming majority of the world's people will only become involved in 'environmental' issues which they perceive to be of direct relevance to them and their futures. A large proportion of humanity is not in a position to view the future in anything but the short term. A woman reduced to collecting acacia seeds to feed her children in the drought stricken Sahel is unlikely to be concerned about ozone depletion or nuclear waste disposal.

Some of our environmental problems have already reached, or are rapidly assuming crisis or disaster proportions. The situation in Ethiopia, where it is doubtful that the land can continue to support the human population, is an example of a centuries old and chronic crisis becoming increasingly acute, while the oil spillage and burning in the Persian Gulf is not only a local disaster of as yet undetermined consequences, but also potentially, an incipient crisis for other parts of southern Asia. It is no co-incidence that environmental activists frequently cite peace or the lack of it as a major ingredient of global environmental problems. Recent events have led to a clarion call for a 'Geneva Convention' on the environment and to make 'ecoterrorism' a war crime.

South Africa is in some senses a microcosm of the environmental crises facing humankind. Not only are we as subject as everyone else to global issues, but we have regional problems peculiar to our bio-physical and socio-historical circumstances. Apart from the less obvious ones such as gradual and insidious

desertification and loss of habitat diversity, Wilson and Ramphela (12) have aptly focused our attention on 'earth, fire and water' as the basic resource scarcities and environmental issues for the majority of our population. Other environmental issues at a local level may be no less important in the absolute sense, although perceptions of them will vary greatly. These may range from the consumption, with no alternatives, of chemically polluted river water through to concern about litter in streets, safety in public parks or buying ozone-friendly deodorants. Other issues considered as of great importance to some may be perceived by others as irrelevant. Examples here may also include litter in streets, paint peeling off buildings, or a concern about the future of rhinos. (Interestingly, some preliminary research indicates that people who give money to protect rhinos are also more likely to give money to social causes than those who do not give money for rhinos).

The third premise is that there is some general agreement on the meaning of education and that among other things, it is a preparation for the future. This would seem to some to be a blind act of faith, but without it we cannot proceed. It would therefore seem logical that Environmental Education would refer to any educational philosophy or programme intended to increase or promote sensitivity, knowledge or values about the environment, but today this would be regarded as insufficient in itself. To understand the reason for this it is necessary to consider the various inputs which have led to the current conceptualisation of the term.

Environmental Education has, amongst other things, been described as 'a goal of education', 'a process', 'a subject', 'a field of study', 'a medium for skill development', a 'way of life', and a 'style of education'. To some the term is synonymous with 'conservation education' or 'countryside education' or even a modern form of nature study. To the conservationists it has usually been concerned with instilling an awareness of the value of natural resources for man's overall welfare, cultural and aesthetic as well as material, and of the necessity for their proper management and conservation. To educationists, environmental education may or may not have incorporated this concept, but it usually included the idea of using the environment for education or skill development. Some educationists would regard Environmental Education as an 'approach to education which helps to develop individual potential and promote a sense of responsibility for the consequences of personal and social actions'. Sometimes concerned individuals and the media see Environmental Education as a process in which scientists (who know) are involved in a one-way transmission of knowledge to the public (who don't know) about the things which they ought to know about. Yet others follow the simplistic approach that pupils, and

possibly adults, need only be taught properly about environmental issues and responsibilities for them to act responsibly - and then express surprise when this does not occur.

Environmental Education has also been seen as part of a wider political struggle and as the key to 'political literacy' in the sense of active public participation in decision making. George Martin (13) has argued that

"... environmental education does not ultimately have validity unless it also involves educating to change the human environment for the better by understanding on the one hand the political processes by which this can be done as 'participating citizens'; and on the other hand, as noted by conservationists and other environmentalists, by acquiring an environmental ethic and a knowledge of the ecological basis of all life, on which value judgements about the environment can be based."

In South Africa this has been expressed as a need to move from an oligarchy to a participatory democracy in which people cherish their environment because it is theirs to take part in creating and conserving. Robert Saveland (14) amplified this point when he stated that Environmental Education is

"a process aimed at producing citizenry that is knowledgeable concerning the total environment and the role of man, able to participate in activities for maintaining and improving the quality of the environment while meeting human needs, and motivated to do so."

Among the most influential environmental educators, such as Anil Agarwal (15) and Timothy O'Riordan, are those who have drawn attention to the relationship between Environmental Education and the economic and social circumstances of the 'third world', effectively the large majority of the world's population. This awareness, sometimes embodied in the term 'realconserve', argues that in order to place Environmental Education in its logical context, it must be recognised that the task cannot be reduced only to problems of industrial hygiene and the conservation of species, even though these are important aspects of it. The real issues to be dealt with are those causing the day to day hardship and death of people all over the world. The world's environmental problems are seen ultimately to reside in the structure of economic, industrial, political and military power designed to serve the interests of profit, the accumulation of wealth and the exercise of power for its own sake. A new ecological ethic is called for in which, not only is there to be a new world economic order based on a more equal distribution of wealth and the rational exploitation of resources, but which recognises man as an integral part of nature, living in harmony with his environment. This harmony implies both living within the constraints which the environment imposes and utilizing the opportunities which it provides. It is a useful exercise to consider the

southern African environmental situation from this perspective. O'Riordan (16) summarises this view:

"Behind all the reasoning is the spectre that any attempt at continued economic growth in its current wasteful and highly inegalitarian form will not only result in very real and imminent resource scarcities, but will necessarily lead to environmental destruction and serious poverty and social hardship. The worst consequences will fall disproportionately upon those who are least able to help themselves, and whose indigenous abilities to cope with resource scarcities and environmental stress are already being eroded by forces mostly beyond their control, and whose voices in the halls of political power are either not heard at all or are extremely faint."

It is not surprising that this viewpoint has found a strong echo in the developing world and poorer countries where much of the current development in the theory and practice of Environmental Education is now taking place. This is the more interesting in that many of these countries until the 1980s, tended to eschew the concerns of Environmental Education as being the problems of the world's rich nations.

Ethical concerns are not confined only to those of socialist or egalitarian persuasion. Moral philosophers, most conservationists and some clerics conceive of Environmental Education as including a built-in ethical component and it is frequently argued that the moral relationships of people towards the environment should be taught as part of the school and university curriculum, on the basis that such an ethic determines the way people use the land, air and other resources which in turn determines the quality of the human environment. Appeal is increasingly made to holy writ in support of such a view and all the major religions of the world have in the past few years included both environmental issues and Environmental Education on their agendas.

Environmentalism and Environmental Education have also been the concern of 'radicals', many of whom have drawn upon the ideas of Marx, neo-Marxists and anarchists. For many of them, such as Andre Gorz, ecology or environmental conservation are not ends in themselves but part of a larger issue with its roots in 'the class struggle'. The domination of nature, Gorz (17) argues, inevitably entails a domination of people by the techniques of domination. Engels' concern for the despoiling of nature was largely on the grounds of the deprivation it would cause for later generations - a view currently echoed by environmental educationists of all ideological persuasions. Many authors are now also interpreting Marxist-man-environment relationships in a more complex manner than a simplistic reading of the original texts would suggest.

Parallel to and complementing these developments, cogent arguments have been advanced for a radical form of Environmental Education supported by new insights from moral and political education as well as from learning theory. Both the inspirational and empirical bases for these arguments lie with individuals such as Piaget, Kohlberg, Feuer, Ausabel and de Bono. Among such exponents are Noel Gough (18), who argues for an 'ecological paradigm for education' (where the emphasis is on interrelationships rather than 'facts') to replace our present epistemological (fact orientated) paradigm. Ian Robottom (19) argues for a greater enquiry based, 'practitioner research approach' to Environmental Education, while di Chiro (20) and Benaria (21) are representative of writers offering a feminist critique on environmental issues. Feminists have brought into question many of the tenets of an historically male dominated world and have raised the concepts of 'masculinity' and 'femininity' within an environmental and Environmental Education context. 'Feminism', it is argued, 'is not for women alone' if we are to take a more long term, realistic and gentle approach towards our environment.

The 'environmentalist' movement per se, embracing as it does deep ecologists, advocates of soft technology, and those who believe that economic and technical accommodation are possible and even inevitable, as well as many other viewpoints, has also had a profound influence on the development of Environmental Education. From this diversity of viewpoints have flowed a rich variety of ideas and insights ranging from the Gaia hypothesis, which suggests that the Earth as a whole be treated as a living organism, through the 'Earthrights' notion to animal rights arguments, aesthetic concerns and Norton's philosophical case for biological diversity (22).

Another interesting way of looking at Environmental Education is as a product of the conflict between our biological and our cultural evolution. The former is seen as common to all living organisms while the latter is peculiar to the human species. Cultural evolution is furthermore not only very rapid compared with biological evolution, but increasingly so and therein lies the seeds of the environmental problems which we face and the need to make adjustments or social adaptations. It may also be argued that within these seeds lies the solution, as the main cause of the increasing rate of cultural evolution is the increase in speed and quantity of communication, of which education is an institutional example. Environmental Education in particular, it is argued, has the potential to generate and sustain social values appropriate to an ecologically sustainable future. E.O. Wilson's work on 'sociobiology' too has had its echoes in Environmental Education.

Where then do we stand with this wide range of viewpoints? How do we both celebrate diversity and have a sense of direction?

Ironically the most frequently referred to and widely accepted 'definition' of Environmental Education was developed by the IUCN as early as 1971. It reads:

"Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness amongst people, their culture and their biophysical surroundings. Environmental education also entails practice in decision making and self-formulation of a code of behaviour about issues concerning environmental quality." (23).

The strength of this statement is that it embraces what many, if not most, environmental educators regard as the essential elements of the concept i.e.

- the inter-relatedness of people, their culture and their biophysical surroundings
- that people hold values and attitudes which inter alia relate to the environment and to behaviour towards the environment
- that 'skills', including decision making and the formulation of norms, are an integral aspect.

Thus, educationally speaking, environmental education is a holistic approach involving all three domains of human development; the cognitive, the affective and the psychomotor. When linked to the 'Tbilisi Principles' and supported by insights gained over the past decade, this statement has become a powerful tool for action.

In 1991 Environmental Education is seen by the vast majority of workers in the field as essentially embracing two complementary concepts. Firstly, it is about understanding political processes and creating political structures in order to be able to participate actively in decision-making about environmental issues on a local, national and global scale. Secondly, it is about acquiring the necessary knowledge and understanding including, critically, that of ecological principles and processes needed to make properly informed decisions about environmental issues. It is axiomatic however that all rights to decision-making however, must be balanced with an acceptance of the responsibility of living with the consequences of those decisions.

Given then the relatively solid historical and philosophical base which has been outlined and the momentum generated by both the hopes and concerns which we all have for the future, what directions might Environmental Education be considering in the southern African context?

I want to make a number of closely related suggestions. Some of these may seem idealistic but we cannot afford to ignore them. They are not in any order of importance.

- * The first is that greater insights need to be sought in terms of environmental knowledge, understanding, attitudes, values and perceptions in our diverse society. Relatively little is known in this area.
- * A second suggestion is that there needs to be a continuous exploration of ways for the more affective and meaningful sharing of environmental knowledge, insights and values. This may include looking for ways to increase the accessibility to knowledge and information required for democratic decision making and in such a way that it can be acted upon. It may also require seeking ways that allow for greater public understanding of the complexities of environmental issues and thus better informed decision making. Such efforts would need to be allied to current learning theories such as the 'constructivist' theory and necessarily have to jettison the outdated idea that individuals learn merely by transmission of facts!

It would need to be coupled to the argument that there is no one 'correct' way in educational methodology and that to refer to education as a 'science' is pretentious at best and nonsense at worst. There are far too many unidentifiable as well as uncontrollable variables to make any claim of this nature.

- * Thirdly, Environmental Education needs to develop its concern with the issue of social justice in relation to environmental issues, most particularly in terms of resource distribution and utilisation. Coupled with this is the importance of the empowerment of people to take the initiative in environmental issues which concern them.

In South Africa we have an embedded tradition of top-down government, top-down decision making and top-down management. The encouragement and sanction of local initiatives and action, whether on environmental matters or anything else, has not been part of 'our way of life'. This lopsided approach needs to be changed so that ways can be found to modify environmentally and socially harmful behaviour through genuinely democratic processes.

- * Fourthly, Environmental Education needs to become more actively involved in the development of innovative curricula. Like People's Education, but on a global scale, Environmental Education has been a response to perceived

inadequacies of our educational systems. Alternatives to existing curricula at all levels of education need to be considered and explored. This might include:

- The more vigorous promotion of a holistic and non-reductionist view of the environment and ecological processes. This implies the building of more interdisciplinary and cross-disciplinary links and the strengthening of existing ones. This, in the view of Okot-Uma and Wereko Brobbey (24) who have placed Environmental Education within an African context, is one of the central issues of education for relevance.
- The development of continuous and vigorous evaluation as an integral aspect of all Environmental Education programmes and endeavours. This is essential if Environmental Education is to remain virile and open to new ideas. Much knowledge exists in this area, but needs to be adapted and applied to Environmental Education, particularly with a non-positivistic paradigm.
- The serious consideration of models of curriculum which may appear, at least initially, to be diametrically opposed to existing models. Of particular significance here are Colin Lacey's advancement of the 'Radical Curriculum' in which 'education, ecology and development' form the primary focus (25) and William Doll's notion of the 'Transformative Curriculum' (26, 27). The latter draws upon the inspirational work of Schon, Piaget, Kuhn & Ilya Prigogine whom, some of you will recall, won the Nobel Prize for Chemistry. James Gleick (28) too, in his exposition of the nature of chaos, offers particular insights in this area.

* My last suggestion is that research priorities need to be identified.

In this context I would like to say a few words about logical positivism (sometimes disparagingly termed the 'agricultural-botanical paradigm') as a research paradigm in Environmental Education both because it is an issue about which environmental educators, in common with other social scientists, sometimes have strong feelings and because it has a bearing on the type of research which is often carried out in Environmental Education.

This way of thinking (29), with its emphasis on verification by direct observation and measurement and, where possible, repeatability, has dominated Western thought and progress for about two centuries including the school of

thought in education and psychology known as 'behaviourism'. (Whether behaviourism constitutes progress is however a matter of debate.) Logical positivism has implied a mechanistic image of human beings and as a consequence, human behaviour as being a response to the demands of the environment. Its antagonists argue that this fails to take account of people's unique ability to interpret their experiences, represent them to themselves as well as construct theories about themselves. Logical positivism stands accused of ignoring the profound differences between some of the natural sciences and the social sciences. People, it is argued, should not, for ethical reasons as well as practical ones, be subject to manipulation as variables. Human attributes such as attitudes, values and even knowledge are furthermore argued to be unstable and dynamic and not subject to accurate measurement.

Counter paradigms to logical positivism fall broadly into three categories, viz. phenomenological, ethnomethodological and symbolic interactionist, all of which would question traditional notions of 'truth' and 'objectivity' in research. Emphasis tends to be on insights and 'subjective' observation rather than measuring and calculation which, it would be furthermore argued, need be no less 'rigorous'. I say all this because Environmental Education operates to a considerable extent within anti-positivist paradigms reflected in methodological approaches such as hermeneutics, critical theory, action research, case studies and ethnographic methods, all of which often seem vague, woolly and unscientific to the researcher schooled in 'scientific method'. Cognisance of the widely accepted validity of these approaches needs however to be taken.

This is not to suggest that the logical positivist paradigm be rejected in its entirety, but rather that the approach in Environmental Education, in attempting to blend scientific knowledge with human behaviour and to establish cross disciplinary structures, should be both eclectic and flexible.

Colleagues and students in my Department are already working in several of the areas which I have suggested - most particularly evaluation and research priorities. This was a significant factor in obtaining the recent Murray and Roberts Chair of Environmental Education and we hope that with time and in conformity with the spirit of the subject as outlined to expand upon the work presently being done.

In conclusion, there are probably three major and interrelated issues which will determine our future quality of life in South Africa. These are; how

well we husband and run our economy, the extent to which social justice is addressed and how we treat our biophysical environment. In terms of the latter we have essentially three 'management' options; the stick, the carrot and the 'cop-out'. We may enact laws and regulations governing human interaction and behaviour, but experience tells us that these will never in themselves be adequate. The second option is Environmental Education, which I suggest would be most effective if blended with enlightened and non-authoritarian, democratically enacted legal guidelines and constraints.

The third management option is 'not to manage' but to allow social adjustment to deteriorating environmental conditions to take place. There is however a twofold problem here. Firstly the downward spiral of environmental degradation is likely to continue and secondly a minority of rich and powerful interests are in the best position to cope with it, and to control access to and monopolise the use of resources. The consequences of this non management option will be borne very unevenly and will almost certainly lead to abject misery and low life expectancy for much of the world's population.

Aldo Leopold (30) noted over 50 years ago that an ethic inasfar as it pertained to the environment is simultaneously two things: biologically it is a limitation on freedom of action in the struggle for existence and philosophically it is a differentiation of social from anti-social conduct. He understood that we would get nowhere unless ecological values are integrated with economic, scientific, technological and, most importantly, political activities. Much of Leopold's thought presaged development in Environmental Education, but we have yet to achieve a well elaborated code of environmental behaviour for individuals and for society, where we move from greed to need and which will allow us all to live within the constraints and opportunities of what the earth provides.

I submit that other than basic literacy and numeracy, Environmental Education is the major priority which needs to be addressed in all education, formal and non-formal. For some parts of the world it is possibly already too late and for the planet as a whole we might be closer to the brink of irreparable environmental damage than we care to imagine, but in southern Africa I believe we are not yet too late to take issues in hand.

Mr Vice Chancellor, we end with an ancient Persian proverb engraved in stone among ruins in the Mesopotamian desert - once 'the fertile crescent' - one of

the cradles of civilisation:

"God will not ask thee thy race,
Nor thy birth
Alone he will ask of thee -
What has't thou done with the land I gave thee?"

NOTES AND REFERENCES

1. CURREY R.F. Rhodes University 1904-1970. Grahamstown.
2. From: 'On the Projected Kendal and Windermere Railway' Selected Poems of William Wordsworth. 1913. Oxford University Press. Oxford.
3. Quoted in CURTIS S.J. & BOULTWOOD M.E.A. 1965: A Short History of Educational Ideas. London. University Tutorial Press. p.381 from F.H. Hayward (1904) Pestalozzi & Froebel. Holland.
4. UNEP 1977: Environmental Education. UNEP Facts. UNEP FS/15 October 1977.
5. IUCN/UNEP/WWF/FAO/UNESCO 1980: The World Conservation Strategy. IUCN. Morges.
6. BRANDT REPORT 1980: North-South: A Programme for Survival. Pan Books. London.
7. BARNEY G.O. 1982: Global 2000 Report to the President of the U.S.: Entering the 21st Century. Vol. 1: The Summary Report. Penguin. London.
8. WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT 1987: Our Common Future. Oxford University Press. Oxford.
9. DEPARTMENT OF ENVIRONMENT AFFAIRS 1989: White Paper on Environmental Education. April. Department of Environment Affairs. Pretoria.
10. SISULU M. & SANGWENI S. 1990: Future Environment Policy for a Changing South Africa. ANC Discussion Paper. Workshop 3/11/1990.
11. DESAI B. 1990: An Environmental Policy for the Pan Africanist Congress of Azania. Discussion Document.
12. WILSON F. & RAMPHELE M. 1989: Uprooting Poverty. David Philip. Cape Town.
13. Quoted from MARTIN G.C. 1975: A Review of the objectives for Environmental Education. In Martin G. & Wheeler K. (eds) 1975: Insights into Environmental Education. Oliver & Boyd. Edinburgh. p. 29.
14. Quoted from SAVELAND R.N. (ed) 1976: Handbook of Environmental Education. Wiley & Sons. London. p. 201.
15. AGARWAL A. 1986: Human-Nature Interactions in a Third World Country. The Environmentalist. 6:3 165-183.
16. Quoted from O'RIORDAN T. 1981: Environmentalism and Education. Journal of Geography in Higher Education. 5:1 p.4.
17. GORZ A. 1980: Ecology as Politics. South End Press. London.
18. GOUGH N. 1987: Learning with environments: Towards an ecological paradigm for education. In Robottom I. (ed) 1987: Environmental Education: Practice and Possibility. Deakin University.
19. ROBOTOM I. 1987: In Robottom I. ibid.
20. DI CHIRO G. 1987: Environmental Education and the Question of Gender: A Feminist Critique. In Robottom I. ibid.

21. BENERIA L. 1982: Women and Development. Praeger. New York.
22. NORTON B.G. (ed.) 1986: The Preservation of Species: The value of biological diversity. P.U.P. Princeton.
23. IUCN 1971: Education and Environment. Papers of the Zurich Conference of December 1971. IUCN. Morges.
24. OKUT-UMA R. & WEREKO-BROBBY C. 1985: Environmental Education: The African Dimension. The Environmentalist. 5:2 137-142.
25. LACEY C. 1987: Education, Ecology and Development. WWF/Kogan Page. London.
26. DOLL W.E. 1989: Foundations for a post-modern curriculum. Journal of Curriculum Studies. 21:3 243-253.
27. DOLL W.E. 1988: Curriculum beyond stability: Schon, Prigogine, Piaget. In Pinar W. (ed) Contemporary Curriculum Discourses. Gorsuch Scarisbrick. Scottsdale.
28. GLEICK J. 1987: Chaos. Penguin. Harmondsworth.
29. HARRE R. 1981: The Positivist-empiricist approach and its alternative. In Reason P. & Rowan J. (eds.) Human Inquiry. John Wiley. Chichester.
30. LEOPOLD A. 1949: A Sand County Almanac. Oxford University Press. Oxford.

GUIDING PRINCIPLES FOR EFFECTIVE ENVIRONMENTAL EDUCATION AS ADOPTED AT THE 1977 INTERGOVERNMENTAL CONFERENCE ON ENVIRONMENTAL EDUCATION HELD AT TBILISI, USSR.

Environmental Education should:

- * consider the environment in its totality - natural and built, technological and social (economic, political, cultural-historical, moral, aesthetic);
- * be a continuous lifelong process, beginning at the pre-school level and continuing through all formal and nonformal stages;
- * be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective;
- * examine major environmental issues from local, national, regional and international points of view so that students receive insights into environmental conditions in other geographical areas;
- * focus on current and potential environmental situations while taking into account the historical perspective;
- * promote the value and necessity of local, national and international cooperation in the prevention and solution of environmental problems;
- * explicitly consider environmental aspects in plans for development and growth;
- * enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting their consequences;
- * relate environmental sensitivity, knowledge, problem-solving skills and values clarification to every age, but with special emphasis on environmental sensitivity to the learner's own community in early years;
- * help learners discover the symptoms and real causes of environmental problems;
- * emphasize the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills;
- * utilize diverse learning environments and a broad array of educational approaches to teaching/learning about and from the environment with due stress on practical activities and first-hand experience.