Outdoor Environmental Education in the United Kingdom: A Conceptual Framework of Epistemological Diversity and Its Educational Implications

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Abstract

Outdoor education in the United Kingdom is long on practice and short on theory. The theory that has developed belongs to the tradition of humanistic psychology, which celebrates the development of self and others. Theoretical development has not treated the relationship between self, others and the environment particularly well. This paper begins to address the balance by drawing on secondary sources, which deal with elements of environmental philosophy. In reviewing the literature I found that there was a great deal of environmental philosophy which dealt with ethical and moral issues. However, there was less said about educational implications and less again about using the outdoors as an educational medium. To fill the gap between ethics, morals and educational implications in the outdoors I have introduced a framework of epistemological diversity. The purpose of this paper therefore is to offer outdoor educators a way of thinking about outdoor education which transcends the focus of self and others to include relationships with the environment.

Résumé

L'éducation in situ, au Royaume-Uni, doit beaucoup à la pratique et peu à la théorie. La théorie qui s'y est développée appartient à cette tradition de psychologie humaniste prônant le développement du moi et des autres. Son évolution théorique laisse à désirer quant à l'étude qu'elle fait du rapport entre le moi, les autres et l'environnement. Le présent travail amorce l'étude de cet équilibre en puisant à des sources secondaires traitant d'éléments divers de la philosophie environnementale. À la lecture des documents, il m'est apparu que la philosophie environnementale traite souvent de questions éthiques et morales. On y est moins disert, cependant, quant aux possibilités et aux outils pédagogiques inhérents à l'étude in situ de l'environnement. Pour rapprocher l'éthique, la morale et la portée pédagogique de l'étude in situ de l'environnement, je propose un cadre de diversité épistémologique. Ce travail a donc pour fin d'offrir aux éducateurs de plein air une optique de l'étude in situ qui, par une prise en considération des rapports à l'environnement, transcende l'étude stricte du moi et des autres.

This paper is based on earlier research (Nicol, 2001). One of the aims of this research was to establish the extent to which local authority, residential, outdoor education centres were delivering aims relating to environmental education. Five research sites were chosen (4 in Scotland and 1 in England). All five centres provided five-day multi-activity programmes for primary school pupils (aged 10-12 years), and such groups represented the largest share of the centres' programme activities. The research indicated two things. First, there was a very limited provision of environmental education; and second, that if provision was to change then some recognition and understanding of ontological and epistemological principles was necessary. By way of illustrating a possible relationship between the theory and practice of environmental education in the outdoors deep ecology was used to provide a standpoint. This was appropriate to the research in question because, as a philosophy, it posits solutions which require changes in the way human beings think of humanity and its relationship with the natural environment. However, despite its philosophical grounding, deep ecology as a theoretical standpoint, does not have much to say about learning in terms of epistemology and pedagogy.

> A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. (Leopold, 1989, p. 224-225)

Philosophy

Philosophy has been described as "the attempt to make clear, and if possible to answer, a range of fundamental and puzzling questions which arise when . . . we try to understand ourselves and the universe we inhabit" (Grayling, 1988, p. 13). It is said to consist of "a range of central and linked questions, especially questions about the general nature of knowledge, language and concepts, which recur . . . in all special fields of investigation and reflection" (Jary & Jary, 1991, p. 468). Traditionally, much of this debate has focussed on the nature of reality (ontology), how that reality can be understood and legitimated (epistemology), and questions about how we should live (ethics). On this basis various philosophers have developed or aligned themselves with particular schools of thought where each school provides their own constitutive version of reality (Russell, 1979).

Ontology deals with first principles, which means inquiry into the nature of existence (Bahm, 1974). These first principles are the basis from which knowledge is developed and has particular relevance to educators as ontological assumptions provide the practice of teaching with an acknowledged foundation. Maykut and Morehouse (1994) suggest that ontological assumptions concern questions such as "what is the nature of reality?" (p. 3). Reality is presented (or realities, Harvey, 1990) in the manner of ontological assumptions which are expressed as a theory, or theories, about the world.

One theoretical position relevant to environmental philosophy, which was developed from the first principles of ontological assumptions, is that of deep ecology. Deep ecology emanates from what its founder, Arne Næss (1988), calls an "ecological ontology" (p. 29). Deep ecology is, at the same time, a school of thought, a social movement, an environmental ethic and a reaction to the world's global environmental problems. It posits solutions which require changes in the way humanity thinks about itself and its relationship with the natural environment. In order to achieve such change, a fundamental shift of values has to occur moving from the present relationship where humanity is seen to be the dominator of nature to a position where human beings are located within nature as a biological dependent (Harding, 1997). Næss (1989) has developed a theory of life which he has formulated into an eight-point platform of principles.

The theory and platform of principles can be summarized within the ontological assumption that "humanity is inseparable from nature" (Næss, 1989, p. 2). The corollary of this is that if humanity causes harm to the environment it causes harm to itself. Suzuki (1997) explains this process, stating "the interconnectedness of all things on Earth means that everything we do has consequences which reverberate through the systems of which we are a part" (p. 102). One need only think of the radioactive material carried on the wind from Chernobyl and deposited on Scottish soils, or how deposits of sulphur were carried on the wind from power station emissions in the UK and deposited as rain acidifying the lakes of Scandinavia (Reid, 1995). These examples show how geophysical cycles can redistribute pollutants beyond their original sources. The distribution of pollutants can also have biotic consequences. This point was most famously made with the publication of Rachel Carson's *Silent Spring* (1965) which demonstrated how chemical pesticides applied to crops work their way into food chains having consequences for human health. It is these cycles and ecological connections that are the source of what Suzuki (1997) and Næss (1989) mean when talking about interconnectedness. They call themselves ecologists, as Marshall (1995) observes, "because they embrace the central insight of ecology that there is an intermingling of all parts of the universe" (p. 413).

The question now arises as to the position of human beings within these interconnections. Despite the evolutionary advances of the human condition (notably through the development of the brain), and the standards of living which this has brought to certain parts of the world (through the development of science and technology) one inalienable fact remains. Human beings depend on the natural environment, at a biological level, for the air breathed, nutritious food and clean water for healthy living. Nature also absorbs human waste (industrial and domestic) whilst providing life support systems such as climate stability, photosynthesis and protection from ultraviolet radiation (Wackernagel & Rees, 1996).

Developing this theme Suzuki (1997) locates human beings within, and dependent on, nature stating that:

> you and I don't end at our fingertips or skin—we are connected through air, water and soil; we *are* animated by the same energy from the same source in the sky above. We are quite literally air, water, soil, energy and other living creatures. (p. 130)

The corollary of this is that, despite scientific and technological advances, human beings as individuals, communities, and ultimately a social order, remain rooted in the natural world and dependent on the natural processes which maintain it. Wackernagel and Rees (1996) provide further evidence of the thesis that Suzuki posits stating, "we are not just *connected* to nature—we *are* nature" (p. 7). These key concepts of interconnectedness and interdependence are central to deep ecology and have influenced the work of major environmental philosophers (Bateson, 1972; Schumacher, 1974; Thoreau, 1983; Wilson, 1984; Lopez, 1986; Seed, Macey, Flemming, & Næss, 1988; Leopold, 1989; Muir, 1992; Lovelock, 1995; Smyth, 1995; Capra, 1996).

Deep ecology strives to "relate philosophical and valuative premises with the concrete aspects of ecological problems" (Næss, 1989, p. 65). Current exemplars of global ecological problems would include climate change, species extinction, human population growth and the loss of topsoil. Contemporary issues within the UK media show that the growing of genetically modified crops, the transmission of viruses from salmon farms to native stocks, and radioactive leaks from nuclear reprocessing plants are causing concern. Deep ecology is therefore bound up in the values associated with how people live their lives. This has resulted in some commentators suggesting that deep ecology is "anarchic" (see Barry, 1999) and "ecofascist" (see Gore, 1992). However, these are over-zealous interpretations of deep ecology and display a selective interpretation and general misunderstanding of its principles. For example, Gore (1992) (the one-time American presidential candidate) states "deep ecologists assign our species the role of a global cancer, spreading uncontrollably, metastasizing in our cities and taking for our own nourishment and expansion the resources needed by the planet to maintain its health . . . [and that they] . . . seem to define human beings as an alien presence on the Earth" (p. 216-217). Because Gore's reading of deep ecology is based on the assumption that humans are an alien presence, it is fundamentally opposed to Næss's (1989) ontological vision of interconnectedness.

However, these criticisms may be viewed as a useful counterbalance to guard against over-zealous interpretations of deep ecology. This is particularly the case when considering education. In a study of English language General Certificate in Secondary Education environmental education literature, Moodie and Kwong (1997) concluded that the literature depends on an

oversimplification of issues presented in an uncritical manner which can lead to either passive acceptance of sensationalised "truths" or indoctrination. Furthermore they suggest it is "doomsday oriented, fear generating . . . and devoid of science teaching" (p. 87). The problem, they suggest, arises because texts are written from the perspective of the environmentalist as opposed to the educator. Marshall (1995) identifies the point which distinguishes the two when he suggests environmentalism "is chiefly preoccupied with clearing up the planet (whereas deep ecology) seeks to change our understanding of ourselves and our place in nature" (p. 413).

Despite these concerns, an accurate understanding of the intentions of deep ecology shows it to be not a doctrine, nor a code of ethics, but "a root for practical work" (informed by) "going deeply into our own experience" (Rothenberg, 1989, p. 17-19). This is a defining aspect of deep ecology because it is as much a question of ontology as ethics. The difference between the two is that if one truly understands and believes the ontology then one will want to act in accordance with its principles, in which case there is no need to impose a code of ethics. Therefore individuals are not coerced into a particular view but undertake "a re-examination of how we perceive and construct our world" (Næss, 1989, p. 19).

This becomes apparent when considering a key concept of deep ecology which is "self-realization" (Næss, 1989). This should not be confused with the narrow definition of self and ego, but more an extension of self (Harding, 1997). Self-realization is a unity of the ontological and psychological. This is expressed in Næss's (1989) differentiation between acts where:

> one may speak of "beautiful" and of "moral" action. Moral actions are motivated by acceptance of a moral law, and manifest themselves clearly when acting against inclination. A person acts beautifully when acting benevolently from inclination. Environment is then not felt to be something strange or hostile which we must unfortunately adapt ourselves to, but something valuable which we are inclined to treat with joy and respect, and the overwhelming richness of which we are inclined to use to satisfy our vital needs. (p. 85)

Deep ecology depends on this connection between the ontological and the psychological. The point of "realization" is internally conditioned rather than externally contrived which confounds the anarchic and ecofascist claims. Deep ecology is not about teaching people what to think but rather what to think about. People are human agents with the power to choose; they represent the locus of control. Furthermore, self-realization does not depend on altruistic acts since, as Suzuki (1997) points out, "humanity has an absolute need to protect biological diversity: it is a matter of sheer self-interest" (p. 130). It is this understanding of human nature from which an educational philosophy may be established.

The process of self-realization involves an identification with, empathy for, and heightened expansion of concern for non-human life (Harding, 1997). Furthermore, for self-realization to occur we have to "realize how dependent we are on the well-being of nature for our own physical and psychological well-being" (p. 16). It involves thinking not only of the well-being of human beings but the well-being of human beings within the biosphere they inhabit (Horwood, 1991). Consequently, realization of self includes the realization that nature has intrinsic value (Sessions, 1995). When these statements are juxtaposed with Næss's (1989) view that self-realization depends on the individual's own experience, it follows that pedagogic endeavours relevant to this aspiration should be directed at the *way* in which individuals experience the natural world.

However, deep ecology adopts the position that there are epistemological barriers to overcome before self-realization can occur. Epistemology, the theory of knowledge, "seeks to give an account of the nature of *knowing* in general [and] to give accounts of the important related concepts such as belief, certainty and truth" (O'Connor & Carr, 1982, p. 1). Epistemology is concerned with the sources of knowledge and the variety of modes of acquiring it (O'Connor & Carr, 1982). Since there are different sources of knowledge the question arises: are some ways better than others for acquiring knowledge?

To understand the epistemological barriers which prevent a deep ecological understanding of the world, writers on environmental philosophy often refer to Kuhn's (1962) concept of paradigms. A paradigm is defined as "a constellation of achievements—concepts, values, techniques etc.—shared by a scientific community to define legitimate problems and solutions" (Capra, 1996, p. 5). In this manner, knowledge accumulates as successive generations within the scientific community conduct research within the dominant paradigm. In this stable environment scientists and researchers operate within the boundaries of what the paradigm deems conventional. Consequently any hypotheses or problems that fall within that paradigm are "legitimate." Problems arise when the paradigm fails to recognize some things—anomalies—as legitimate. Deep ecology, for example, suggests that the current paradigm not only does not recognize, but works against the type of relationship between human beings and nature that will ensure the long term survival of both (Capra, 1996).

This is why environmental philosophers are attracted to Kuhn's (1962) work. It shows that the world of ideas is not a fixed entity but subject to change. For reasons that will become clear, environmental philosophers are frustrated at the hesitation shown by politicians, economists, policy makers, and some of the scientific community in dealing with environmental issues. Consequently, they are drawn to examples of change in the social order brought about in the past where scientists have operated beyond

conventional boundaries, with the most cited being Copernicus, Newton, and Einstein (Orr, 1992). These individuals introduced new ways of understanding the world which challenged, and ultimately changed, perceived wisdom. Kuhn (1962) called these changes "paradigm shifts." Despite the importance of Kuhn's argument great importance may be placed on what he did not say. Whilst developing the concept of paradigms to demonstrate their existence he stopped short of addressing the relationship between knowledge and societal structures beyond that of the scientific community. He therefore did not ask of himself "where do our paradigms come from?"

This represents a new and growing source of inquiry within both the natural and social sciences. For example, Feyerabend (1993) points to philosophers of biology who posit "there is not one 'science' with clearly defined principles but that science contains a great variety of (high-level theoretical, phenomenological, experimental) approaches . . . " (p. x). Also, within the social sciences, some environmental philosophers have tended towards a realist epistemology drawing inspiration from Marxism and critical theory (e.g., Fien, 1993; Huckle & Sterling, 1996). Consequently, ideology and other agents of social change (factors traditionally thought of as external to natural science) have emerged as sources of study aimed at determining the extent to which social values, independent of natural science, create and maintain paradigms. Scientific paradigms can now be seen as related to social values and not independent of them. As Rose (1997) suggests "the claim that (natural) science produces 'truth' about the world is forced even further on the defensive" (p. 50).

Understanding the mechanisms by which knowledge is constructed and valued is central to a deep ecological understanding of the world. However, despite these developing areas of inquiry one problem remains. The view that science is ethically value free remains entrenched in the consciousness of social institutions where knowledge remains divorced from values (Heron, 1996). This is particularly apparent in Pepper's (1986) claim that historical reasoning ensured that "nature became composed of objects metaphysically separated from man" (p. 51). The reason for this is often traced back to Descartes (whose seventeenth-century work aimed at describing the world mathematically helped to establish the philosophical origins of "modern" science) and the epistemological position of rationalism (Pepper, 1986). Rationalism has been described as "any of a variety of views emphasizing the role or importance of reason . . . in contrast to sensory experience [feelings]" (Honderich, 1995, p. 741). The historical preoccupation with reason established a dualistic pattern which has influenced contemporary thought to the point that,

> human beings are the things that think (the only things, and that is all they are), and the rest of the world is made up of things that can be measured (or "thought about"). Subject or object, mind or body, matter or spirit: this is the dual world we have inhabited ever since . . . From this duality come the ideas we live by . . . . (Suzuki, 1997, p. 192)

Suzuki (1997) is suggesting that the dominant paradigm does not allow for a deep ecological understanding of the world. Pepper (1986) concurs stating "it was this dualism . . . which paved the way for a man-nature separation in which the former was conceived of as superior to the latter" (p. 52). Deep ecology is a reaction against this dominant form of knowing (Horwood, 1991), and the reuniting of knowledge and values is the defining element of deep ecology (Capra, 1996). It is a point identified by Freire (1972) whose pedagogy was based on the assumption that people do not live independently of the world, or more specifically, reality does not exist independent of peoples' perception of it. In summary, a dominant epistemology exists which does not recognize the concerns of deep ecology. In order for these concerns to be recognized, deep ecology posits a change in the way human beings think about and relate to the natural world.

I would like to explore the dualistic paradigm by reframing it within an epistemological position more sensitive to deep ecology. Within this framework I would like to move towards translating the philosophical principles of deep ecology into a framework suitable for understanding and evaluating the pedagogical process germane to outdoor environmental education. This particular endeavour is of vital importance since as Horwood (1991) states, "deep ecology literature is strong in philosophical development . . . it lacks a matching educational framework . . ." (p. 24). Consequently, one must look outside the deep ecology literature to find workable educational principles.

Reason (1998) offers a four point epistemology comprising experiential knowing, presentational knowing, propositional knowing and practical knowing. This follows Wittgenstein's view (in Silverman, 1997) "that philosophy, properly understood, is not a set of propositions, but an activity, the clarification of non-philosophical problems about the world" (p. 208). The strength of this form of reasoning is that it recognizes multiple forms of knowing which makes for "an integrated (but not singular) theory of truth as the congruent articulation of reality" (Heron, 1996, p. 168).

Experiential Knowing

Experiential knowing is "through direct face-to-face encounters with person, place or thing; it is knowing through empathy and resonance . . ." (Reason, 1998, p. 44). Orr (1993) argues that "ecological education will, first, require the re-integration of experience into education" (p. 18). In another paper Orr (1994a) suggests that "we experience nature mostly through sight, sound, smell touch and taste—through a medley of sensations that play upon us in complex ways" (p. 6). Experiential knowing is based on the assumption that "there is no way to separate feeling from knowledge, or object from subject; there is no good way to separate mind and body from its ecological and emotional context" (Orr, 1993, p. 17). Consequently, the separation of mind from body is more abstract than real. This point is taken up by Bloom, Krathwohl,

& Masia (1964) who assert, "the fact that we attempt to analyse the affective area separately from the cognitive is not intended to suggest that there is a fundamental separation. There is none" (p. 45). This epistemological way of knowing (experiential knowing) is integrative where "thought is taken to include feelings" (Horwood, 1991, p. 23) and provides legitimacy for a subjective reality (Capra, 1996). Experiential knowing represents an epistemological position which addresses concerns which rationalism alone does not. For example, logic may lead us to recognize our integral part within the natural world but Capra maintains that it is direct "experience" of it that leads to a deep ecological understanding. The question now arises as to the manner in which this happens.

By adopting an epistemological position which unifies the subject and object (mind and world) cognition is not "a representation of an independently existing world, but rather a continual bringing forth of a world through the process of living" (Capra, 1996, p. 260). Donaldson (1978) shares this view suggesting that:

> we do not just sit and wait for the world to impinge upon us. We try actively to interpret it, to make sense of it. We grapple with it, we construe it intellectually, *we represent it to ourselves*. (p. 68)

These statements correspond with the epistemological position of constructivist theory where "participants work to make meaning out of their experience" (DeLay, 1996, p. 77). This has applications for educators who must recognize that they do not have ultimate control over learning outcomes. As DeLay (1996) points out "the learner is actively engaged in his or her knowledge construction" (p. 80). In this way learning becomes an interactive relationship between the teacher, the learner and the natural environment.

Direct experience is foundational to experiential knowing because concentrating solely on bringing forth an *inner* world of concepts, objects, and images of ourselves maintains a rationalist epistemology and allows us to remain alienated from the natural world (Capra, 1996). This has been compounded with the type of learning where pupils spend most of their educational career in classrooms. This is not a wholesale criticism of class-based education. However, whilst the classroom may be suitable, or even desirable, for some study, it is not useful for integrated study of the natural environment (Orr, 1992) nor should such study be confined to formal institutions (Smyth, 1995). Furthermore, as Orr (1994a) suggests, "we've organised education like mailbox pigeonholes, by disciplines which are abstractions organised for intellectual convenience" (p. 6). Consequently, outdoor environmental education represents a pedagogical endeavour with potential for overcoming these abstractions. Without the physical confines of the classroom, nor its subject disciplines, outdoor environmental education offers a way to counteract Orr's (1994a) concern that "there is a connection between knowledge organised in boxes, minds that stay in those boxes, and the inability of those minds

to perceive the causes of degraded ecologies . . . " (p. 7). Experiential knowing counters this tendency and educational psychology experiments with young children show that they benefit when experience is direct, compelling, and relevant; and further, when the experience is lessened so to is its educational potential (Donaldson, 1978).

Presentational Knowing

If experiential knowing relies on direct experience of the natural environment then there needs to exist a means of identifying quality experience. As Dewey (1963) warned, "the belief that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative. Experience and education cannot be directly equated to each other" (p. 25).

Having established that direct experience is only the beginning of a learning process (Donaldson, 1978), Orr (1994a) maintains that it is foundational "before introducing students to more advanced levels of disciplinary knowledge" (p. 7). The advanced form to which he refers is the second aspect of this epistemological framework called "presentational knowing [which] . . . emerges from experiential knowing, and provides its first expression through forms of imagery such as poetry and story, drawing, sculpture, movement, dance and . . . sharing of the experience" (Reason, 1998, p. 44).

This form of knowing allows pupils to reflect on their experiences. In this way the experience becomes a unification of the mind and world as the individual endeavours to internalize the experience and then bring it forth as either talk, text, or image. This interaction implies a conscious effort on the behalf of the pupil. At this point the role of the teacher becomes apparent. It is to help pupils explore representations of their experience and what that experience means in a wider social and natural context. This is in keeping with Illich's (1996) position that education should be a balance between personal choice and mentoring.

The role of the teacher is essential because one of the problems with experiential knowing is that it has "no clear intrinsic moral value" (Horwood, 1991, p. 23). This means that experiential knowing is a process which gives no guidance as to what is a quality experience. Capra (1996) directly addresses this vacuum by suggesting that the non-human world is something to be experienced and since it has "no language, no consciousness, and no culture; and therefore no justice, nor democracy . . . We cannot learn anything about those human values from ecosystems" (p. 289-290).[1]

Presentational knowing, arising out of experiential knowing, is the basis from which the teacher can use the pupils' own experiences to talk of the way in which the non-human world is valued. This interactive relationship between the pupil and teacher is the starting point of concrete experience. Note that the representation of the experience (talk, text, or image) is

not solely rational. This is in keeping with various theories that learning is multi-modal (Rogers, 1983). For example the Scottish polymath Patrick Geddes promoted the concept of education relating the heart, hand, and head. As his biographer, Boardman (1978), states, "these terms and their sequence simply meant that priority must be given first to the child's emotional development, thereafter to physical growth, and finally to strictly intellectual training" (p. 224). Similarly the tripartite model which holds that education is "in, about and for" the environment (the development of which Jickling and Spork [1998] attribute to Arthur Lucas in the late 1970s) can only be effective in relation to affective education (Shallcross, 1996).

Similarly, Gardner's (1993) enquiry into multiple intelligences shows that the perceived wisdom regarding cognition and intelligence has come about through a priori forms of knowledge. These are understandings based on the thoughts of reflective individuals. However, Gardner (1993) calls for empirically based models of understanding so that cognition and intelligence may be investigated whereby the authority lays as much on inductive forms of knowledge as deductive. Thus, Gardner (1993), Orr (1994b), and Capra (1996) amongst others believe the present forms of understanding are far from complete. There are clear implications for education involving its structure and balance, and the way it is thought about and delivered.

Propositional Knowing

Children must learn to control their own thinking but they cannot do so unless they are aware of it (Donaldson, 1978). Furthermore, in order to develop control they must project their thinking beyond the context of their immediate world. This introduces the third part of the four-point epistemology which involves knowing "about something through ideas and theories, and is expressed in abstract language or mathematics" (Reason, 1998, p. 44). Propositional knowing allows pupils to explore the world beyond that of their experiential and presentational knowing. They can critically evaluate text, propositions, and theories, looking for strengths and inadequacies and develop their own theories. Donaldson (1978) suggests this way of thinking about theories also serves as recognition that discovery learning is not always possible nor desirable.

For example, direct experience alone cannot convey an understanding of the abstract and symbolic world in which we live. Through propositional knowing pupils can learn about the societal structures which prevent or support a deep ecological understanding of the world. Reid (1995) provides an example of these structures suggesting that the industrial world is consuming natural resources at a rate beyond which they can be replenished. Similarly, Porritt (1984) suggests that the industrial technologies which exploit natural sources cause pollution. Bowers (1993) argues that the industrial world maintains this exploitation because industrial wealth is equated with

human progress, and he further suggests that such an equation is a cultural myth. By this he means that the dependence of human progress on industrial wealth is a culturally-specific assumption based on rationalist thinking. This myth is maintained, O'Riordan (1981) suggests, through a technocentric paradigm (rational and exploitative) which dominates the ecocentric paradigm (where nature has value not necessarily defined by human utility). Further readings show that writers and researchers have become concerned about the extent to which technocentric thinking has resulted in psychological alienation. So much so that a new body of literature, called "ecopsychology," has developed to redefine sanity and mental health by reviewing the relationship between humanity with the non-human world (Roszak, Gomes, & Kanner, 1995). Propositional knowing, therefore, provides the pupil with another form of knowing not accessible by direct experience alone.

I have not attempted to be definitive in the environmental issues expressed here. Instead the examples were used to demonstrate the type of knowledge necessary to deep ecology. In terms of propositional knowing this would consist of understanding ecosystems, the principles of organisation of ecological communities and the social and economic impacts on them from human communities. This type of knowledge has been summarized by Orr (1992) as "ecological literacy" (p. 85). This multi-modal epistemology helps pupils to develop constructs to make sense of meaning by organizing their experience into categories. This process works in two directions; first where the direct experience needs to be codified (induction); and second, where theoretical knowledge has to be ordered so as to accommodate new experiences (deduction).

Consequently, a deep ecological understanding of the natural world depends on theoretical (deductive) as well as experiential (inductive) knowledge. The strength of propositional knowing is that it seeks to unite what Kant (1933) and Dewey (1963) saw as the perennial differentiation between theory and practice, where practice without theory is blind. Freire (1972) had the same to say, which I have paraphrased as, "action without reflection is activism, reflection without action is verbalism" (p. 68). In a similar way Mackenzie (1989) states "the dissociation between theory and practice of knowledge has bedevilled learning" (p. 45).

However, accepting the worldview of ecocentrism brings with it certain challenges. This becomes apparent when considering other writers who have been interested in the relationship between education and worldviews. For example, in the foreword to Freire's *Pedagogy of the Oppressed* (1972), Richard Schaull introduces these challenges by suggesting that "there is no such thing as a neutral educational process" (p. 16). When this view is combined with the definition of experiential knowing above (whereby the world is brought forth), then knowledge becomes pluralistic, socially-constructed and consisting of "multiple realities" (DeLay, 1996, p. 79). This introduces a very distinct epistemological position summarized by Capra

(1996) who suggests "what we see is not nature itself, but nature exposed to our method of questioning" (p. 40).

Practical Knowing

This is the fourth form of knowing which involves "how" to do something and is expressed as a "skill, knack or competence" (Reason, 1998, p. 44). At first glance this practical knowing may very well appear to be the epitome of what might be seen as a traditional view of outdoor education with its focus on outdoor activities. However, I must distinguish between an activity pursued for outcomes inherent in the activity as opposed to one where the activity is pursued for outcomes more directly related to this particular ontological and epistemological position. Developing a "skill, knack or competence" in, for example, kayaking is a biomechanical function related to skill acquisition where pupils improve their ability to perform skills necessary to manoeuvre the craft. Consequently, becoming competent at an outdoor activity does not in itself lead to "self-realization" in the way that deep ecology intends. Action should therefore not be confused with being physically active in outdoor activities. For an alternative view, the *5-14 Environmental Studies* (Scottish Office Education Department, 1993) document suggests that in developing informed attitudes pupils need to "think through the various consequences for living things and for the environment of different choices, decisions and courses of *action*" (p. 28-29; my emphasis). In this sense action is an outcome of a conscious decision by someone to act, as opposed to simply a willingness to participate in an activity.

For outdoor activities to have deep ecological worth pupils would need to demonstrate competence in relation to deep ecology as opposed to competence in outdoor activities. The type of action, to which practical knowing refers, is that practiced by Freire (1972) where the purpose of education is to improve the social condition. Action is borne out of the belief that the truth is not absolute and out there, but accessible to the individual who can enter into it and transform it (Freire, 1972). From a deep ecology perspective this action is mediated by, and becomes known through, its ontological principle that human beings are part of, and not apart from, the natural world (Næss, 1989). In this situation the individual's actions are inextricably linked to their values and their knowing. They are a practical expression of attitudes which are emotional and intellectual (Dewey, 1963). Suzuki (1997) takes this a stage further suggesting that "action invariably precedes a profound shift in values" (p. 214). Values therefore are at the heart of this educational endeavour. Thus a deep ecological awareness can be realized through this four point epistemology where valid action (practical knowing) "must be grounded in our experiential, presentational and propositional knowing" (Reason, 1998, p. 44).

Summary

The purpose of this paper was to demonstrate a range of environmental issues and explain their ontological, epistemological, ethical and educational implications. In this I have been guided by Schumacher's (1974) statement that "education cannot help us unless it deals with metaphysics . . . that is to say our fundamental convictions" (p. 76). The "help" needed relates to how society deals with the current degradation of the non-human world. In this I have pointed to deep ecology and its ecological ontology as a "metaphysics" upon which "fundamental convictions" may be based. In this way environmental problems and metaphysics become one and the same, whereby human beings seek to develop, and perhaps change, their understanding of themselves and their place in nature.

However, as I have pointed out, deep ecology's orientation towards environmental problems and understanding of fundamental convictions (metaphysics), lacks any well-developed epistemological position. Consequently there is a missing link between human and non-human existence (ontology) and knowledge of that existence (epistemology). I have bridged this gap by presenting Reason's (1998) four point epistemology which recognizes different ways of knowing. This epistemological position rejects the traditional dualisms of mind and world, subject and object, emotional and intellectual, and inductive and deductive. As the eminent educational philosopher Alfred North Whitehead (1950) wrote "it is a moot point whether the human hand created the human brain, or the brain created the hand. Certainly the connection is intimate and reciprocal" (p. 78). Instead these dualisms are seen as two parts of the same whole where the world is comprised of multiple realities which need to be understood in pluralistic terms, and where knowledge is socially constructed. I have presented this as an integrated endeavour comprising of experiential, presentational, propositional, and practical modes of enquiry where the prime educational purpose is to understand the relationship between human beings and the non-human world.

In presenting this theoretical essay I have endeavoured to provide a framework so that outdoor educators may rethink the purpose of their work. By juxtaposing deep ecology with an epistemological position which embraces multiple ways of knowing, the stage is now set to provide outdoor educators with an alternative theoretical position to that of humanistic psychology with its focus on self and others. It has been important to do this because outdoor education in the United Kingdom has come to be associated with personal and social education at the expense of environmental education (Nicol, 2001). This paper shows how outdoor education can orientate itself towards different goals such as the exploration of the relationship between human beings and the environment.

Having said that, there is much work to be done to implement these ideas. The next stage is to explore appropriate aims, assumptions, methods, content and claims particular to an environmental philosophy with a view to implementing these into the practice of outdoor education.

Notes

[1] The statement that "we cannot learn anything about those human values from ecosystems" would seem strange to an oral mythopoetic culture where nature is the source of social and cultural organization and indeed origin myths. However the point is made from within the context of the culture to which I belong and am being critical of. What I am taking issue with is the form of outdoor education where educators facilitate outdoor activities such as canoeing and climbing and expect understanding of nature to happen incidentally. Consequently, those partaking in such outdoor activities within this cultural context will not come to understand nature in the way oral mythopoetic cultures do, hence the need for epistemological diversity in this particular instance.

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