Engaging Students' Eco-Philosophies in Research and Teaching

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Abstract

This paper interprets student teachers' responses to open-ended interview probes concerning the relationship of humans to the non-human natural world, complementing outcomes presented earlier (Robertson, 1993). Outcomes are presented as conceptualisations: humans and nonhumans sharing common processes of origin, and humans becoming alienated from nature. A third category describes four intrinsic value-based conceptualisations: awareness-, life-, ecosystem-, and God's purpose-based, followed by an inherent value-based conceptualisation of aesthetic experience of natural settings. Finally, an instrumental conceptualisation of therapeutic value is presented. The outcomes are used to support the argument for incorporating students' eco-philosophies within instruction in environmental education.

Résumé

Cet article, qui complète des résultats présentés auparavant, interprète les réponses d'étudiants en enseignement à des entrevues semi-structurées concernant la relation des personnes avec le milieu naturel, c'est-à-dire avec les non-humains. Les résultats sont présentés sous forme de conceptualisations: les humains et les non-humains ont vécu un processus commun d'évolution et, les humains sont aliénés de la nature. Une troisième catégorie décrit quatre conceptualisations centrées sur des valeurs intrinsèques: la prise de conscience, la vie, l'écosystème et les buts de Dieu. Une autre conceptualisation suit au sujet de l'expérience esthétique des milieux naturels. Finalement, une autre, de valeur thérapeutique, est suggérée. Les résultats démontrent la pertinence de l'incorporation des idées

écologiques des étudiants en éducation relative à l'environnement.

Insights into students' perspectives on environment and human-nature relationships have much potential to inform our practice as environmental educators, yet few authors attach much significance to the relevance of students' pre-instructional beliefs (although see Cobern, 1993; Colloquium Participants, 1996; Wals, 1992). Qualitative research methods are well-suited to explore *how* students might conceptualise human-environment relationships (Robertson, 1994a), and this paper presents outcomes of such a research approach, in this case, multiple interviews conducted with student teachers in the early stages of their teacher education programme. These outcomes complement those presented in an earlier paper (Robertson, 1993).

Research Method and Context

Interviews were conducted with students in the secondary school teacher education programme at Rhodes University, Grahamstown, South Africa. Three data sets were collected: while the first two focused on the study's substantive interest in human-nature relationships, the third data set explored the context in which the first two sets of interviews occurred. That is:

- single interviews comprising Data Set #1 in 1992 (DS#1) (see Robertson 1994b for reporting of 1992 data),
- multiple interviews with nine other students in 1993 for a total of 49 interviews, to comprise DS#2, and
- single interviews with the DS#2 students conducted by an independent researcher, for DS#3.

Research procedures and outcomes derived from DS#1 alone are presented in Robertson (1993); this paper reviews research procedures, and comments on the contribution of the third data set, before presenting outcomes of the second data set.

Data Set # 3: 1993

A goal of the interviews was to create the conditions in which the interviewee "says what he or she means, means what he or she says, says what he or she thinks, and thinks about what he or she says" (MacDonald & Sanger, 1982, p. 181). Throughout the research process, the primary interest was with issues and perspectives which students—not the researcher—raised in their responses to the probes. The Data Set #3 "meta-interviews" (interviews about interviews) provided insights on the extent to which these goals were achieved, from the students' standpoint (reviewed in Robertson, 1994b). That is, the purpose of these interviews was to explore the students' experience of the Data Set #2 interviews—rather than the topic of the research *per se*. Andrea, for example, discussed how her perception of the interviews evolved: initially cautious, she attempted to phrase her responses in an "environmentally-friendly" manner. As the interviews progressed, she became "more honest":

> *Kevin K.:* I wonder what caused that shift? Towards greater honesty?
>
> *Andrea:* Just knowing him better. Even from the beginning, it's not like I changed what I was. I just didn't open up as much. And, I thought, you know, "He's not judging me". He's actually looking for something that's in all of us. None of us will ever be totally . . . ecologically friendly, or whatever. This is about me. (DS#3, Andrea, 3)

Procedures of Analysis

Transcriptions were printed and read with the research question in mind, and descriptive words or phrases were attached to short sections of the transcript, "utterances relevant to the question" (Marton, 1988, p. 198). For example, a number of students attributed rights to non-human forms of life, in support of how they believed humans should act toward them. This was framed as a potential category (labeled "ethical perspectives"). Subsequently, sections of the transcripts (hereafter referred to as excerpts) alluding to this category were labeled. These excerpts were printed and organised into potential sub-categories within ethical perspectives. This mechanical sorting allowed for numerous excerpts to be considered together; in this manner, the research interest shifted from an individual's statements to the "pool of meanings" within a particular conceptu-

alisation which was being framed and elaborated (Marton, 1988, p. 198).

Interview excerpts were approached iteratively in the sense that initial categorisations were constantly compared with designated excerpts throughout the transcripts. "Why these categories?", one might ask. Were they pre-conceived or did they emerge from the data? Responding to this question, MacKinnon (1989, p. 48) proposes that, to account satisfactorily for the source of these categories, "we might think in terms of an interdependence—even a tension—that is played out." In other words, the origin of these categories stems from an interplay between the student's intended meanings and the analyst's theoretical perspectives. On the one hand, the student was attempting to communicate a way of understanding a relationship. On the other, I the analyst, sought to identify qualitatively different ways in which students thought about the relationship. Thus, my conduct in the analytical process was informed by both the research question and by insights derived from the literature. Regarding the latter, however, I must stress that the outcomes were not predetermined in the sense that I introduced these ways of thinking about human-nature relationships in the interviews. This claim was clearly supported by students' responses in the meta-interviews (Data Set # 3).

Outcomes

Conceptualisation: Shared Origin of Humans and Nature

In the fourth interview of the second data set, held outdoors, students responded to the following question:

> We are surrounded by a variety of different things: we hear birds and insects, and around us are trees, bushes, rocks, and soil. How do you understand how all these different kinds of things, living and non-living, came to exist?

Students accounted for the existence of diverse forms of life in terms of sharing processes of origin: while describing how different forms of life came to exist, they did not differentiate between humans and non-humans. These accounts derived from interpretations

of scientific accounts for the origin of life and interpretations of theistic-based creation accounts.

Lara immediately referred to scientific accounts for the origin of life, drawing on concepts such as adaptation, Darwinian succession, and evolutionary change over geological time. Not only did she have a detailed knowledge of evolutionary accounts for the origin of life, she also accepted these interpretations on a personal basis. Jennifer, too, invoked a science-based explanation, in preference to a religious explanation, which she explicitly rejected:

> *Jennifer:* I don't have a religion, as such. So, I mean, it's not like "On the first day this, and on the second day, this was made": I don't think that way at all. I see it just as a natural process: there was an Earth, and things changed and adapted, according to how they had to, and then Man came in . . . people and erosion and all those factors. (DS#2, Jennifer, IV, 31)

Sibu's response to the question on the origin of life, on the other hand, was phrased exclusively in terms of "God's creation." Within a framework of common creation, Sibu differentiated between man-made things (human artefacts) and natural phenomena. Sandile also voiced a mix of scientific and religious views in his account of the origin of life, then added a further dimension by drawing on Xhosa beliefs in the power of the spirits of one's ancestors:

> *Sandile:* So, I would say that they were created by God . . . So, God created everything which is on earth, he created people. I'm a Christian as well, but, I'm not a strong believer, I would say. You see, in our culture, we believe that there was someone superior that created man . . *izinyane*, that is, the dead. We cannot forget about them, that is "write them off". They are there, they are living, they are there to protect us. (DS#2, Sandile , II, 14)

The religious beliefs of the Xhosa involve veneration of a supreme deity, lesser deities, and one's ancestors (Miller, 1979; Tyrrell & Jurgens, 1986). While a supreme deity is considered to be ultimately responsible for making the heavens and the earth, the people and the animals, much veneration is reserved for one's ancestors. Sandile acknowledges his own acceptance of European-derived beliefs in a Christian deity, western scientific interpretations on the evolution of different forms of life, and in the power of the spirits of his ancestors—that is, a blend of beliefs associated with different

cultures. These beliefs convey a deep-seated understanding of continuity of oneself with previous generations of humans. Rather than indicating continuity with other forms of life, however, they are human-centred. While humans and non-humans were created by the same deity or deities, subsequent to this shared origin the focus of attention was clearly on humans as distinct from the rest of the natural world. These comments introduce approaches to thinking about humans as connected to, or separate from, the natural world (as elaborated in Robertson, 1993). The following category reviews a way of thinking about humans as becoming separate, or alienated, from the natural world.

Conceptualisation: Humans Becoming Alienated from Nature

While acknowledging the existence of science-based connections between people and the natural world, some students considered that modern society was becoming increasingly estranged from the natural world. Gavin, for instance, believed that humans were no longer part of nature, although they were in the past: modern humanity is, in a sense, separate from the natural world because of the extent of human imposition on the natural world. As an individual, however, one could attempt to ameliorate the extent to which one was estranged from the natural world, through actions which consciously attempted to minimise these human impositions.

In her first interview, Andrea described this process of alienation in terms of modern society's decreased contact with nature. She was concerned with what she perceived as a growing intellectual detachment from nature:

> *Andrea:* I think modern society alienates itself. Well, first of all, through urbanisation: we're not in contact with nature in that way, but also, we've intellectualised ourselves, and we think about theories, and interactions, but we don't actually think about how we depend on our primal needs. We still need to get food from the land—whether we buy it from the shop—we still depend on the earth, but I think we've alienated ourselves from that connection. (DS#2, Andrea, I, 4)

While discussing her arrangement of the cards (a visualization exercise conducted during the first interview), Jennifer alluded to socialisation as a process which resulted in an increased separation

between humans and nature. Probed to elaborate on "separate," she offered "being drawn away," "losing touch," and "becoming foreign." She mentioned acquaintances whom she considered were engaged in this process of being drawn away to a greater extent than herself. She also described how she would go on daily walks along a nearby beach, partly to keep in touch with both natural features and her private thoughts. Sara, too, described how children differed from adults in terms of their lack of exposure to widespread beliefs and practices, which invariably resulted in them "becoming hardened to the importance of nature" in their lives. In general, adults were more destructive and hurtful to other creatures, in comparison to younger children who had yet to acquire those widespread beliefs on human-nature relationships.

Value-based Categories

The attribution of value to non-human organisms and entities was apparent in students' discussions of how they thought humans should act toward the natural world. Approaches to thinking about human-nature relationships based on the concept of value have been organized using three categories: intrinsic value, inherent value, and instrumental value.

Intrinsic Value. While discussing how humans should interact with nature, some students attributed the existence of rights based upon a concept of intrinsic value, to organisms or entities other than humans. While no student actually mentioned the term "intrinsic value", the excerpts will illustrate that this inference is fair. Beliefs in intrinsic value formed the premise of their statements on why people should treat the non-human world with respect: because non-human organisms or entities possess these rights, they deserve to be treated in a respectful manner. Four ways of thinking about the intrinsic value of non-human organisms and entities were evident in the students' responses: awareness-based, life-based, ecosystem-based, and God's purpose.

Conceptualisation: Awareness-based Intrinsic Value

As Sibu stated, living beings have intrinsic value because they "feel pain, just like us." During the interview, Sibu explicitly rejected my suggestion that the value of particular forms of life was

conferred by humans: he was also adamant that non-humans possessed these rights. In a similar vein, Jennifer described how she thought about geckos, small reptiles which she often encountered in her home. While she was unable to discern how they might feel pain, she was nonetheless convinced of their ability to do so:

> *Jennifer:* They are alive, and they have feelings. But somehow I can't get into their way of feeling hurt, and pain. They would, but I can't imagine it for myself. Maybe it's their eyes. You can see their expressions. I know this is silly—they are very much like human beings except they don't have that higher intelligence. They can't reason, and that's where I see them being more vulnerable, and having more right to having their freedom, and treated with respect, than us. Because we can fight for what we want, or what we believe in. They can't. (DS#2, Jennifer, II, 10)

Jennifer subsequently articulated a view on the concept of rights which provided a basis for her aversion to instances of animal abuse. In the final interview, she described how her experiences as a participant in the study had consolidated her views concerning the rights of living creatures "not to be imposed upon." She also described how these beliefs translated into her actions regarding other creatures:

> *Jennifer:* It's making me think about why I feel this way. And, I think I've developed a new concept. I mean, I've always had that heartfelt sympathy for something, but you don't ever think "*Why*?" And now, yes. It's a violation. I see it more as a violation than I did before. Rather than just the sympathy.
>
> *Alistair:* A violation of . . . ?
>
> *Jennifer:* Of rights for living things . . . My strongest right, I think, is not to be imposed on, by something, or someone else. I think every living thing that comes into the world has the right not to be imposed on. I *hate* being imposed on! (DS#2, Jennifer, V, 46; emphases in original)

Advocates of ethical sentientism propose that an appropriate criterion of moral considerability is that of sentience, that is, the capacity for sense perception (Fox, 1990, p. 163). If a being is sentient, so the argument goes, then it may be said to have interests, including avoidance of suffering. These interests are intrinsic to the being; that is, they do not depend upon whether the being is useful or not for human purposes.

Conceptualisation: Life-based Intrinsic Value

In Gail's view, non-human creatures had value simply because they were living. A criterion of "respect for life" seemed to underlie her thinking:

> *Gail:* You respect life: other forms of life! OK, if it's a usable thing, as much as I don't like to see animals killed, as much as it upsets me, I think that if it's necessary, I would kill it and eat it. I'm not a vegetarian either. But I feel that when it's just for a kick, then it's wrong. Maybe it's just an inherent thing, that it's wrong to kill. (DS#2, Gail, 5)

In this manner, Gail conveyed her belief in the ethical position that living organisms deserve to be treated with respect simply because they are living.

Conceptualisation: Ecosystem-based Intrinsic Value

In the final interview while we were discussing Gavin's previous statement, that he did not see humankind as part of the environment, Gavin mentioned how he would never drive a vehicle over the sand dunes of a beach, even though he had seen other people do this. He strongly resented these actions. Gavin saw his resentment as an instance of his being "conscious of nature," and indicative of his belief that he should try to minimise his impact on natural features, where possible: his reply drew upon a blend of ecosystem-based and life-based intrinsic value arguments. Concerning the former, he understood the sand dunes to be more than an assemblage of living organisms and non-living components. The sand provided a habitat for these organisms and they in turn constituted an integral feature of the stability of that habitat. In this sense, the two were inseparable parts of an ecosystem. Gavin's beliefs accord closely with Aldo Leopold's land ethic: "A thing is right when it tends to preserve the characteristic diversity and stability of an ecosystem or the biosphere. It is wrong when it tends otherwise" (Fox, 1990, p. 176).

Conceptualisation: God's Purpose-based Intrinsic Value

A conceptualisation of the origin of all life-forms in terms of shared processes was portrayed at the start of this paper. For one of the students in particular, the fact that humans share numerous features with other forms of life was all the more significant because he believed that all life, having been created by a deity, was an expression of that deity's purposes. Hence, all forms of life were imbued with intrinsic value. This way of understanding how humans originated in relation to other creatures provided a basis for Sibu's belief that he should treat other creatures with respect. That is, he saw these creatures as having intrinsic value, and that this value influenced how he should act towards them.

Inherent Value, Aesthetic Appreciation. Frankena (1973) describes inherent values as referring to "things that are good because the experience of contemplating them is good or rewarding in itself" (p. 82). Armstrong and Botzler (1993), similarly, describe inherent value as "value which requires the presence of a valuer who can appreciate the object of experience" (p. 53).

In a written assignment on a class-wide excursion to an outdoor setting, Sibu claimed that his experiences in the natural surroundings and the interest shown in the natural environment over the weekend had prompted him (and, he claimed, his colleagues) to think about the natural world:

> For many of us, the opportunity was a sort of awakening from a deep sleep because we had never thought much about the environment before. . . . We became observant of the nature aspects of environment. One was also able to start appreciating the beauty of nature, for instance, the "Madonna and Child" waterfall. (DS#2, Sibu, written submission)

Armstrong and Botzler (1993) describe an aesthetic experience as differing from other forms of experience in several ways. Perhaps most importantly, it requires ". . . an interest that is non-practical and non-utilitarian. Aesthetically, an object is valued for its own sake, rather than for its potential use" (p. 104). This category portrays a way of thinking about and valuing nature that is qualitatively different from appreciating natural settings as, for example, a tranquil escape from one's social setting. The focus here is on con-

templation of the beauty of the natural setting, rather than on the benefits one may derive from that contemplation. Siyanda, for instance, described how her appreciation for nature had only begun since she started her university studies and gained access to a variety of educational sources. In the final interview, she described this dawning appreciation:

> *Siyanda:* Well, it started here at Rhodes (University). Otherwise, before then, I just didn't consider nature as something even existing.
>
> *Alistair:* But, you knew about it from books ?
>
> *Siyanda:* Well, I wasn't interested. And, I didn't have access to books before I came to Rhodes. I don't remember seeing a book with things of nature. I just saw novels. I don't remember reading a book with nature, which introduced me to nature. (DS#2, Siyanda, V, 26)

In the final interview, I handed Siyanda a photograph of students at the waterfall and asked her to describe her experience of the place:

> *Siyanda:* I was just thinking of the waterfall. Just appreciating the waterfall. It was quite beautiful, a beautiful view. I was enjoying looking at the waterfall, because . . . in my life, I wasn't able to go to the waterfalls. So, I was just enjoying looking at it. (DS#2, Siyanda, V, 28)

Andrea articulated a form of aesthetic appreciation while I was encouraging her to describe how she thought of "elephant" during the cards exercise in the first interview. After describing how she appreciated the beauty of elephants, she explicitly rejected the suggestion that this beauty depended on their value as tourist attractions. Andrea's aesthetic appreciation of elephants was enhanced by her understanding of these creatures as integral contributors to a larger natural system. In other words, her aesthetic appreciation of these animals was informed by an understanding of their place in a natural order.

The influence of ecological knowledge on aesthetic response has been described in the literature. In an essay on Leopold's writings, Callicot (1993) demonstrates how Leopold's perception of aesthetic beauty was self-consciously informed by his intimate knowledge of ecological and evolutionary biology. Just as experience informs thought, so thought "equally and reciprocally informs experience" (Callicot, 1993, p. 153). In Callicot's words, "the 'world', as we drink

it in through our senses, is first filtered, structured, and arranged by the conceptual framework we bring to it" (p. 153). From the perspective of an integrated systems conceptualisation of environment (Robertson, 1995), biotic and abiotic "parts" are valued because they are integral parts of a larger system. In this manner, an ecological and systems-based way of thinking deepens one's aesthetic perception of the natural world. Ecological knowledge, among others, "penetrates the surface provided by direct sensory experience and supplies substance to scenery" (Callicot, 1993, p. 153).

Instrumental Value. A major collection of ethical arguments is based on the view that while humans have intrinsic value, the non-human world (and its parts) is valuable only when it is seen to be valuable to humans (Fox, 1990, p. 149). From this standpoint the only kind of value that non-humans can have is instrumental—if they serve as a means to human ends. As far as animals were concerned, for example, Andiswa was adamant: "we control them: they are under our control." While she argued that humans had rights, she did not attribute a concept of rights to other forms of life. Indeed, toward the end of the interview she refuted my suggestion that animals might have intrinsic value. She contended, rather, that their value was determined by their usefulness to humans. Two categories of instrumental value-based conceptualisations of human-nature relationships were presented in Robertson (1993); the following reviews a therapeutic value-based conceptualisation of natural settings.

Fox (1990) describes a psychogenetic argument as a category within instrumental value theory. In terms of this psychogenetic argument we

> . . . ought to preserve the nonhuman world because it provides us with a range of contexts and experiences that are essential to our healthy psychological survival and development. (p. 159)

Whereas most of the resource preservation arguments (e.g., the life support system) emphasise the importance of the natural world to humans for the development of healthy bodies, the psychogenetic argument emphasises the importance of the natural world to humans "for the development of healthy (sane) minds" (Fox, 1990, p. 160). The following themes are interwoven in the portrayal of

this conceptualisation: natural settings as reflective places, as places promoting freedom of thought, and as places offering an escape from social settings.

Sibu valued his experiences in natural settings during the excursion for a variety of reasons. Concerning two hours spent in a forest during a "solitaire" exercise, for example, he appreciated the time to be alone for the opportunity it provided him to think about his university experiences. In other words, he used his time in the forest to think about his life outside of the forest. Similarly, Andrea described her interest in traveling to "quieter, more natural places," such as the coast, and game farms. She appreciated these natural settings for the opportunity they provided her to reflect on herself and events in her life:

> *Andrea:* It's nice for me to get away, and to actually get in contact. Being in more natural surroundings, I find that I'm in contact with myself more. (DS#2, Andrea, I, 7)

Fox (1990) describes an aspect of the psychogenetic importance of unmanaged places as "a refuge from the heavily managed aspects of existence (. . . known colloquially as 'getting away from it all')" (p. 159). Andrea discussed this notion of "getting away from it all" in terms of two different "realms" which she could move between. She distinguished natural (bio-physical) features, which she associated with a "spiritual realm," from her life in the city, her "daily existence." Jennifer similarly appreciated time spent in natural settings for the opportunity to escape from her social world and was quite clear on how she often used such opportunities to ponder her social situation, rather than focus on bio-physical features about her. In discussions on her experiences as a school pupil, Jennifer commented with notable emotion on her dislike of being "imposed upon," whether by teachers or authoritarian values broadly. Natural settings are especially conducive to promoting freedom of thought because she does not perceive any sense of being imposed upon in such settings, given the absence of human artefacts. That is, natural settings represent the antithesis of "heavily managed and especially totalitarian contexts" (Fox, 1990, p. 159).

Discussion

These conceptualisations portray students' pre-instructional beliefs about human-nature relationships insofar as discussions on this topic during the teacher education programme did not precede the interviews, and that students were unaware of eco-philosophical literature. Regarding the nature of the students' responses, note that the interview process often necessitated posing successive "why?" questions. Naess contends that asking strings of "why?" and/or "how?" questions eventually takes one beyond the realm of the everyday and the technical and into the realm of the philosophical (Fox, 1990, p. 92). In this sense, then, the outcomes portray elements of students' philosophical knowledge on human-nature relationships—that is, their eco-philosophies.

Students espoused elements of psychologically-based and value-based approaches which have been described in the literature. Indeed, each of the value-based conceptualisations—intrinsic, inherent, and instrumental—parallel approaches elaborated elsewhere. Fox's (1990) typology of intrinsic value arguments, for example, contains three categories: ethical sentientism, life-based ethics (including ecosystem ethics), and cosmic purpose ethics. Arguments on ethical sentientism have much in common with those presented in the conceptualisation "awareness-based intrinsic value": consider Jennifer's inclusion of sentient non-humans with humans as deserving of respectful treatment. Just as she resents being dominated ("imposed on," in her words) by other people, so she attempts to act in ways which diminish the extent of her own imposition on sentient non-humans. She rejects, in other words, acts of unjustified domination of sentient non-human animals—as well as of humans—by humans, and this relates closely to an ecofeminist standpoint: the domination of women and of nature are linked and ought to be eliminated (Kurth-Schai, 1992; Merchant, 1980; Warren & Cheney, 1991). Other students were also explicit in their concern for the inter-relatedness of social and environmental justice. The same can be said broadly of students' beliefs about the natural world in terms of instrumental value, although the content of their responses incorporated only a few of the instrumental value arguments reviewed in Fox (1990). Thus, students' pre-instructional conceptualisations of human-nature relationships, taken collectively, traverse a range of eco-philosophical perspectives and include elements of many of the categories developed in this literature.

As the content of these conceptualisations reflect, in part, the contextual features of the research setting, a discussion of the relationships between the context and the outcomes follows.

Context and the Content of the Outcomes

Students' views were diverse and this diversity is partly a consequence of the interview context, because particular ways of conceptualising nature were neither pre-figured nor seen as more credible than others: this approach was essential to the research procedure. Underlying Jennifer's concern for animal abuse, for example, was a different way of "seeing" animals (that is, thinking of them): simply, she did not conceptualise these creatures as objects totally removed from her sense of self.

These arguments lie at the heart of the rationale for this study: implicit in how one acts in relation to the natural world are ways of thinking about human-nature relationships—about how one should act, and why. In Evernden's (1993b) terms:

> The question one asks of nature-as-object is "what's in it *for* me?"; whereas of nature-as-self one might ask "what is it *to* me?". The former implies simple exploitation . . . while the latter implies a concern with the relationship of humans and non-humans. (p. 214; emphasis in original)

Some students did not conceptualise particular forms of life as objects, but rather as subjects more akin to themselves. As Jennifer commented, there is a tendency to devalue these thoughts as "sentimental" and excessively "subjective" when they are espoused in public, even to close friends and family members. Yet, those publicly devalued experiences of non-humans were undoubtedly meaningful to her, and influenced how she interacted with the natural world.

These outcomes beg the questions: "Which conceptions of human-nature relationships are being promoted, whether explicitly or implicitly, within a programme curriculum?" and "How do these conceptions relate to students' personal perspectives?" Gough (1990) argues that many approaches to environmental education embody objective conceptions of nature. If this is the case, it would help explain why incongruities often emerge between learners' personal

understandings and those more widely accepted in public discourse (Evernden, 1993a).

Engaging students' eco-philosophies in research and teaching

As students revealed in the meta-interviews, feelings, notions, and thoughts on these topics are often nebulous and difficult to articulate. Consequently, it is crucial to create a supportive interview context which encourages students to voice their thoughts, however hesitatingly, and which enables them to flesh these thoughts out through gently responsive probing questions.

Currently, we possess little in the way of an explicit appreciation of the concepts, theories and personal understandings regarding human-nature relations which students might bring to an education programme. Research of this genre would contribute to a phenomenography of human-nature relationships, portraying qualitatively different conceptualisations derived from diverse social settings and cultural contexts. For instance, while one may locate descriptions of how Africans conceptualised human-nature relationships in the past—in pre-industrial, pre-late twentieth century (e.g., Burnett & Kang'ethe, 1994)—there is little in the literature to inform instructors of how their students, in this day and age, think about this relationship. This research would increase understandings between instructors and students and result in a knowledge base which, being derived from students' expressions, is likely to be more meaningful to peers than perspectives derived through philosophical and historical inquiry alone. That is, this research would complement the somewhat de-contextualised portrayals described in the literature.

To conclude, students' eco-philosophies should be incorporated within the process of instruction (Robertson, 1993). Indeed, qualitative research may highlight conceptualisations which students find to be compelling in terms of normative implications. As students are encouraged to explore and develop their thinking on human-nature relationships, they should be encouraged to consider associations between their personal standpoints and actions beyond the academic setting. This approach, then, includes elements of the clarification, reasoning, and perception approaches reviewed by Courtenay Hall (1996): students clarify personal values and consider the arguments underlying these values, an essential component of

the entire process being that they are enabled to express their capacities for moral perception in its broadest sense - including conceptualisations of caring and imaginative empathy for the nonhuman world.

Notes on Contributor

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