In the neighbourhood of uncertainty: Poststructuralisms and environmental education

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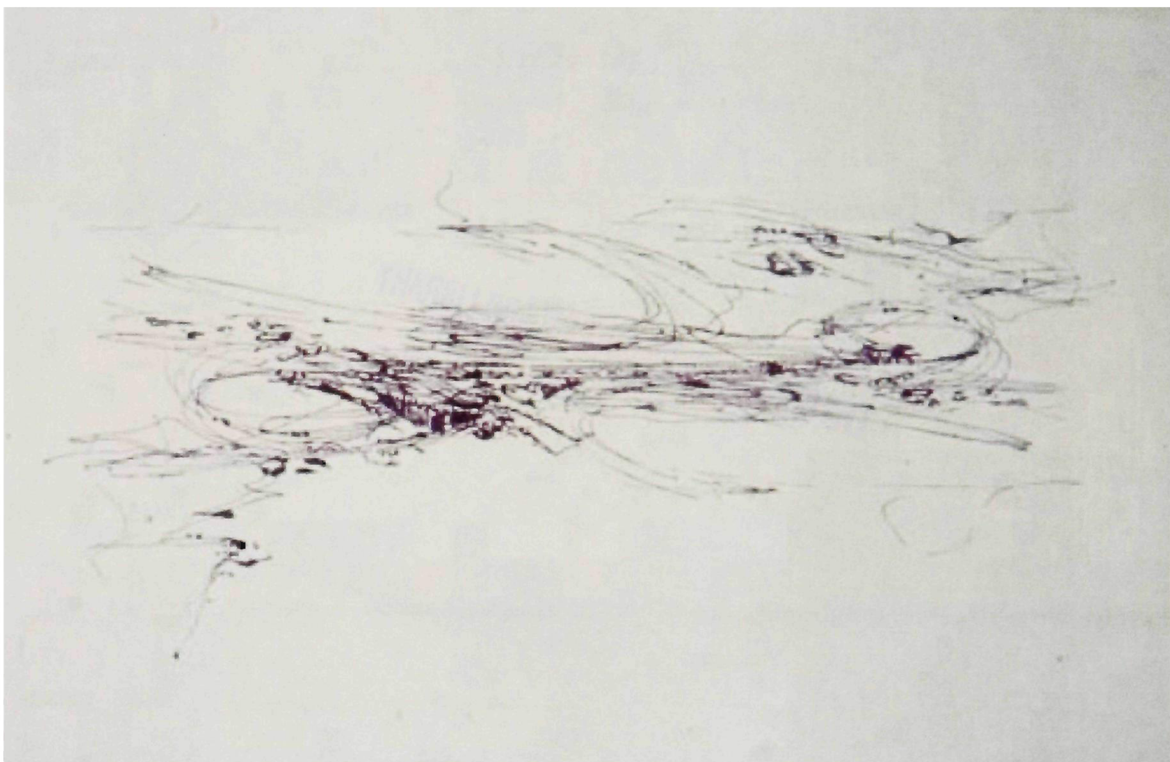

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21 November, 2003

DECLARATION

I hereby declare that the work presented in this thesis is, to the best of my knowledge, original and my own work, except as acknowledged in the text, and that the material has not been submitted, either in whole or part, for the award of any degree at this or any other university, except as acknowledged.

Joy Hardy

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For Terrence Cowles (1933-1997)

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ABSTRACT

This thesis acts upon the numerous calls that are being increasingly heard for the introduction of postmodernist/poststructuralist perspectives into environmental education (Callicott & da Rocha, 1996; Dreyfus, Wals, & van Weelie, 1999; A. Gough, 1997, 1999; Gough, 1993, 1994b, 1996, 1997, 1998b, 1999a; Littledyke, 1996; Panel for Education *for* Sustainable Development, 1998; Sauvé, 1999; Sosa, 1996; Stables, 1996, 1997) and the current interest in uncertainty in environmental education (Panel for Education *for* Sustainable Development, 1998) and the broader education arena (Atkinson, 2001; Bligh, 2001; Grant, 2001; Kenway & Bullen, 2000; Torres & Arnott, 1999; Villaume, 2000). These interests in uncertainty and postmodernist/poststructuralist perspectives in education often coincide. This is not surprising given that it is common to encounter claims that herald "postmodernism as an Age of Uncertainty" (S. Kelso, 1997, p. 457). In environmental education, this conjunction is exemplified in the report presented to the Department for Education and Employment (DfEE) and the Qualifications and Curriculum Authority (QCA) by the Panel for Education *for* Sustainable Development (1998), in the United Kingdom. This report advocates that students should "understand the concept of cultural change and the shift from the certainties of the modern age to the uncertainties of the postmodern age, and what opportunities this may afford for realising a more sustainable society" (1998, p. 11). However, 'postmodern uncertainties' have not been theorised in environmental education or the broader education arena. This thesis initiates poststructuralist theorisations of uncertainty.

In keeping with postmodernist/poststructuralist concerns for the Other, this thesis strives to respect uncertainty *as* uncertain. It does not strive to render a definitive account of uncertainty. Such a totalising approach would render uncertainty certain. In order to avoid the violence that would deprive uncertainty of the honour of its name, this poststructuralist theorisation of uncertainty is framed in 'the neighbourhood of'. 'The neighbourhood of' is "somewhere about" (Oxford English Dictionary). It is relationality through and through; yet despite

this immense relationality, it is an unstable space with indistinct boundaries. Chapter One introduces the figuration of 'the neighbourhood of' and advances its relevance for both postmodernist/poststructuralist theorisations of uncertainty and environmental education. Chapter One also presents readings of key motifs in 'the neighbourhood of' environmental education and argues that discursive constructions of uncertainty are important in positivist, liberal and critical strands of environmental education. Brief readings of the postmodernist/poststructuralist (dis)positions and motifs that are used as structural elements in the arguments constructed in this thesis are also provided. These readings precede the formulation and problematisation of the 'aims' and 'objectives'. Chapter One 'concludes' with a discussion of the difficulties that attend writing a thesis that strives to respect uncertainty *as* uncertain.

Chapter Two, Methodological (Dis)Positions and Methods, presents readings of two of the three research methods that were explored during the course of this project. The denouement of this project could be considered evolutionary, if the term 'evolutionary' is understood as a process in which relatively stable periods are punctuated by instabilities that result in major transformations, rather than a gradual, continuous and accretive series of minor modifications. This evolutionary path led to dramatic deterritorialisations and reterritorialisations of the theoretical terrain. The three research methods explored were Drees' constructive consonance (1988, 1990), Peirce's fallibilism (1931), and Deleuze and Guattari's rhizomatics (1980/1987), which was ultimately chosen for this project. The readings presented in Chapter Two, however, are limited to constructive consonance and rhizomatics due to constraints on space. The inclusion of a research method that was turned aside may be considered unusual. However, Drees' constructive consonance offers a valuable framework for research projects in environmental education that are aligned to either critical theory or to mediations of critical theory and postmodernism, as per Best and Kellner (1991, 1997), Giroux (1988, 1990, 1992, 1996) and McLaren (1995, 1997). Thus, whilst constructive consonance was not chosen for this particular project, its inclusion

opens up a space for alternative theorisations of uncertainty from other perspectives in environmental education.

Chapter Three, Tracing Uncertainty in Environmental Education, presents a reading of the existing engagements with uncertainty in environmental education and, in some instances, extends the already-said by following the paths that the existing engagements preconfigure. This chapter constitutes the tracing section of Deleuze and Guattari's rhizomatics; it portrays existing territories by delineating boundaries and the spaces enclosed. Whilst the number of engagements with uncertainty is relatively small in environmental education, the engagements are dispersed across diverse theoretical terrains. This chapter presents a reading of the scientific discourse of uncertainty and allied concepts, such as risk, indeterminacy and ignorance, and positions environmental education engagements with uncertainty in relation to this discourse.

Chapters Four and Five are the first two mapping chapters. As each chapter is discrete, they may be read in any order. Chapter Four, Face to Face with the Environment, draws a line of flight from the educational dimension of 'uncertainty and precaution in action' proposed by the Panel for Education *for* Sustainable Development to Levinas' ethical relationship known as the 'face to face' (Levinas, 1957/1987 1961/1991, 1962/1996, 1968/1996, 1974/1991, 1982/1985, 1984/1996). This line of flight is enabled by the panel's attribution of plurality and a limitation of knowledge to uncertainty. This conjunction is central to Levinas' philosophy. However, Levinas' formulation of the face to face relationship exclusively attends the realm of human sociality. This restriction would result in a highly anthropocentric ethics if applied directly to environmental education. However, it is argued that when Levinas' ethics is cross-read with Heidegger and others, as per Llewelyn (1991), an ethico-political framework emerges that can inform environmental values education and environmental education's commitment to eco-political agency. This framework disavows anthropocentrism and has an undeniably deep green orientation, but it avoids many of the criticisms levelled at deep green approaches, such as apoliticism. This

chapter anticipates and counters two lines of resistance that could be raised against the introduction of a Levinasian eco-ethics in environmental education. It is concluded that the relentless provocations that Levinas' philosophy presents would enable environmental education to engage uncertainty in a manner that maintains the conditions of uncertainty, rather than offering a conduit to certainty, which would defeat the purpose of engaging Levinas from the outset.

Chapter Five, Narrative Uncertainties, takes flight from Vance's (1917) rendition of certainty. Environmental education has not been articulated to Vance's work previously. However, given that Vance formulated one of the earliest versions of critical realism and given that critical realism underpins many orientations in environmental education, his philosophy is wholly germane to environmental education. This chapter exploits the egress that Vance's rendition of certainty provides into narrative theory. After taking advantage of this egress, the chapter presents readings of the three major theories of truth - the correspondence, coherence and pragmatic theories of truth - in order to anticipate and ward off possible resistance to the adoption of narrative theory in environmental education through arguments that could be used to discursively contain and diminish the theorising of narrative uncertainties that follow. Whilst, Gough (1994b) has argued against such discursive containment of narrative theory, he has presented arguments that undermine the fact/fiction dichotomy. The thorny issue of truth has received scant attention in environmental education to date. As a matter of prudence, the chapter also counters the misreadings of Derrida's deconstruction (1967/1976, 1967/1978, 1972/1981) as a denial of (the) material environment and as a destructive and anti-environmental discourse. These misreadings have been applied widely in environmental education and deconstruction has been subjected to discursive containment and denigration as a result (Bowers, 1993b; Callicott & da Rocha, 1996; Littledyke, 1996; Sauvé, 1999; Sosa, 1996). Following these precautionary denouements, this chapter formulates four forms of narrative uncertainty and discusses how these uncertainties can be engaged in environmental education.

Chapter Six, Shifting Terrains, maps secondary lines of flight from the terrain constructed in the previous two chapters. Specifically, this chapter forges links between uncertainty and feminist theory, critical literacy and postmodernist/ poststructuralist ethics. These trajectories proliferate links with key motifs in environmental education, such as engaging indigenous voices, the construction of environmental subjectivities and eco-political agency, and environmental values education. However, the arguments presented in the chapter cause these influential themes to resonate in unfamiliar tones.

Chapter Seven, Decalcomania, enacts the final stage of rhizomatic analysis. It consists of laying the tracing of environmental education's current engagements with uncertainty presented in Chapter Three over the maps constructed in Chapters Four, Five and Six. The purpose of decalcomania is twofold. First, this process of laying the tracing over the maps enables the identification of blockages and silences in the already-said. Thus, this aspect of decalcomania has a decidedly deconstructive aspect. Second, laying the tracing over the maps enables an exploration of the effects that the maps can induce in the tracing. There is a risk of a power take-over in this second aspect of decalcomania. The map may be hegemonically forced to conform to the tracing, thus sustaining the concepts and structures that configure the already-said. Consequently, the analytical emphasis in this chapter is that of 'plugging the map into the tracing' in order to minimise the risk of a power take-over.

Finally, Chapter Eight, In-Conclusion, invokes Deleuze and Guattari's figuration of 'becoming' as a means to both trouble the notion of a conclusion and frame the reflections upon the 'aims', 'objectives' and 'findings' of this project. It is argued that becoming-uncertain is an important objective and pedagogical venture for environmental education. Becoming-uncertain is not to be taken literally; it does not designate the path to, or arrival of, incertitude. Instead, becoming-uncertain refers to the experience of thinking uncertainty differently, experiencing the capacity of uncertainty to affect and be affected, and experiencing the spaces that this opens up, transforms or forecloses. 'Becoming-

uncertain' is a political strategy to undermine the hegemonic containment imposed by dominant discourses. Deleuze and Guattari's 'becoming' is a program for Utopian politics (Colebrook, 2000). I argue throughout this project that environmental education is characterised by Utopian politics. This is a provocative stance that will be defended as this project unfolds. Further, following Gatens (2000), I subscribe to the view that to think differently, is to exist differently. Therefore, mindful that the readers will assuredly draw their own conclusions, I advance the situated and provisional conclusion that becoming-uncertain can be read as an agentive strategy to exist differently and that by thinking and existing differently we can imagine and enact more sustainable futures. The conclusion also identifies openings for further research. In keeping with the rhizomatic nature of this project, numerous possible lines of flight are identified.

PUBLICATIONS FROM THE THESIS

Hardy, J. (in press). Becoming-Uncertain. In L. Baker, S. Rawolle, J. Vadeboncoeur & A. Zavros (Eds), *Educational Imaginings: On the play of texts and contexts*. Brisbane: Australian Academic Press.

Hardy, J. (2002). Levinas and environmental education. *Educational Philosophy and Theory*, 34(4), 459-476.

Hardy, J. (2002). In the neighbourhood of uncertainty: Rhizomatics and environmental education. In V. Carrington, J. Mitchell, S.Rawolle & A. Zavros (Eds), *Troubling practice* (pp. 147-162). Flaxton: Post Pressed.

Hardy, J. (2001). Face-to-face with the environment: Levinas and environmental education. In C. Kapitzke, W.-L. Cheung & Y. Yu (Eds), *Difference and dispersion: Educational research in a postmodern context* (pp. 103-114). Flaxton: Post Pressed.

Hardy, J. (1999). Fractal Alterity. In K. Chalmers, S. Bogotini & P. Renshaw (Eds). *Educational research in new times: Imagining communities for diversity and inclusiveness* (pp. 7-14). Flaxton: Post Pressed.

CHAPTER ONE – INTRODUCTION: … 'THE NEIGHBOURHOOD OF' …

This thesis acts upon the numerous calls that are being increasingly heard for the introduction of postmodernist/poststructuralist perspectives into environmental education (Callicott & da Rocha, 1996; Dreyfus et al., 1999; A. Gough, 1997, 1999; Gough, 1993, 1994b, 1996, 1997, 1998b, 1999a; Littledyke, 1996; Panel for Education *for* Sustainable Development, 1998; Sauvé, 1999; Sosa, 1996; Stables, 1996, 1997) and the current interest in uncertainty in environmental education (Panel for Education *for* Sustainable Development, 1998) and the broader education arena (Atkinson, 2001; Bligh, 2001; Grant, 2001; Kenway & Bullen, 2000; Torres & Arnott, 1999; Villaume, 2000). These interests in uncertainty and postmodernist/poststructuralist perspectives for education often coincide. This is not surprising given that it is common to encounter claims that herald "postmodernism as an Age of Uncertainty" (S. Kelso, 1997, p. 457).

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connect with key motifs in environmental education, such as the social construction of (the) environment, environmental values education, and the construction of environmental subjectivities and eco-political agency, indicating that uncertainty is implicated in each.

This chapter introduces the structural themes of this project whilst acknowledging that the notion of 'the introduction' is problematic in postmodernist/ poststructuralist thought. The figuration of 'the neighbourhood of' is advanced as a means to negotiate situated introductions, whilst acknowledging that beginnings never are. The figuration of 'the neighbourhood of' is also used to 'introduce' the surge in education's interest in uncertainty, the polarisation of this interest, and the commitment of this project to theorise uncertainty in a manner that respects uncertainty *as* uncertain. It is also advanced that 'the neighbourhood of' is an apt metaphor for the field of environmental education, which can be best described as a field of shifting relations animated by contestation. Brief readings are presented of the competing environmental education positions that are encountered during the denouement of this project: the social construction of (the) environment, environmental values education and eco-political agency. It is also argued that uncertainty is an important issue for each of the major orientations in 'the neighbourhood of environmental education'. This chapter also explores and counters common disparagements of postmodernist/poststructuralist perspectives and advances that postmodernist/ poststructuralist perspectives are germane to environmental education. This is followed by brief readings of the postmodernist/poststructuralist themes that are mobilised in this project. The 'aims' and 'objectives' of this project are presented and problematised after consideration of these postmodernist/poststructuralist themes. This chapter also addresses the problems that attend documenting a project that theorises uncertainty from postmodernist/poststructuralist perspectives. These result in the need to disrupt a sense of certitude inhabiting the text and the need to chart a course between clarity and obscurity. Finally the chapter concludes with brief chapter summaries.

...THE NEIGHBOURHOOD OF ...

'The neighbourhood of' is "somewhere about" (Oxford English Dictionary). It is relationality through and through; yet despite this immense relationality, 'the neighbourhood of' is an unstable space with indistinct boundaries. These boundaries, which delineate that which is other than our neighbourhood, are irrepressibly fluid; they cannot be transgressed; there is no exteriority. 'The neighbourhood of' cannot be fixed or enclosed; yet it cannot be denied. Its inexactness is its exactitude. 'The neighbourhood of' denotes inescapable situatedness. As Derrida reminds us: "one never lives elsewhere" (1972/1981, p. 12).

Now think of 'the neighbourhood of' as language.

As St. Pierre (2000a) and Stronarch and MacLure (1996) note, introducing any work is a tricky enterprise and introductions to poststructuralist works provide one of the greatest challenges. This challenge arises from the inevitability that introductions to poststructuralist works will disappoint in one of two ways, in addition to the myriad of other ways in which introductions may disappoint. They will disappoint either by trying to orient the reader to the work, or by resisting the impulse to do so.

These modes of disappointment arise from the problems opened up by poststructuralist critiques of origins, the Death of the Author, and the Death of the Subject. The figuration of 'the neighbourhood of', however, provides a means to grapple with these problems and forge an engagement, where the term 'engagement' is used in the dual senses of entering into a conflict and a promise of marriage. This engagement, then, is a warring alliance. Clearly, betrayal is in the air. But this is a betrayal that allows an introduction to occur, whilst acknowledging that beginnings never are.

To introduce a work, one must know where one is, presumably at a beginning. Poststructuralist critiques of origins, however, demonstrate the impossibility of beginnings. Derrida, for example, demonstrates this impossibility through the

endless play of *différance*, which compels him to proclaim that there is not "a rightful beginning, an absolute point of departure" (1972/1982, p. 6). Where, then, can we begin? Derrida argues that we can only begin, "*Wherever we are*: in a text where we already believe ourselves to be" (1967/1976, p. 162, Derrida's emphasis).

The figuration of 'the neighbourhood of' problematises the notion of introducing a work in a manner that is wholly consistent with Derrida's and other (Deleuze & Guattari, 1980/1987) poststructuralist critiques of origins. The notion of 'a rightful beginning' has no efficacy in 'the neighbourhood of' because there are no absolute points of reference in a shifting terrain; there is only relationality. One can start only where one *believes* oneself to be because the fluid boundaries preclude the possibility of a meta-vantage point from which to get one's bearings. Thus, there cannot be any introduction in an absolute sense, but this does not preclude or invalidate movement within this space and, *more importantly*, this does not preclude the recognition of this movement. Thus, this movement is intelligible; it can be acknowledged; it can be 'introduced' in 'the neighbourhood of' in a manner that recognises the inescapable situatedness and contingency of the introduction. Even projects that promise to introduce a work that is entirely 'new' can only position their 'newness' or difference relationally. The recognition of this inescapable situatedness does not mean, however, that such introductions should be apologetic or less than rigorous. On the contrary, the recognition of the immense relationality of 'the neighbourhood of' compels that sharp attention be paid to context. This does not betray the critiques of origins; it upholds them. It admits introductions whilst acknowledging that beginnings never are.

Given that it is possible to offer a situated introduction, mindful of its impossibility in any absolute originary sense, one has to face the issue of the Death of the Author, as per Barthes (1968/1977), Derrida (1972/1981), Eco (1962/1989) and Foucault (1969/1988), which seriously threatens to snatch the possibility of an introduction away again. The poststructuralist motif of the Death of the Author threatens the possibility of an introduction by shifting the

construction of meaning both spatially and temporally. This is similar to the critiques of origins. In postmodernist/poststructuralist thought, the Author is not held to be the originator of meaning; there is no 'sovereign author' (Derrida, 1972/1981) or 'Author-God' (Barthes, 1968/1977) who governs the meaning of the text. Instead, the meaning of the text is cast as a function of language: the meaning of "the text is held in language, [it] exists only in the movement of discourse" (Barthes, 1971/1977, p. 157). This does not dissimulate or transcend the author/reader binarism. Rather, it troubles the binarism by complicating the relations between the author and the reader. Therefore, the introduction cannot be a solo performance. This challenges the possibility of the introduction by questioning *who* can offer an introduction and *when* introductions occur.

The relations between the author and the reader concomitantly problematise the notion of 'authorial intention', which is typically afforded a special role in the introduction. Thus, the Death of the Author not only questions *who* can offer an introduction and *when* introductions occur, it also questions a central purpose of the introduction. In other words, the Death of the Author also questions the *what* and the *why* of the introduction. This, however, does not amount to the annulment of purpose. The inability to privilege the position of the author in this complex milieu does not annul authorial intentions. As Derrida argues, the author's "declared intention is not annulled by this but rather inscribed within a system in which it no longer dominates" (1967/1976, p. 243).

The Death of the Author, therefore, seriously disturbs the introduction by problematising the construction of meaning. Meaning is no longer preset by the author or self-contained within the work. Instead, meaning is actively constructed in a dynamic system in which the author and the reader are co-participants. The author cannot opt out of this partnership and the author's 'presence' should not be ignored, as Wakeling notes:

> however playful others may be in their interpretations, however one might agree that there is no unified 'presence' in the text who has

> ownership of its meaning, no originator in a "fixed or fetishized" sense, as Hutcheon terms it (1998, p. 126), it has nonetheless still been constructed by an empirical writer at a particular time and place. It has been constructed, moreover, from a point of view of a specific gender, race, sexuality, as well as out of a personal, national – and even global – history. The text therefore bears a relation to life, thought, experience, other texts and cultural artefacts of its own or past times, and it would seem to be short-sighted to leave the producer, producers' meanings, out of the equation all together. (Wakeling, 1998, p. 6)

Stonarch and MacLure argue further that it is not only short-sighted to omit or overlook authorial 'presence', but that "authorial 'absence' should, in any case, be treated with scepticism ... the writer is never more present than when she [or he] seems absent" (1996, p. 35). This comment is made in relation to modernist texts claiming objectivism, but it is just as relevant to postmodernist/poststructuralist engagements with the Death of the Author.

The Death of the Author seriously troubles the *who*, the *what*, the *why* and the *when* of the introduction. But as argued above, the author cannot bow out and should not be ignored. The author must write an introduction and offer intentions, but this "must not be conceived of as 'the first stage of meaning', its material vestibule" (Barthes, 1971/1977, p. 158). The figuration of 'the neighbourhood of' provides a means of understanding *how* this can be done. Any point in 'the neighbourhood of' can only be located relationally. The question, "Where am I?", cannot be answered intelligibly by an account of the ground under one's feet, no matter how detailed such an account may be. When 'the neighbourhood of' is used as a metaphor for the landscape of meaning, the meaning of the introduction, or the work, cannot be understood in terms of its 'content'. Meaning can only be constructed relationally. Thus, the introduction and the work in 'the neighbourhood of' cannot be conceived as 'the first stage of

meaning', rather, the meaning is instantiated and configured by the relationality itself.

Thus, the Death of the Author does not snatch away the possibility of the introduction. The intentions of the 'empirical writer' (Hutcheon, 1998) are not annulled, but they no longer govern meaning. Meaning is transacted relationally. Thus, the closest attention must be paid to the complex relations between the author and the reader, and their inescapable and wholly contingent situatedness within 'the neighbourhood of' language. It is essential to offer an introduction in order to prepare the conditions for relationality to occur.

The discussion of the Death of the Author, thus far, has nuanced the author and the reader unproblematically. Whilst it has been acknowledged that complex relations exist between them and that they are inescapably situated within specific socio-cultural-historical contexts, they have been nuanced as stable subjects within an unstable terrain. The Death of the Subject, however, supplants the notion of stable unified subjects with discursive subjects that are multiple, fluid and narrativised (Hall, 1996). This has implications for the introduction because it further problematises the author/reader binarism by positing each as an instantiation of discourse. This leads Barthes to proclaim that the life of "a paper-author" is "but a fiction contributing to his [or her] work" (Barthes, 1971/1977, p.161). It follows then, as a matter of logical consistency, that the reader 'is but a fiction' contributing to the work as well. This fictionalisation of the author and the reader is not to be understood in a pejorative sense. It in no way constitutes a denial of embodied existence, the author and reader do not 'melt away', nor does it constitute a devaluation of the construction of meanings in which they participate. On the contrary, in order to be noticed something must be deemed worthy of attention. Noticing is normative. Therefore, the accentuation of the active construction of the discourses in which we participate can be read as a high valuation simply by virtue of its accentuation. This accentuation concomitantly offers a salutary reminder of the ethico-political aspect of writing.

The figuration of 'the neighbourhood of' is wholly consistent with the poststructuralist theme of the Death of the Subject. 'The neighbourhood of' does not and cannot admit that the author and reader are stable positions within an otherwise shifting terrain. Instead, the author and reader are cast as parts of the fabric of the shifting relations that constitute 'the neighbourhood of'. Thus, 'the neighbourhood of' can be read as a theoretical framework within which to "rearticulate the relationship between subjects and discursive practices" (Hall, 1996, p. 2) and within which introductions, in their deconstructed form, occur.

The critiques of origins, the Death of the Author and the Death of the Subject compel the introduction to operate 'under erasure' (Derrida, 1972/1982), as "an idea which cannot be thought in the old way, but without which certain key questions cannot be thought at all" (Hall, 1996, p. 2). Thus, I take up the challenge to introduce this work in 'the neighbourhood of', mindful that beginnings never are. Intentions, methods and contexts will be advanced, whilst recognising that these are not only indissociable from the immense relationality of 'the neighbourhood of', but that their instantiation is wholly contingent upon this relationality. This does not diminish or weaken the introduction. On the contrary, it increases the potential of the introduction by forging connections to sites that have been otherwise blocked. This does not mean that the figuration of 'the neighbourhood of' resolves or transcends the issues raised by postmodernist/poststructuralist thought. Rather, 'the neighbourhood of' provides a strategic means of foregrounding these issues and accentuates the vigilance required to negotiate them in a manner that assures their continued provocation.

IN THE NEIGHBOURHOOD OF UNCERTAINTY

A cursory literature search will demonstrate that there is a burgeoning body of literature addressing the topic of uncertainty. A search of only two databases, using the key words 'education' and 'uncertainty', revealed titles such as "Education in the age of uncertainty" (Kenway & Bullen, 2000), "Educating for uncertainty" (Torres & Arnott, 1999), "Learning from uncertainty" (Bligh, 2001), "The necessity of uncertainty" (Villaume, 2000), "The power of uncertainty"

(Grant, 2001) and "The promise of uncertainty" (Atkinson, 2001). No longer relegated to apologetic footnotes, uncertainty is leading the text through bold titles such as these.

These titles announce a celebratory tone in relation to the topic of uncertainty. Uncertainty is portrayed as an opportunity laden with potential. This celebratory tone is countered, however, by an equally large body of literature that adopts a negative attitude toward uncertainty. The negative literature presents uncertainty as a threat rather than an opportunity and posits education as a means to reduce and manage this threat in order to alleviate adverse manifestations such as anxiety, stress and distrust (Bradac, 2001; Brashers, 2001; Guard & Wright, 2001; Hargreaves, 1997; Kramer, 1999; Schiralli, 2002).

This polarisation of attitudes towards the relations between education and uncertainty appears to be highly correlated to the authors' sympathies towards postmodernism/poststructuralism. This is not surprising given that it is common to encounter statements proclaiming "postmodernism as an Age of Uncertainty" (S. Kelso, 1997, p. 457). Those works that present uncertainty as an opportunity are generally sympathetic toward postmodernist/poststructuralist perspectives, whereas the negative portrayals tend to either ignore postmodernist/ poststructuralist perspectives or launch into scathing attacks on postmodernism/ poststructuralism.

This polarisation of attitudes towards uncertainty along the axis of modernism versus postmodernism/poststructuralism is well represented in environmental education's engagements with uncertainty. *Agenda 21* (UNCED, 1992), a key environmental education document that operates within a positivist frame, assertively promotes uncertainty reduction and emphasises that uncertainty reduction is both a responsibility and an imperative in education. These sentiments are upheld beyond positivism by Diduck (1999, who is committed to critical theory. In both of these examples, uncertainty is assigned a wholly negative value. In contrast, Rosenbaum and Bressers (2000), who operate within a

positivist perspective, advance that incidental benefits, such as solidarity, can be gained from working in the face of uncertainty. Yet, like *Agenda 21* and Diduck, they emphasise the importance of reducing uncertainty and advocate education as a means to achieve this end. Thus, they assign a positive instrumental value to uncertainty whilst upholding a negative intrinsic value.

In contrast to the negative value that these modernist approaches assign to uncertainty, postmodernist/poststructuralist engagements assign uncertainty a positive value and seek to engage uncertainty toward beneficial ends. The most striking example of the conjunction of uncertainty as an opportunity and support for postmodernist/poststructuralist perspectives in environmental education theorising and curriculum documents has been advanced by the Panel for Education *for* Sustainable Development (1998). The panel has developed global educational objectives for education *for* sustainable development around seven key themes, the last of which is 'uncertainty and precaution in action'. This placement is significant because the panel contends that uncertainty and precaution in action are a logical consequence of engaging with each of the preceding themes. Thus, engaging with uncertainty and acting with precaution can be read as the ultimate achievement of education *for* sustainable development. Furthermore, the educational objectives within this theme clearly demonstrate the positive value that is attached to both uncertainty and postmodern perspectives. For example, the panel stipulates that students should "understand the concept of cultural change in the shift from the certainties of the modern age to the uncertainties of the postmodern age, and what opportunities this may afford for realising a more sustainable society" (Panel for Education *for* Sustainable Development, 1998, p. 11).

Despite all the interest that is being focused on uncertainty, however, uncertainty *per se* has not been theorised in environmental education or in the broader arena of education. Both the proponents and the critics of uncertainty's role in education appeal to intuitive understandings of uncertainty. This project seeks to respond to this lack and to the increasing number of calls for the

introduction of postmodernist/poststructuralist perspectives into environmental education (Callicott & da Rocha, 1996; A. Gough, 1997, 1999; Gough, 1991, 1993, 1994b, 1996, 1997, 1998d, 1999a; Littledyke, 1996; Panel for Education *for* Sustainable Development, 1998; Payne, 1999; Sauvé, 1999; Sosa, 1996; Stables, 1996, 1997). Thus, this project aims to theorise uncertainty from postmodernist/poststructuralist perspectives.

Notwithstanding the difficulties that attend characterising postmodernist/ poststructuralist perspectives, it is uncontentious to assert that postmodernist/ poststructuralist thought opposes the violence inflicted upon the Other by totalising practices. Thus, a postmodernist/poststructuralist theorisation of uncertainty must avoid totalising practices, which, in this instance, would inflict the greatest violence on the topic of investigation by rendering uncertainty certain. Thus, this project does not aim to yield a definitive account of uncertainty. A definitive account would render uncertainty certain, thereby depriving uncertainty of the honour of its name. Instead, this project strives to respect uncertainty *as* uncertain.

This commitment to respecting uncertainty *as* uncertain stands in stark opposition to Hargreaves' approach (1994). Rather than respecting uncertainty *as* uncertain, Hargreaves proclaims: "While I am interested in such things as the collapse of scientific certainty as a social phenomenon, I do not myself embrace that absence of certainty in the way I analyse it!" (1994, p. 40). This is a most curious statement. The mark of exclamation signals Hargreaves' recognition that the statement "gives expression to some absurd idea" (Urquhart, 1913, p. 166), which arises, in this instance, from Hargreaves' (con)fusion of certainty and certitude.

The difference between certitude and certainty has been put succinctly by Vance (1917). According to Vance (1917, p. 217) certainty "is a quality of propositions" and certitude is "a state of repose following upon our assent to the truth of a statement". In light of this distinction, certitude and certainty may face

each other without loss of integrity since certitude is a psychological state and certainty is a linguistic phenomenon. However, whilst they may face each other, the distance between them is irreducible and untraversable. Certitude and certainty cannot be fused and should not be confused, except as a rhetorical ploy. Hargreaves' (con)fusion of these terms provocatively entices debate. This ploy will not be followed in this project, however. Instead, Vance's distinction between certainty and certitude will be maintained throughout the arguments presented in this project and the same distinctions will be applied to uncertainty and incertitude.

Modernist approaches to theorising uncertainty must begin with the question: what is uncertainty? From postmodernist/poststructuralist perspectives, this question initiates a path of violence since such a question arises from an impulse to presence uncertainty, to capture it in a concept, to render it certain, thereby eradicating its possibility through totalisation. Yet, on the other hand, this is a question that must be asked for several compelling reasons, as Deleuze and Guattari indicate:

> You have to keep enough of the organism [or concept] for it to reform each dawn; and you have to keep small supplies of significance and subjectification, if only to turn them against their own systems when the circumstances demand it, when things, persons, even situations, force you to; and you have to keep small rations of subjectivity in sufficient quantity to enable you to respond to the dominant reality. (Deleuze & Guattari, 1980/1987, p. 160)

Deleuze and Guattari seek to avoid the violence of representational thought, yet their contention that 'you have to keep small supplies of significance and subjectification' indicates that in order to pursue the path of least violence, it is necessary to retain minimalist representation. In the context of this project, it is necessary to refrain from completely abandoning the question: what is

uncertainty? A failure to retain a minimalist representation of uncertainty would result in losing the topic of investigation. This negligent violence is on a par with eradicating uncertainty's possibility by rendering it certain. Thus, it is ethically imperative to refrain from wholly endorsing and wholly abandoning representational thought so that uncertainty can 'reform each dawn'. There are also several compelling pragmatic reasons for why uncertainty should 'reform each dawn'. Firstly, if a minimalist representation were not retained, how could we recognise and respond to uncertainty? Secondly, maintaining minimalist representation is necessary to forestall an idolatry of uncertainty as a result of elevating its status to the mystical, which would thwart critical engagements with it.

Following Deleuze and Guattari, it is also necessary to retain a minimalist representation of uncertainty in order to turn such representations 'against their own systems when the circumstances demand it, when things, persons, even situations, force you to'. Thus, retaining minimalist representations is necessary for deconstructive readings of uncertainty. Finally, it is necessary to ask the question - what is uncertainty? – in order to identify and 'respond to the dominant reality'. Modernists orientations do indeed strive to render uncertainty certain by capturing it in a concept in order to pursue research projects that few would deny are both necessary and urgent. Many such projects share risk reduction as a motif and they are prevalent in areas such as health and safety, environmental impact assessment, and so forth. These projects are of great interest to environmental education. The need for environmental education, generally, to be able to respond to the dominant reality has been put succinctly by Stables and Williams:

> Environmental education is a response to a perceived ecological crisis which is itself both a product of, and a challenge to, the institutions of modernity; inevitably, environmental education must also be grounded in the educational traditions, the discourses, of modernity, even though these have (at least, in part) caused the ecological crisis. This implies that environmental education, if is to

> be ameliorative, must entail a critical reading of modernity. (Stables & Scott, 2001, p. 262)

Thus, whilst postmodernist/poststructuralist perspectives eschew representational thought due to the violence that totalisation inflicts upon the particular and upon difference *per se*, it is necessary to ask the question: what is uncertainty? It is also necessary, however, to disrupt totalisation by ensuring that representation is minimalist. In this project, uncertainty is minimally predicated as 'a quality of propositions'. Totalisation is also disrupted in this project by employing Deleuze and Guattari's logic of rhizomatics (1980/1987). This involves focusing on questions such as: What does uncertainty function with? What is uncertainty's capacity to affect and be affected? How does it connect with other things? How can we position theory and practice in relation to uncertainty? These questions reach outward in many directions; they explore 'the neighbourhood of uncertainty'. Thus, they disrupt totalisation by shifting the focus away from the inwardly directed process of capturing uncertainty in a concept.

By working in 'the neighbourhood of' uncertainty, this project strives to ensure that uncertainty preserves the honour of its name by stridently resisting the impulse to render the uncertain certain. The constitutive instability of 'the neighbourhood of' disrupts this work's certainty by denying totalisation, enclosure and presence. This research wanders along fragmented paths in 'the neighbourhood of' uncertainty as a further means to disrupt certainty. This wandering, however, is not aimless. Instead, this nomadic movement acts upon Deleuze and Guattari's (1980/1987, p. 20) contention that sometimes "in order to designate something exactly, anexact expressions are utterly unavoidable". I read this statement as being supportive of the intention of this research to respect uncertainty *as* uncertain.

Whilst this project strives to respect uncertainty *as* uncertain, however, it must be noted that this project does not stand in opposition to risk reduction

enterprises, which seek to render uncertainty certain; nor does it deny or decry the necessity and urgency of such projects. In other words, whilst the views presented in this project are grounded in the belief that rendering uncertainty certain is violence, it is also recognised and affirmed that risk reduction is both necessary and urgent in many circumstances. This is not ambivalence, a paradox or an assertion that reducing uncertainty is a necessary evil. However, these dual convictions are contradictory; they cannot be upheld simultaneously *de jure* or *de facto* since each conviction's possibility relies upon a set of philosophical assumptions that is incommensurable with the other. Each possibility can be thought alternately, but not simultaneously. Each possibility is contingent upon its context, its 'neighbourhood of'.

IN THE NEIGHBOURHOOD OF ENVIRONMENTAL EDUCATION

The teeming sociality of 'the neighbourhood of' is laden with significance for environmental education. The question 'Who is my neighbour?' abounds with ethico-political implications. Is each and every other individual my neighbour? Is the stranger or my enemy my neighbour? Is my neighbour non-human? Ethico-political implications issue from, and are immanent within, the strategies of inclusion and exclusion of neighbours. What are the rights of, the responsibilities and obligations to, neighbours? And under what authority are these issues determined? These are central questions in environmental education in relation to both the 'social' and 'natural' environments.

The figuration of 'the neighbourhood of' is also an apt metaphor for the manner in which the field of environmental education positions itself in relation to these questions. Environmental education is a contested field and it is characterised more by contestation than agreement in relation to these questions. Moreover, this contestation *per se* is highly prized. Almost two decades ago, Robottom asserted that "it is important to attempt to create and maintain conditions for debate and practical deliberation about the 'essentially contested concepts' of the field, and to resist attempts to foreclose such debate" (1987, p. 26). This sentiment is still held today. For example, de Alba, González-

Guadiano, Lankshear and Peters (2000, p. 67) stress that in the debates in environmental education "it is not a question of closing the discursive circuits with essentialist taxonomies but of contributing lines of discussion in an open system of analysis". Similarly, Jickling and Spork (1998, p. 322) maintain that "if environmental thinking is to have the opportunity to evolve, we must not allow a particular vision to be embedded at the heart of environmental education". Thus, the field of environmental education defines itself in terms of unstable and contesting relations between various nodes within a network; environmental education sees itself as a dynamic, shifting field and resists moves that would coalesce this terrain to a stable, unified point. The image that environmental education projects to itself and the broader education arena, and which it seeks to preserve is wholly compatible with the figuration of 'the neighbourhood of'.

The 'origins' of contemporary environmental education can be located in *The Belgrade Charter* (UNESCO-UNEP, 1976) and *The Tbilisi Declaration* (UNESCO-UNEP, 1978), the latter of which formulated and advanced five broad categories of environmental education objectives:

Awareness: to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.

Knowledge: to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its associated problems.

Attitudes: to help social groups and individuals acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection.

> **Skills:** to help social groups and individuals acquire the skills for identifying and solving environmental problems.
>
> **Participation:** to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems. (UNESCO-UNEP, 1978, p. 3)

The debates about the 'essentially contested concepts' in environmental education arise from differing discursive interpretations of these categories of objectives and the relative importance that should be assigned to each. These differing interpretations arise from the diversity of philosophical positions upheld in environmental education, which can be loosely classified as positivist (Culen & Volk, 2000; Knapp, Volk, & Hungerford, 1997; Ruskey, Wilke, & Beasley, 2001; Zint & Peyton, 2001), liberalist (Barcena & Payne, 1995; Sterling, 1993, 1996), neo-Marxist (Di Chiro, 1987a, 1987b, 1999; Diduck & Sinclair, 1997a; Fien, 1993; Fien & Trainer, 1993a; Huckle, 1993, 1996, 1999; Robottom & Hart, 1993) and poststructuralist (Ferreira, 1999/2000; A. Gough, 1997, 1999; Gough, 1993; 1994b, 1997, 1998d, 1999a; Stables, 1996, 1997; Stables & Bishop, 2001). The ontological and epistemological differences that differentiate these positions preclude agreement on a 'common ground' to designate as (the) environment. The differences proliferate from here, leading to heated ontological, epistemological and pedagogical debates. The fiercest debates involve the awareness, attitudes and skills objectives. More specifically, these debates address the issues of the discursive/hegemonic construction of (the) environment and environmental problems, environmental values education and eco-political agency.

The lines of flight undertaken in this project encounter all of these debates along the way, indicating that uncertainty is implicated in each. Thus, brief readings of these debates will be presented here in order to trace the existing

contexts that the lines of flight encounter. This is followed by a reading of why interest in uncertainty can be sustained across the different philosophical positions that are held in environmental education.

THE SOCIAL CONSTRUCTION OF (THE) ENVIRONMENT

The notion of (the) environment as a social construct can be upheld across most philosophical orientations in environmental education, although the meanings assigned to the 'social construction of (the) environment' differ radically. For those operating within positivist, postpositivist and classical liberalist frameworks, the social construction of (the) environment refers to the alteration of *the* material environment as a result of intentional or unintentional human activity. As such, the social construction of *the* environment has been occurring since the dawn of humankind. There can be no pristine environment in any absolute sense, although some environments can be regarded as being more or less pristine than others depending upon the degree of human impact. Knowledge of the social construction of *the* environment and *the* environmental issues that ensue, then, can be gained through empirical/analytical research which upholds the belief in the collection of objective data and the notion of a correspondence between knowledge and the world.

Contemporary liberalists, critical theorists and poststructuralists differ from the classical liberalists, positivists, and postpositivists by taking seriously the power/ knowledge complex in the social construction of (the) environment and environmental issues. This, however, is a very loose connection and disparities proliferate beyond this broad level of agreement. Both classical and contemporary liberalists uphold the belief that freedom is attained through the acquisition of knowledge. Unlike classical liberalists, however, contemporary liberalists admit the influence of restrictive, social constraints in the pursuit of knowledge and freedom. However, the break between contemporary and classical liberalists is partial. Feinberg argues that the contemporary liberalist "removed some barriers and supported others. Yet his [sic] philosophy was so constructed to convince

himself and others that the latter were not barriers at all but were inevitable aspects of an external environment to which the will had to adjust itself in order for man [sic] to be free" (1975, p. 18). Feinberg's use of the expression 'the external environment' is broad; it is not specifically referring to (the) environment in the ecological sense. Nevertheless, this broad use of the expression does have direct implications for (the) environment in the ecological sense and, by extension, for environmental education. In the context of environmental education, this partial removal of barriers casts some aspects of the social construction of (the) environment as immutable. This constrains the extent to which we can participate in the social reconstruction of (the) environment and environmental issues in an effort to live in more sustainable ways.

The critical theorists uphold many of the contemporary liberalists' views, but argue that they are insufficient in the pursuit of an environmentally sustainable future (Fien, 1993, 1997b; Fien & Trainer, 1993a). In terms of the social construction of (the) environment, critical theorists reject the contemporary liberalists' partial break from the classical liberalists on the issue of power. Critical theorists advance, instead, that the power relationships that constitute ideologies are all encompassing and, as such, ideologies are implicated in the construction of: (the) environment, environmental issues, environmental ethics and environmental politics. These power relationships are seen to have both 'positive' and 'negative' effects. The positive effects include providing a "sense of personal and group identity", "a view of what the world should be like and how such a state can be attained" and a "set of criteria or moral values by which social processes and events can be evaluated" (Fien, 1993, pp. 16-17). Di Chiro's reading of the critical theorist's conception of the social construction of the environment reflects these positive aspects attributed to ideology.

> The environment is what surrounds us, materially and socially. We define it as such by use of our own individual and culturally imposed interpretive categories, and it exists as the environment at the moment we name it and imbue it with meaning. Therefore, the

> environment is not something that has a reality totally outside or separate from ourselves and our social milieux. Rather, it should be understood as the conceptual interactions between our physical surroundings and the social, political and economic forces that organise us in the context of these surroundings. It is in this sense that we can say that the concept 'environment' is socially constructed. And if we view the environment as a social construct then we accept that certain aspects of it can be changed or transformed according to whichever social relations are in operation. (Di Chiro, 1987b, p. 24-25)

As noted above, however, the notion of ideology also has a 'negative' or pejorative connotation. This pejorative connotation casts ideology as a lens that propagates distorted worldviews that lead to "incorrect reading[s] of reality" (Huckle, 1993, p. 45) which hegemonically suppress participation in the social construction of (the) environment in order to effect social oppression and license environmental exploitation and degradation. Critical theorists in environmental education draw upon both connotations of ideology in relation to the social construction of (the) environment.

Postmodernist/poststructuralist positions would not oppose Di Chiro's rendition of the social construction of (the) environment. However, they do oppose the attribution of the power necessary for the social construction of (the) environment to 'ideology'. This opposition results from ideology being posited as a centre that grounds the truth or validity of discourse. This opposition does not constitute an utter rejection. Indeed, postmodernist/poststructuralist perspectives are indebted to Marxism. Derrida, for instance, states that deconstruction would not have been thinkable "in a pre-Marxist space" (Derrida, 1993/1994, p. 92). The issue here is transcendence. Postmodernist/poststructuralist perspectives replace transcendence with immanence. Thus, they argue that power is propagated immanently within texts (Derrida, 1967/1976), *petits récits* (Lyotard, 1984),

discourses (Foucault, 1966/1970) or planes of immanence (Deleuze & Guattari, 1980/1987).

These projects are enormously varied and this variety cannot be entered into here. As the lines of flight forged in this research result in an argument that posits uncertainty as a constitutive element of the social construction of (the) environment in a manner that draws on Derrida's deconstruction of transcendence, only Derrida's critique of transcendence will be examined with respect to the social construction of (the) environment. Following Derrida, (the) environment can be apprehended only through texts. This resonates with Di Chiro's contention that the environment becomes intelligible at the moment we name it and imbue it with meaning. The crucial difference, however, lies in the issue of reference. Di Chiro and other critical theorists in environmental education adhere to critical realism, which admits the notion of a correspondence between language and the world, whilst acknowledging that this correspondence need not necessarily be straightforward. Straightforward or otherwise, critical realism entails that meaning is instantiated in the correspondences between language and the world. This is a transcendent manoeuvre. Derrida, however, disavows the notion of correspondence and posits the construction of meaning in the differential play of language itself; the construction of meaning is immanent. Thus, the expression 'the social construction of (the) environment' refers to textual inscriptions of (the) environment, which acquire coherence only through processes of exclusion, through what is not said. Thus, (the) environment can be reinscribed differently. The possibility of reinscribing (the) environment and, by extension, environmental issues, environmental ethics and environmental politics is wholly relevant to environmental education as it provides a means to re-imag(in)e environmentally sustainable practices. This view of the social construction of (the) environment is supported and advanced in environmental education by Gough (, 1993, 1994b, 1997, 1998d, 1999a) and Stables (1996, 1997; Stables & Bishop, 2001). The arguments in this project go further than those

presented by Gough and Stables, however, by theorising the constitutive role of uncertainty in the social construction of (the) environment.

ENVIRONMENTAL VALUES EDUCATION

Environmental values education has been an enduring theme in environmental education. There is agreement across all philosophical positions within environmental education concerning the constitutive role of environmental values education. Beyond this broad level of agreement, however, environmental values education is intensely and passionately contested. The lines of flight pursued in this project connect with two thorny aspects of this debate, namely ***anthropocentrism*** and ***indoctrination.*** Environmental educators generally strive to distance themselves from both of these aspects of the environmental values education debate, but charges of anthropocentrism and indoctrination are wielded in attempts to undermine opposing positions.

Anthropocentrism/Ecocentrism

The anthropocentrism/ecocentrism debate concerns whether (the) environment has intrinsic value and, if so, whether the intrinsic value should be privileged over, set on a par with, or subordinated to instrumental values. In relation to the former, there is a broad consensus in environmental education that (the) environment has intrinsic value. Therefore, the debate revolves around the prioritising of intrinsic versus instrumental value. This debate would be brought to a swift end if the intrinsic value were prioritised and enacted unconditionally. Thus, this debate concerns the question of 'balance'. This question of balance has recently been given expression through the notion of 'sustainable development'. Proponents of sustainable development fully maintain that (the) environment has intrinsic value, but concede that this value must be compromised at times to promote human flourishing. This enables instrumental values to be prioritised under certain circumstances. The issue then becomes a matter of determining which instrumental values can legitimately be prioritised, determining the circumstances that warrant this prioritisation and determining who has the

authority to tender answers to these questions. This 'question of balance', however, has been confronted recently by de Alba *et. al.* who endorse the notion of sustainable development, but withdraw whole-hearted support for the intrinsic value of (the) environment:

> We do not entirely reject the thesis of deep ecology. Nonetheless, we believe that the search for Nature's rights should not blind our eyes to the rights of people who have nothing, of those who suffer, of those who have become dispensable. That would lead to a sophisticated form of social exclusion based on green excuses. (de Alba et al., 2000, p. 63)

The anthropocentrism/ecocentrism debates exert considerable sway in environmental education. Li (1996), however, argues that these debates are problematic, retrograde and irrelevant. In relation to the former claim, Li questions the cogency of the notion of intrinsic value. The cogency of this issue has been accepted, hitherto, as a matter of faith rather than demonstrated in environmental education. This assumed cogency, however, has been intensely engaged in philosophical debates and found to be wanting. Some philosophers have constructed arguments around the question of rights. These arguments entail the thesis that (the) environment and animals have rights if and only if the unborn, babies and intellectually impaired persons have rights. Both the positive and the negative arguments deploying this thesis are persuasive, but they are problematic as well (see Nuyen, 1981). The cogency of intrinsic values has also been challenged by epistemological arguments, which favour negative positions. Epistemological arguments revolve around the premise that the "presence of inherent value in a natural object is independent of any awareness, interest or appreciation by a conscious being" (Regan, 1985, p. 71). This leads into the familiar epistemological bind that sceptics and poststructuralists strive to address: "there can be no value apart from an evaluator … all value is as if in the eye of the beholder. The value that is attributed to the ecosystem, therefore, is humanly

dependent or at least dependent upon some variety of morally and aesthetically sensitive consciousness" (Callicott, 1989, p. 27).

Neither analytical arguments based on the question of rights nor epistemological arguments can present a conclusive case that supports the notion of intrinsic value. In light of the seemingly intractable nature of the problems that attend the question of intrinsic value, Li argues that environmental educators ought to recognise and accentuate the capacity of instrumental values to 'solve' environmental problems and pursue more sustainable practices. Furthermore, Li argues that focusing on instrumental values is more consistent with environmental education's contention that (the) environment is a social construct. Accordingly, focusing on the anthropocentrism/non-anthropocentrism debate introduces a false dichotomy that surreptitiously upholds the culture/nature binarism, which environmental education has sought to dismantle on the grounds that it is highly culpable in (the) environmental crisis. Thus, Li contends that the anthropocentrism/non-anthropocentrism debate is not only problematic and irrelevant, but a retrograde move in environmental values education.

Indoctrination

If (the) environment is a social construct, as per the contemporary liberalists', critical theorists' and postmodernist/poststructuralist's understandings of social construct, then it follows, as a matter of logical consistency, that environmental values are socially constructed as well. Accordingly, there is no sovereign authority to ground environmental values; they are contestable. This generates the question of whether there is a set of 'good' socially constructed values to explicitly develop in students or whether it is a matter of critiquing all values equally in an effort to avoid favouring more to one than another. This question is central to the indoctrination debate in environmental education.

Liberalist environmental educators (Breiting & Mogensen, 1999; Jickling, 1992; Jickling & Spork, 1998) ardently uphold the latter approach of critiquing all values equally in an attempt to avoid the risk of indoctrination. As Mason notes: "A

liberal education is one that teaches that there is always more than one way to see things and that *it is always up to the individual to judge* just where the truth lies in any particular issue" (1992, p. 10, emphasis added). Jickling has presented one of the most influential arguments for the adoption of a liberalist approach in environmental education:

> I would not want my children to be "educated for sustainable development." The very idea is contrary to the spirit of education. I would rather have my children educated than conditioned to believe that sustainable development constitutes a constellation of correct environmental views. ... I would like my children to know about the arguments that support it and attempt to clarify it. But I would also like them to know that sustainable development is being criticized, and I want them to be able to evaluate that criticism and participate in it if they perceive a need. I want them to realize that there is a debate going on between a variety of stances, between adherents of an ecocentric worldview and those who adhere to an anthropocentric worldview. I want my children to be able to participate intelligently in that debate. To do so, they will need to be taught that those positions also constitute logical arguments of greater or less merit, and they will need to be taught to use philosophical techniques to aid their understanding and evaluation of them. They will need to be well educated to do this. (Jickling, 1992, p. 8)

Liberalists support their contention that indoctrination is 'contrary to the spirit of education' by arguing that the direct teaching of particular values: does not promote deeper and fuller understandings of the issues; deprives students from exercising their own critical faculties; and denies students' personal engagements. Breiting and Mogensen (1999) augment these objections with the contention that the direct teaching of particular values limits the learners' capacity to participate in the resolution of environmental issues to the here and now. They maintain that in

an ever-changing world it is necessary to equip learners with strategies that can be used to cope with future environmental problems rather than prescriptions that can rapidly become out-dated.

However, others in environmental education challenge the liberalist view by questioning whether education can afford to adopt a 'neutral' stance when faced with so many powerful influences in society. Bonnett notes that those who challenge the liberalist stance question whether "in such circumstances we are justified in an assumption that 'pure' rationality will: (i) prevail; (ii) provide the truth; (iii) support the democratic values that its proponents favour; (iv) support sustainability of the desired sort?" (1999, p. 321). Critical theorists in environmental education provide negative responses to each of these questions and defend the stance that environmental values ought to be actively promoted in environmental education. Fien, for example, contends that "directly teaching for the values of a critical environmental ethic should be an overt purpose of education *for* the environment" (1993, p. 63). Similarly, Scott and Oulton promote learning experiences in which "value sets are made explicit, actively espoused and entrenched" (Scott & Oulton, 1998, p. 222).

Despite this forthright normative stance, however, critical theorists are keen to avoid the charge of indoctrination. Critical approaches are often advanced as a means to avert such a charge on the basis that indoctrination is commonly designated as the teaching a body of knowledge uncritically for the purpose of bringing about acceptance and allegiance. Fien goes further than simply advocating a critical approach, however, by recommending the inclusion of Kelly's (1986) strategies for 'committed impartiality' as a means to protect learners from unethical teaching practices. In addition to accentuating the inclusion of critical approaches, the proponents of the direct teaching of particular values emphasise that educational institutions, curricula and classroom practices are value-laden through and through. Accordingly, Fien argues that "the key issue for educators concerned with questions of values and ethics in education should not be to check whether a particular approach to teaching is indoctrination but to ask questions

related to the ways, and in accordance with what values and ends, should schools and teachers 'indoctrinate'" (1997a, p. 438).

The arguments presented in this project avoid the charge of indoctrination by drawing on Derrida (1967/1976, 1967/1978, 1972/1981, 1972/1982, 1988, 1999) to advocate deconstructive environmental literacy. This involves paying close attention to the structure of texts in order to discern how they configure environmental subjectivities such that we will subscribe to the environmental values that have been foregrounded rather than those that have been discursively marginalised. The arguments presented in this project also support a non-anthropocentric approach to environmental values education by drawing on Llewelyn's (1991) cross-reading of Levinas (1961/1991, 1974/1991) and others. This results in a deep green environmental ethics in which the sheer existence of a thing other than me, independent of its predicates, imposes an obligation of non-indifference upon me. This disavows *a priori* prejudice in favour of human beings. At the same time, however, it disavows *a priori* prejudice against human beings. Thus, this results in a green ethics that does not "lead to a sophisticated form of social exclusion based on green excuses" (de Alba et al., 2000, p. 63).

ECO-POLITICAL AGENCY

The notion that eco-political agency is an outcome of environmental values education has exerted considerable sway in environmental education. Knapp's view that: ""Values education" refers to a planned or unplanned school program directed toward or resulting in the development of a personal value system and an associated set of behaviours" (1983, p. 22) has been highly influential in environmental education and forged a seemingly 'natural' conjunction between eco-political agency and environmental values education. This conjunction, however, has been challenged on the basis that it does not take economic and political considerations into account (Fien, 1993; Huckle, 1980, 1983, 1999) and because it embraces an unproblematic view of subjectivity (Dillon, Kelsey, & Duque-Aristizábal, 1999; N. Gough, 1999a; Payne, 2000). Therefore, this reading

of the various positions in relation to eco-political agency will not be treated as an extension of the previous section on environmental values education. Instead, it will trace four competing perspectives of eco-political agency: behaviourist, liberal, emancipatory and poststructuralist. Each of these positions will be considered with respect to the way in which they discursively read the statement that "an action (or event) is caused by an exertion of power by some agent endowed with will and understanding" (Rowe, 1995, p.13).

Behaviourist Approaches

Behaviourist approaches to eco-political agency are generally attributed to positivist and postpositivist orientations in environmental education (Robottom & Hart, 1993) and associated with environmental education approaches in the United States (A. Gough, 1997). There are, however, a number of decidedly behaviourist approaches being presently advocated in Europe and the United Kingdom from environmental educators who claim other affiliations (Breidler, 1999; Eder, 1999; Uzzell, 1999). The 'Ecologisation of Schools' programme in Europe represents a significant strengthening of behaviourism's hold; the medium term goal is to have the programme running in 1000 schools across 10 countries by 2005 (Posch, 1999). Uzzell's (1999) reading of the Action Competence programmes in the United Kingdom also promotes behaviourist approaches to eco-political agency.

Behaviourist approaches towards the development of eco-political agency view learners (potential agents) as manipulable: "it is considered proper to apply 'behaviour intervention strategies' and to 'manipulate situational factors in order to produce desired behavioural changes' even if the individuals ... do not necessarily want to change in this way" (Robottom & Hart, 1993, p. 36). Accordingly, the will and interest to act as an eco-political agent are *shaped* (Posch, 1999) or *trained* (Uzzell, 1999) by hierarchically structured, rule-based educational programmes that include systems of incentives and penalties to police

environmental behaviour (Eder, 1999, p. 357). As such, participants are endowed with power to act within sanctioned ways.

These three elements of the behaviourist's approach to eco-political agency are exemplified in the manner in which the Ecologisation of Schools programme has been implemented in a primary school in Austria. Headteacher Eva Eder, provides a vivid account of 'innovations' that are behaviourist through and through. Students in this school are appointed as 'eco-sheriffs' for two-week periods. These students are identified by 'eco-sheriff' badges, "carry out tours of inspections before lessons begin" and at the end of each appointment "there is a discussion about the quality of their work in the presence of all the pupils in the school with appropriate praise, appreciation and criticism, if need be" (Eder, 1999, p. 357). This system of incentives/disincentives is embedded in similar systems operating at different levels. The schools, for example, are rewarded for their progress along the path of ecologisation with financial and other incentives and there are opportunities to gain further recognition and rewards through national contests (Breidler, 1999; Eder, 1999).

Liberal Approaches

The liberal ideology of education evolved from Greek doctrines that involved harmonious relationships between the mind and knowledge, and between the mind and reality. The first set of doctrines hold that the *raison d' être* of the mind is to pursue knowledge. The acquisition of knowledge, therefore, fulfils the mind's purpose and leads to the development of a 'good' mind. The second set of doctrines hold that "the mind, in the right use of reason, comes to know the essential nature of things and can apprehend what is ultimately real and immutable" (Hirst, 1972, p. 2). Greek education was viewed as 'liberal', then, as it freed the mind to function in accordance with its 'true' nature, freed reason from illusion and falsity, and freed a person's conduct from wrong by revealing how people ought to live both individually and socially.

The liberal concept of achieving freedom through the acquisition of knowledge resulted in the secondary concept of equal opportunity. Classical liberalists viewed everyone as being free to achieve their will and a failure to do so was meritocratically attributed to personal inadequacy; external constraints were not considered. Contemporary liberalists, however, reject this *laissez-faire* view of freedom, acknowledge the influence of external societal constraints and acknowledge people's ability to alter the social environment (Feinberg, 1975; Smith & Knight, 1982). In the classical liberalist view, societal transformation was possible as a result of individuals collectively exercising the sound judgment that was gained through the acquisition of a 'good' mind. For the more contemporary liberalist, societal transformation required the elimination of restrictive societal constraints as well.

The contemporary liberalist's view is translated directly into liberal approaches to environmental education and the associated conceptions of eco-political agency. Thus, the will and the understanding required to act as an eco-political agent are seen to arise from freeing the mind to function in accordance with its 'true' nature, and the power to act as an eco-political agent is seen to arise 'naturally' in the pursuit of a 'true' path. However, it is acknowledged that some persons are hindered in their pursuit of this path, which results in calls to promote the ideals of democracy in environmental education (Barcena & Payne, 1995; Breiting & Mogensen, 1999; Jickling, 1992; Jones, Merritt, & Palmer, 1999).

Emancipatory Approaches

Both the behaviourist and liberalist approaches uphold social contract theory, which explains political and social cohesion as a product of an agreement among individuals. This casts individuals as being conceptually prior to political and social units (Ham, 1995). Critical theorists in environmental education, however, oppose conceptualising an individual's relationship to political and social community in this way. Critical theorists emphasise the pejorative connotation of ideology as a construct that "functions as a system of beliefs which legitimate and

render 'natural' asymmetrical relations of power and wealth in society ... [in a manner that] creates a distorted view of reality for 'subordinate' groups who take the positive world view of dominant social groups for granted" (Fien, 1993, p. 17).

Critical theorists argue that the will to act as an eco-political agent, the choices that we perceive as being available and the power, or lack of power, that we perceive ourselves as being endowed with may be "false or distorted interpretations of structures, processes, experience and events" (Huckle, 1993, p. 47). Accordingly, critical theorists argue that ideological critique and the development of political literacy skills are essential "to raise the consciousness of learners to the ideological interests served by the present construction of their environment and to empower them to engage in reflective action (praxis) to transform it" (Fien, 1993, p. 73). Thus, the development of eco-political agency is cast as an emancipatory process. Furthermore, critical theorists argue that "to reveal the emancipatory potential of education for sustainability we need to consider the critical theories of society and nature offered by modern social scientists working within the Marxist tradition" (Huckle, 1993, p. 48).

Poststructuralist Approaches

Unlike each of the previous positions, poststructuralist approaches to eco-political agency take a problematic view of (the) subject. Rather than assuming the existence of a stable, unitary, *a priori* subject, poststructuralists view subjectivity as an effect of the discourses/texts in which we participate. Thus, subjectivity can be seen as an ambidextrous inscription: like Escher's sketch of a hand drawing, and being drawn by, another hand, so too subjectivity is written by the texts/discourses we write. It follows, that as we participate in multiple texts/discourses that can be rewritten, subjectivity is a fluid and multiple construction.

Importantly, subjectivity is not seen to be at the mercy of capricious texts because we are actively engaged in the construction of these text/discourses, which enables the possibility of agency from poststructuralist perspectives. With

respect to poststructuralist notions of eco-political agency, close readings of texts/discourses enable analyses of how and which environmental issues are being instantiated and how these instantiations simultaneously construct subjectivities such that we will accede to that instantiation. This process of close reading also calls for attentiveness to the textual silences that erase the instantiation of other environmental issues and counter-subjectivities that may cause us to act in more or less environmentally sustainable ways. The will to eco-political agency derives from the necessity to engage in ongoing deconstructive readings on the basis that each textual reading is contingent upon constitutive blindnesses. Gough (1994b, 1997, 1999a) promotes this perspective in environmental education. The arguments developed in this thesis extend Gough's work by mapping the constitutive role of uncertainty in the development of eco-political agency.

UNCERTAINTY AS AN ISSUE ACROSS ENVIRONMENTAL EDUCATION

Uncertainty is gaining a high profile within 'the neighbourhood of' environmental education, suggesting an apparent 'common interest'. Common interests in environmental education, however, cannot be taken at face value. The diversity of the philosophical positions that comprise the field results in common interests being configured and justified in entirely different ways. This section presents readings of why uncertainty can be entertained as an issue worthy of consideration in environmental education from the philosophical positions of positivism, liberalism and critical theory. As a range of sub-positions constitutes each of these philosophical positions, the readings presented adopt a broad stroke approach. This section is not concerned with how these interests are manifested in environmental education. Readings of specific engagements with uncertainty are presented in Chapter Three.

The interest demonstrated in uncertainty by positivists and postpositivists has been claimed to indicate the adoption of a humbler stance by the scientific community with respect to the limitations of scientific method and scientific knowledge (Ashley, 2000). This adoption of a humbler stance, however, is highly

contestable. Whilst the strict formulation of the verifiability principle has been thoroughly discredited and positivism is dead as a philosophical movement, tempered renditions of the verifiability principle are still upheld. For statements to be accepted as meaningful, they must denote items of experience that can be investigated empirically or rationally. Furthermore, such statements must be able to be conclusively confirmed or conclusively disconfirmed within specified margins of error. Therefore, uncertainty needs to be minimised if a statement is to be accepted as meaningful. Conversely, a statement needs to be dismissed as having inconclusive cognitive currency if the level uncertainty lies outside acceptable margins of error. From this perspective, positivists and postpositivists must strive for uncertainty reduction, which ensures that uncertainty can be entertained as an issue in environmental education.

Furthermore, the differentiation and acceptance of an irreducible 'scientific uncertainty' as opposed to the standard probabilistic uncertainty, which can be reduced in principle through the careful control of parameters, has fuelled considerable interest from beyond the scientific community, including environmental education (Ashley, 2000; Panel for Education *for* Sustainable Development, 1998; Scott, 2001). Scientific uncertainty "applies to a condition under which there is confidence in the completeness of the defined set of outcomes, but where there is acknowledged to exist no theoretical or empirical basis for assigning probabilities to these outcomes" (Stirling, 1999, para. 51). A great deal of certainty is embedded all renditions of scientific uncertainty, which enables it to be admitted into positivist and postpositivist discourses. This form of uncertainty is of great interest to environmental education because it is frequently attributed to environmental and health issues. Thus, positivist and postpositivist environmental educators need to ensure that uncertainty has a high profile and commit themselves to uncertainty reduction, whilst acknowledging that uncertainty is irreducible in certain circumstances.

Liberalists do not exalt rationality as the means to setting the standard for certainty as positivists and postpositivists do. As Collinson notes in the

introduction to Locke's *An Essay Concerning Human Understanding*: "It was his considered view that an over-zealous allegiance to Cartesian rationalist principles has attributed more to the power of reason than it could actually achieve" (1998, p. xv). Locke emphasises this view repeatedly and he stresses the need to delineate the boundaries of certainty: "If we can find out how far the understanding can extend its view, how far it has faculties to attain certainty, and in what cases it can only judge and guess, we may learn to content ourselves with what is attainable by us in this state" (1690/1998, I. 1. 6). Locke further argues that we can meaningfully experience that which lies beyond the boundaries of certainty. Thus, Locke can be read as arguing that we can experience knowledge that is intrinsically uncertain and we should respect that knowledge as being uncertain. Furthermore, Locke contends that the finitude of the reach of certainty enriches life: "man [sic] would be at a great loss if he had nothing to direct him but what has the certainty of true *knowledge*" (1690/1998, IV. 14. 1, Locke's emphasis). The loss to which Locke refers is the loss of the opportunity to exercise judgement in the face of uncertainty. For Locke, the opportunity to exercise judgement is intimately tied to freedom. Thus, it can be argued that for Locke and liberalists following him, freedom is contingent, in part, upon uncertainty. Locke exhorts us, however, to rigorously map out the terrain of certainty so that we will not be duped by that which has merely the appearance of uncertainty and which ought to be properly designated as ignorance, which limits freedom.

Like Locke, liberalists in environmental education contend that the power of rationalism is over-inflated and they are similarly sceptical of the reach of empiricism. Thus, they argue that the privilege afforded to rationalism and empiricism in environmental education ought to be curbed and advance the necessity of acknowledging the importance of other ways of knowing, such as the emotional, the intuitive, and the spiritual (Barcena & Payne, 1995; Bowers, 2001; Selby, 1999; Sterling, 1993). Furthermore, liberalists reject the reductionist epistemology of the rationalist/empirical tradition and argue for a holistic

epistemology. The call for a holistic epistemology is advanced and defended on the basis that a holistic framework provides a more appropriate means to meaningfully apprehend the holistic nature of ecological and social processes and their integration into ever-increasing complex wholes.

The call for a holistic epistemology is frequently coupled to a call for the adoption of systems theory in environmental education (Barcena & Payne, 1995; Selby, 1999; Sterling, 1993) and it is through systems theory that the liberalists' interest in uncertainty is most pronounced. The 'source' of uncertainty is nuanced differently by the various proponents of systems theory, but the conjunction of complexity and uncertainty is a common theme. Sterling (2000), for example, argues that certainty can be envisaged only in contexts where a 'problem' has a 'solution'. He then argues that: as 'problem solving' is ousted in systems theory by 'system improvement', the possibility of unique and self-sufficient solutions no longer exists. Therefore, certainty is supplanted by uncertainty. He further contends that systems thinking and its inherent uncertainty is laden with educational potential that ought to be built upon in environmental education. Selby's account of uncertainty in complex systems differs slightly from Sterling's. Nevertheless, Selby claims that uncertainty/confusion "should be embraced in all its creative potential" (1999, p. 130). Thus, these liberalists share Locke's contentions that the reach of certainty is more limited than the reductionist empirical/rationalist tradition claims and that uncertainty provides opportunities.

Finally, those who endorse critical theory can uphold uncertainty as an important issue in environmental education. Both education *for* sustainable development and critical education *for* the environment draw upon the critical theories of Marx and Habermas. Furthermore, they both incline towards Habermas' venture to "counter the positivism and economic determinism of Marx's latter writing and thus allow a greater role for capable, reasoning actors in social development" (Huckle, 1993, p. 60). As May (1997, p. 5) notes, "the Critical Theorists from Germany, have considered themselves duty-bound to understand the holocaust and to prepare against its return". This aspect of critical

theory finds expression in Habermas' work through his quest to "provide norms for non-dominating relations to others and a broader notion of reason" (Bohman, 1995, p. 279). Thus, Habermas requires that we think and act in anti-totalitarian ways. Thinking in anti-totalitarian ways entails the rejection of exhaustiveness and indubitability as ideals. Hence, uncertainty must be embraced as a constitutive element of anti-totalitarian thought.

The 'common interest' in uncertainty in environmental education does not indicate a consensus regarding uncertainty *per se.* Uncertainty is configured differently and consequently the role attributed to it varies. Nevertheless, it is reasonable to assert that interest in uncertainty can be justified within each of the major philosophical positions that comprise environmental education, that each perspective admits that uncertainty is a significant issue that should be addressed, and that attentiveness to uncertainty ought to receive a high profile.

POSTMODERNISM/POSTSTRUCTURALISM AND ENVIRONMENTAL EDUCATION

Numerous calls are being increasingly heard for the introduction of postmodernist/poststructuralist perspectives into environmental education (Callicott & da Rocha, 1996; Dreyfus et al., 1999; A. Gough, 1997, 1999; Gough, 1993, 1994b, 1996, 1997, 1998b, 1999a; Littledyke, 1996; Panel for Education *for* Sustainable Development, 1998; Sauvé, 1999; Sosa, 1996; Stables, 1996, 1997). Yet, despite the increasing number and frequency of these calls and the ever-widening forum from which they are being made, few postmodernist/ poststructuralist voices have been engaged in the field. This begs the question of why postmodernist/poststructuralist perspectives have received such little attention. Before considering this question, however, it is necessary to examine the 'postmodernist/poststructuralist' complex in the context of environmental education and this project.

Most of the calls for the introduction of postmodernist/poststructuralist perspectives into environmental education conflate postmodernism and poststructuralism under the banner of postmodernism. This conflation follows

the trend in the secondary literature on postmodernist and poststructuralist philosophy (Cahoone, 1996; Sarup, 1989). Cahoone (1996, pp. 1-2) comments that: "Neither members of this family, nor their critics, ought to be concerned with the label. Theoretical labels are nothing to be feared, they have a purpose as long as they are thought's servants, rather than its master". I do not share Cahoone's sentiment for several reasons, but I will advance only two reasons here. Firstly, Cahoone's rationalisation discounts the constitutive role of language and the power that is invested in labels. Secondly, the conflation compels poststructuralists to enter into the debate on Modernity (Toulmin, 1992).

The competing characterisations of (post)modernity have direct implications for this project. If the 'quest for certainty' is taken to be an exemplar of modern philosophy, this dates Modernity to Descartes, Kant and Hegel and will minimalistically predicate (un)certainty as a quality of propositions. However, if the scientific/technological revolutions are taken to be paradigmatic of Modernity, then we must seriously consider the view that 'we have never been modern'. Thus, any claims regarding certainty must be regarded as misleading at best. These renditions of Modernity are conflated in environmental education (Robottom & Hart, 1993). Thus, theorisations of (un)certainty can traverse both of these theoretical landscapes. The conceptual frame adopted within this project, however, is aligned with the former reading of Modernity and the associated reading of (un)certainty. Predicating (un)certainty in this way is a poststructuralist move because it decentres *the* world as the ground of certainty. Thus, I view this project as a poststructuralist enterprise. I do not subscribe to the conflation of postmodernism and poststructuralism under the banner of postmodernism because it suppresses difference. Nevertheless, I cannot ignore their conflation in environmental education. I use the 'postmodernist/poststructuralist' complex to acknowledge this conflation and to distance myself from it.

Following this rider concerning the 'postmodernist/poststructuralist' complex, it is possible to return to the question of why postmodernist/poststructuralist perspectives have received so little attention in environmental education. One

reason for the relatively indifferent response from environmental education theorists may be that environmental awareness is noticeable mainly in its erasure in contemporary French philosophy. According to Shephard (1995, p. 195): "There is an arm chair or coffeehouse smell about it. Lyotard and his fellows have no glimmer of earth, of leaves or soil". Shephard contends that postmodernist/poststructuralist perspectives are simply irrelevant to environmentalism and environmental education. This contention, however, is neither self-evident nor a logical conclusion. Instead, it is instantiated through "discursive tactics of containment and denegation" (Kamuf, 1991, p. ix). Shephard discursively forges a relevancy/irrelevancy divide to alienate environmentalisms from postmodernisms/poststructuralisms. Furthermore, he marginalises postmodernisms/poststructuralisms by nuancing this theorising as being merely the leisurely musings of a genteel few. This marginalises postmodernisms/ poststructuralisms by containing their putative reach and by soliciting the informal fallacy of 'appealing to the balcony', which presumes that the truth of a proposition is signalled through its acceptance by the majority rather than the few. Thus, Shephard deploys rhetoric to entice the reader into uncritically embracing an informal fallacy.

A related disparagement of postmodernisms/poststructuralisms has been noted and rebutted by Conley (1997). She notes that protagonists draw on the erasure of any explicit environmental awareness in contemporary French philosophy to construct the argument that as the environment is out of sight and out of mind in postmodernist/poststructuralist thought, postmodernisms/ poststructuralisms are complicit in the environmental crisis by omission. Whilst environmental awareness is not explicit in postmodernist/poststructuralist perspectives, this does not verify or justify any complicity *in absentia* claims or Shephard's irrelevancy claim.

Instead of being subversive of, or irrelevant to, environmentalisms and environmental education, there are a number of *prima facie* reasons why, in spite of their apparently oblique or peripheral relations to environmentalisms,

postmodernist/poststructuralist perspectives may be strategic allies. For example, the patent concern for difference that theorises the 'other' as 'radically other' problematises the binarisms that have dominated western philosophy since Plato. These binarisms are commonly held responsible for attitudes and behaviours that lead to the subjugation, exploitation and despoilment of (the) environment. Furthermore, the postmodernist/poststructuralist rejections of the Platonic characterisation of truth as being transcendent, eternal, perfect, incorporeal and immutable oppose them to the devaluation of corporeality and change that Platonism entails. Plumwood clearly traces the conflicts between Platonism and environmental philosophy and attests that "Platonic philosophy not only devalues nature but is profoundly anti-ecological and anti-life; it is truly a philosophy of death" (1990, p. 525). Given that postmodernisms/poststructuralisms disalign themselves from this 'anti-ecological' and 'anti-life' legacy, they are germane to environmental education theorising and may be of great strategic worth.

A stronger reason for the fairly indifferent response to postmodernist/ poststructuralist perspectives in environmental education may arise from a perceived pejorative distinction between the 'word games' of continental philosophy and the deadly serious nature of the environmental crisis in the 'real world'. This is certainly the view that Bowers (1993b) projects in the environmental education arena. For example, in relation to deconstruction, he asserts that "academic freedom is used to create a safe haven for intellectuals to build professional careers promoting nihilism and endless word games that can only strengthen the anomic form of individualism upon which our consumer-oriented society depends" (Bowers, 1993b, p. 201). In this brief statement: Bowers promulgates the misconception that deconstruction is nihilistic, a position that has been repeatedly renounced within environmental education literature (Callicott & da Rocha, 1996; Littledyke, 1996; Sauvé, 1999); he links deconstruction to the promotion of a purposeless, individualistic, consumer-oriented society, which stands in stark opposition to the mandates of environmental education. Thus, Bowers participates in the "discursive tactics of

containment or denegation that have flourished in the vicinity of deconstruction" (Kamuf, 1991, p. ix) by casting deconstruction as being antithetical to environmental education.

Another disparagement of postmodernisms/poststructuralisms based on the distinction between the 'word games' and the 'real world' contends that portraying *the* environment as multiple, competing, social constructions is socially and ecologically irresponsible (Shephard, 1995). This notion of irresponsibility is related to the intentional creation of a space in which it becomes valid to ask "If nature is only a social and discursive construction, why fight hard to save it" (Hayles, 1995b, p.47)? This questioning, it is argued, has the potential to promote further environmental exploitation and degradation by furnishing vested groups with greater authorial leverage for access to power and resources. This line of argument is based on the perception that postmodernist/poststructuralist perspectives lack normative elements and, thus, entail rampant relativism. However, normative elements enabling the evaluation of interpretive possibilities exist in much postmodernist/poststructuralist theorising (Derrida, 1967/1978; Levinas, 1961/1991, 1974/1991; Lyotard & Thébaud, 1985).

Another criticism raised against the 'word games' of postmodernist/ poststructuralist theorising is that the construction of reality through language is the most extreme manifestation of anthropocentrism. Given that anthropocentrism is regarded as highly culpable in (the) environmental crisis, environmental education theorists distance themselves from, and strenuously denounce anthropocentrism. Thus, it could be reasonably anticipated that environmental education theorists would recoil from philosophical perspectives with anthropocentric affiliations. Yet the contention that postmodernist/ poststructuralist perspectives entail such an affiliation is highly contestable and has been rebutted by postmodernist/poststructuralist theorists. For example, in an interview with Richard Kearney (1984), Derrida unequivocally rejected the bleak interpretation of his work as an assertion that there is nothing outside language:

> I never cease to be surprised by critics who see my work as a declaration that there is nothing beyond language, that we are imprisoned by language; it is in fact, saying the exact opposite. The critique of logocentrism is above all the search for the 'other' and the 'other of language'. (Kearney, 1984, p. 123)

Whilst characterisations of postmodernisms/poststructuralisms are problematic, since they seek to totalise theorising that rejects totalitarian thought, it would be uncontentious to state that concern for the 'other' is a common motif, although the 'other' that is alluded to is not the same. This concern for the 'other', then, predicates postmodernist/poststructuralist perspectives resonant with environmental education, rather than being an anthropocentric force of corruption.

Given that the commonly circulated criticisms of postmodernisms/ poststructuralisms can be countered, it is surprising that so few environmental education theorists have responded to the introduction of postmodernist/ poststructuralist perspectives. Those who have responded, however, include: Annette Gough (1997, 1999) who focuses on feminist poststructuralisms, but advocates the inclusion of poststructuralist perspectives in their diversity and signals "the possibilities for new directions when poststructuralist pedagogies and research methodologies are used in environmental education" (A. Gough, 1999, p. 143); Noel Gough who has explored poststructuralist narrative approaches in education and deconstructed the notion of environmental agency (Gough, 1993, 1994b, 1996, 1997, 1998b, 1998c); and Andrew Stables (1996, 1997) who advocates that environmental education should embrace the notion of (the) environment as text.

None of these theorists, however, has embraced the notion of radical 'otherness', or alterity, in their projects. It will be argued in this thesis that it is crucial for postmodernist/poststructuralist perspectives of environmental education to be attuned to the utter excessiveness of the 'other', an utter

excessiveness that is irreducible and unassimilable. To deny the excessiveness of the other casts the other as the counterpart of the same; thus, the 'other' and the 'same' form a totality creating the conditions for the logic of domination to be brought into play. Radical alterity perpetually disrupts the possibility of imposing logics of domination. Since environmental education denounces the logic of domination imposed on (the) environment, facing radical alterity is germane to environmental education. The works of Adorno (1966/1973), Derrida (1967/1978, 1972/1981, 1972/1982, 1977/1979, 1997/1999), Levinas (1961/1991, 1974/1991) and others will be used to theorise uncertainty in environmental education in the light of radical alterity.

POSTSTRUCTURALIST (DIS)POSITIONS AND MOTIFS

Poststructuralisms do not constitute a school of thought or a movement, but a complex set of relations in contemporary thought that cannot be gathered together under a set of unifying principles. This prompts the question of why diverse theories are labelled under the banner of poststructuralism. Butler (1992, p. 5) responds to this question with intriguing secondary questions: "Do all these theories have the same structure (a comforting notion for the critic who would dispense with them all at once)? Is the effort to colonize and domesticate these theories under the sign of the same, to group them synthetically and masterfully under a single rubric, a simple refusal to grant the specificity of these positions, an excuse not to read, and not to read closely?" (quoted in St. Pierre, 2000b, p. 478). An important point to be gained from Butler's response is that the diversity of poststructuralist thought compels close attention to be paid to the specificity of the positions used in projects such as this research and close readings of the structural elements of the positions being presented.

This project draws heavily upon the works of Barthes (1957/1972, 1968/1977, 1971/1977), Deleuze and Guattari (1980/1987), Derrida (1967/1976, 1972/1981, 1972/1982, 1993/1994, 1999) and Levinas (1961/1991, 1974/1991). Deleuze and Guattari's philosophy is used to guide the methodology of this project, whereas the philosophies of Barthes, Derrida and Levinas are used as

structural elements in constructing lines of flight that depart from the theoretical terrain that environmental education has configured. The works of Foucault (1969/1988, 1980, 1994/1997) and Lyotard (1983/1988, 1984, 1992, 1985) are occasionally used for the purpose of elaboration; their role is illustrative rather than structural. Preliminary readings of the key motifs deployed in the construction of the arguments developed in this thesis are presented in the following sections, with the exceptions of the critiques of origins, Death of the Author and Death of the Subject, which were announced earlier. Closer readings of all these motifs are presented in later chapters.

The structural elements of the philosophical arguments developed draw almost exclusively from English translations of primary sources. The arguments pertaining to the engagements of poststructuralist perspectives in environmental education draw heavily on the work of Gough (1991, 1993, 1994b, 1995, 1997, 1998a, 1998c, 1998d, 1999a) and Stables (1996, 1997; Stables & Bishop, 2001). Whilst the work of Gough and Stables constitute secondary sources for poststructuralisms, they are used solely as primary sources for environmental education's engagements with poststructuralist thought.

ALTERITY/OTHER

The terms 'alterity' and 'Other' are used as per Adorno (1966/1973) and Levinas (1961/1991, 1974/1991) to disrupt the notion that there are or must be totalities that are wholly delimitable and wholly knowable. Both Adorno and Levinas appeal to utter excess that exceeds identity to disrupt this totalitarian mode of thought that can be traced to Plato. Each advances and defends the notion that this utter excess cannot be captured in concepts. Adorno, for example, argues in *Negative Dialectics* that "the concept does not exhaust the thing conceived" and that "the name of dialectics says no more, to begin with, than objects do not go into their concepts without leaving a remainder, that they contradict the traditional norm of adequacy" (Adorno, 1966/1973, p. 5). Levinas echoes this contention: the "*ideatum* surpasses its idea" (Levinas, 1961/1991, p. 49,

Levinas' emphasis). Both Adorno and Levinas draw upon notions such as God, infinity, perfection and difference to argue that the thing conceived overflows the contours of the concept. Llewelyn elaborates that alterity does not 'exist' because "there always remains something more to be described, but because there always remains something that exceeds theoretical description" (1991, p. 268). Alterity/Other, then, is irreducible and inassimilable excess.

Two further points warrant consideration here. Firstly, Levinas argues that the alterity of the Other is "refractory to every typology, to every genus, to every characterology, to every classification" (1961/1991, p.73). This notion of alterity distinguishes the Other from the other who is discursively marginalised or erased because the marginalised or erased can be reinscribed differently by deconstructing the dominant discourse, that is by changing the typology. Secondly, the contention that alterity is an irreducible and inassimilable excess begs the question of how we can know and speak of alterity. This question is addressed as per Levinas in Chapter Four.

LOGOCENTRISM

Logocentrism, a term coined by Derrida (1967/1976), denotes the belief that words, writing, ideas, systems of thought are validated by a centre that is external to them whose truth they convey. Two sites commonly designated as centres for *logos* are the mind and the 'real' world. Derrida decentres the first of these two sites, the mind, through his deconstruction of Saussure's (1959) semiology. This deconstruction decentres the long-held belief that people use words "to bring out their ideas, and lay them before the view of others: words in their primary and immediate signification stand for nothing but *the ideas in the mind of him* [sic] *that uses them*" (Locke, 1690/1998, III. 2. 1, Locke's emphasis). The deconstruction of the second commonly designated centre, the 'real' world, however, has more immediate implications for environmental education. The deconstruction of this form of logocentrism does not constitute a denial of (the) material world, but it is a denial that there is transcendent meaning in (the) world that guarantees "the

movement of the text from the outside" (Derrida, 1972/1981, p. 65). This view is not unprecedented. Whilst the ardent empiricist Locke wholly upholds the mind as the centre of language, he is cautious about grounding propositions in (the) world: "Men [sic] would not be thought to talk barely of their imaginations, but of things as they usually are, therefore they often *suppose* their words to stand for the reality of things" (1690/1998, III. 2. 1, emphasis added). Whilst empiricism is held to be an indispensable source of environmental knowledge across all the theoretical positions held in environmental education, Locke's cautionary stance is lost in all except poststructuralist orientations: the notion of theory-ladeness, whilst influential in environmental education and elsewhere, tinkers at the edges of this problematic without squaring-up to the issue of language and reference. The upshot of denying logocentrism in environmental education is that it posits meaning within rather than beyond (con)texts, which are neither wholly determining nor wholly delimitable: "the finiteness of a context is never secured or simple, there is an indefinite opening of every context, an essential nontotalization" (Derrida, 1988, p. 137). This 'essential nontotalisation' enables reinscriptions of (the) 'real' which precludes any notion of the finality of meaning. Thus, "we never encounter nature either in itself or as a whole; instead nature is a social phenomenon, whose meaning is always contested within particular local discourses" (Zimmerman, 1994, p. 139). This denial of logocentrism is also known as the critique of the metaphysics of presence. Both the term 'logocentrism' and the expression 'critique of the metaphysics of presence' are used throughout this project.

DIFFÉRANCE

Différance is unarguably Derrida's most famous neologism. Yet defining *différance* is problematic, given Derrida's insistence that it is neither a word nor a concept (1972/1982). However, Nuyen's reading provides some much-needed help when it comes to the difficult task of addressing *différance*:

> Yet, there is a straightforward way in which *différance* is also a word and a concept. It is thus both a word and not a word, a concept and not a concept. As such, it creates a space for that which stands in the in-between, in the fissure, in the dehiscence, facing both directions, Janus-like. As such, it "produces" difference. (Nuyen, 1989, p. 65)

Thus, it is not necessary to retreat into silence when faced with the non-concept of *différance*. It is possible to address this non-concept without collapsing into contradiction, although care is needed.

Différance enshrines a difference that cannot be resolved into a positivity through a Hegelian dialectic. Derrida draws on Saussure's (1959) semiology which posits 'identity' as an effect of differences. According to Saussure, each word acquires its 'identity' by virtue of being different to other elements in a set. This is an anti-logocentric manoeuvre because it severs 'identity' from correspondences between words and entities in the 'real' world. There are other aspects of Saussure's work, however, that undermine his break from logocentrism. Derrida exposes this retrograde aspect of Saussure's semiology and offers *différance* as a means to avoid the problem.

Différance is a difference with a difference. Drawing on the French word *différence*, which means both to differ and defer, *différance* refuses to come to rest. It is a 'force' that 'produces' differences in a text and endlessly defers meaning. Thus, meaning is never immediately present; a whole can never be apprehended. This is not at all the same thing as saying that there is no meaning or that meaning is impossible. On the contrary, "*différance* produces the differences, without which neither thought nor language would be conceivable" (West, 1996, p. 180). Meaning, which is possible only by virtue of the play of *différance*, cannot be fixed. It is instantiated through differences that cannot be unravelled to reveal an origin because the differences are endless.

DECONSTRUCTION

Deconstruction has been frequently misread and denounced as a destructive practice. As Nuyen notes: "critics complain that deconstruction breaks up the whole and leaves it at that, or leaves it to others to pick up the pieces" (1989, p. 28). Bowers (1993b), Callicott and da Rocha (1996), Huckle (1996), Littledyke (1996), Payne (1999, 2000) and Sauvé (1999) have denunciated deconstruction and promulgated this misreading in environmental education by opposing deconstruction to reconstruction, despite Derrida's insistence that "deconstruction is not opposed to reconstruction" (1999, p. 77). Rather than being a destructive practice, deconstruction is concerned with the dismantling of centres that structure texts in order to explore how texts could be constructed differently. As Johnson comments in the Translator's Introduction to *Dissemination*: "If anything is destroyed in a deconstructive reading, it is not meaning but the claim to unequivocal domination of one mode of signification over another" (Johnson, 1981, p. xiv).

Thus understood, deconstruction offers environmental education a strategic means to dismantle and reconstruct environmental texts to make room for more sustainable narratives, under the proviso that such narratives must, in turn, be deconstructed. This commitment to ongoing deconstructive readings is based on the premise that "ecological problems cannot be solved by turning the environment into yet another metaphysical absolute, since doing so is motivated by the same control-impulse that animates all centrisms, including those for social oppression" (Zimmerman, 1994, 139).

Another pertinent aspect of deconstruction for environmental education arises from Derrida's dual contention that text is not limited to "writings on the page" (1972/1981, p. 60) and that "'text' is not distinct from action or opposed to action" (1999, p. 65). This casts the notion of 'reading texts' as the participation in discourse. Therefore, deconstruction offers a way to rethink, reconstitute and participate in "the surfaces linkages between power, knowledge, institutions,

intellectuals, the control of populations, and the modern state as these intersect in the functions of systems of thought" (Bové , 1990, quoted in St. Pierre, 2000b, p. 485). Thus, deconstruction can be used as a means to pursue more environmentally sustainable practices.

UNDER ERASURE *(SOUS RATURE)*

The need, indeed the obligation, to accede and commit to ongoing deconstruction arises from the impossibility of deconstruction to dialectically supplant modernist concepts with 'truer' alternatives. For such a possibility to arise it would be necessary to break free of contexts, to effect a transgression, which Derrida's critiques of logocentrism demonstrate as impossible: "There is not a transgression … every transgressive gesture reencloses us … within this enclosure" (Derrida, 1972/1981, p. 12). Thus, modernist words and concepts must continue to be thought, but in their detotalised or deconstructed form. The notion of placing words or concepts 'under erasure', or *sous rature*, refers to the practice of continuing to use a word or concept whilst acknowledging its irremedial inadequacy.

Derrida places key philosophical concepts such as 'Being', 'Origin' and 'Presence' under erasure and signifies this placement by crossing out the word with an 'X'. In this project, however, terms that have been placed under erasure will be signified by the use of inverted commas, as in the previous sentence. Key environmental education words and concepts that would be placed under erasure in deconstructive readings include 'environment', 'sustainability' and 'agency'. It is not just key terms that should be placed under erasure, however. The power of less obtrusive words in the text - the definite article, prepositions, pronouns, conjugates of the verb 'to be' – to surreptitiously induce a particular reading over another needs to be acknowledged. These terms cannot be discarded, even though they privilege identity over difference, because they are indispensable for grammatical coherence. Therefore, words such as 'the' and 'is' should be accentuated by placing them under erasure. These less obtrusive terms are

accentuated throughout this project by their placement in parenthesis, for example, '(the) environment'.

'AIMS' AMD 'OBJECTIVES'

> There is a problem here of framing, of bordering and delimitation, whose analysis must be very finely detailed if it wishes to ascertain the effects of fiction. (Derrida, 1980/1987, p. 431)

> If we are to approach a text, it must have an edge. (Derrida, 1977/1979, p. 83)

These introductory quotations uphold the importance and necessity of the notion of border and the process of delimitation whilst indicating that neither is straight forward. If aims and objectives are read as discursive elements that set the scope of a project, then they are implicated in the notion of the border and the process of delimitation and should be approached with great care. However, the notion of the border, or edge, is problematic within 'the neighbourhood of'. It has been argued that the borders of 'the neighbourhood of' are irrepressibly fluid. Therefore, the notion of containing an area that exists in the immense relationality of 'the neighbourhood of' is problematic. This problematic resonates with the fluidity that Derrida (1977/1979) and Deleuze and Guattari (1980/1987) attribute to the text and the book, respectively. According to Derrida, a text (including a thesis) is "a differential network, a fabric of traces referring endlessly to something other than itself, to the other differential traces" (Derrida, 1977/1979, p. 84). Similarly, Deleuze and Guattari argue that:

> A book [or a thesis] has neither subject nor object. ... To attribute a book to a subject is to overlook this working of matters, and the exteriority of their relations. ... We will never ask what a book means, as signifier or signified, we will not look for anything to understand in it. We will ask what it functions with, in connection with what other things it does or does not transmit intensities ... A book exists only through the outside and on the outside. ... the

> only question to be asked is which other machine the literary machine can be plugged into, must be plugged into in order to work. (Deleuze & Guattari, 1980/1987, pp. 3-4)

Here, both Derrida and Deleuze and Guattari oppose containment and accentuate exteriority. How can this be reconciled with Derrida's contention that an edge is necessary in order to approach a text and Deleuze and Guattari's contention that there is a sense in which a book is a "signifying totality, or determination attributable to a subject" (1980/1987, p. 4)? Derrida's deconstruction of the '*parergon*', a frame that doesn't just divide inside from outside, is helpful here. Derrida concludes that: "Deconstruction must neither reframe nor dream of the pure and simple absence of a frame" (1978/1987, p. 73). This thoroughly problematises the notion of aims and objectives as framing devices. They are further problematised by the Death of the Author. As outlined earlier, the Death of the Author does not invalidate authorial intentions, but they no longer control the text. Thus, aims and objectives are not self-sufficient.

It would take a very detailed analysis to deconstruct the nature and role of aims and objectives in terms of these postmodernist/poststructuralist twists and turns and this is not the place to give that task the attention that it requires and deserves. I will settle instead on the simple statement that aims and objectives need to be placed under erasure (*sous rature*). In other words, aims and objectives must continue to be used as framing devices, but they must be recognised as being problematic.

The aims and objectives advanced here are problematic in another sense that must be acknowledged. This project has undergone many mutations. Its original working title was "Chaos, alterity and environmental values education" and aims and objectives were formulated within that context. The aims and objectives were re-formulated as the project mutated. However, the aims and objectives that are presented here undoubtedly bear traces of projects that were never written. This

further illustrates that aims and objectives are not self-sufficient and adds another dimension to the exteriority of the text.

'AIMS'

This project has two broad aims. Neither can be regarded as being the principal aim, but one does logically precede the other. The first aim of this project, which is logically prior to the second, is to theorise uncertainty in a manner that respects uncertainty *as* uncertain. As this aim has a seemingly tautological quality, its possibility is not assured. Therefore, exploring the (im)possibility of this aim will form a significant component of the research project. In order to explore the (im)possibility of this aim, it is necessary to go beyond the conceptual resources available in environmental education and the broader environmental education arena as they are inadequate for the task. Explorations into contemporary postmodernist/poststructuralist philosophy and literary theory are required. As a result the (im)possibility of theorising uncertainty in a manner that respects uncertainty *as* uncertain may have relevance beyond environmental education and the broader education arena. This is not to say that the theorisation will be universal and, hence, imbued with some sense of certainty. Instead, the (im)possibility of multiple theorisations of uncertainty will be presented, which may connect variously with fields that express an interest in 'postmodern' uncertainties.

This project also aims to contribute to postmodernist/poststructuralist discourse in environmental education. Specifically, it aims to articulate to and extend arguments that advocate the adoption of narrative theory (Gough, 1993, 1994b, 1998b; Stables, 1996, 1997, 1998; Stables & Bishop, 2001), deconstruction (Dillon et al., 1999; N. Gough, 1999a) and poststructuralist feminisms (A. Gough, 1997). It also aims to create resonances with those strands of critical theory that are selectively introducing postmodernist/poststructuralist perspectives in an effort to mediate critical theory and (the) postmodern (Fien, 1993; Huckle, 1999, 2002), although many formidable dissonances will arise in the process. Many

dissonances will also be created between the arguments presented here and positivist, postpositivist and Gaianist orientations in environmental education. It is anticipated that proponents of these orientations will object strenuously to the central notions that empiricism is a narrative enterprise and that *the* environment does not constitute *the* ground of environmental Truths and Values. Thus, this project aims to contribute to the contestation that constitutes 'the neighbourhood of' environmental education. It certainly does not aim to quell this contestation by offering dialectical resolutions.

'OBJECTIVES'

The objectives presented here are *parergonal*; they are frames that delimit the scope of the inquiry and can, therefore, be understood as external constraints that contain and legitimate the discourse, yet their nature and legitimacy are systematically and necessarily produced within the discourse. This ambidextrous inscription complicates, without lessening, the nature and role of objectives.

The objectives of this project are:

1. to draw on postmodernist/poststructuralist themes to theorise uncertainty in a manner that respects uncertainty *as* uncertain;
2. to enact postmodernist/poststructuralist engagements with uncertainty in the context of environmental education;
3. to articulate the postmodernist/poststructuralist theorisations of uncertainty to key themes in environmental education, with particular attention to environmental values education and engaging indigenous voices;
4. to explore the plausibility of the hope that the Panel for Education *for* Sustainable Development (1998) attaches to 'postmodern uncertainties';

5. to investigate whether the postmodernist/poststructuralist engagements with uncertainty de-territorialise and re-territorialise existing engagements and to identify the existence, if any, of other sites in environmental education that have not been identified hitherto as sites in which to engage postmodernist/poststructuralist uncertainties.

WRITING THE THESIS

Writing a thesis that strives to respect uncertainty *as* uncertain presents a textual challenge. To write with certitude about uncertainty is problematic even though certitude and uncertainty occupy different domains. Given that this thesis upholds Vance's contention that certitude is a "state of repose following upon our assent to the truth of a statement" (1917, p. 217), writing with certitude conveys assent to the truth of this theorisation of uncertainty. This creates tension because truth is classically construed to be eternal and unchanging. It is not unreasonable to contend that if something is eternal and unchanging, then it is certain. Therefore, writing with certitude would textually render uncertainty certain. Textual violence would be inflicted despite the commitment to treat uncertainty *as* uncertain both philosophically and methodologically.

Care needed to be taken to disrupt a sense of certitude inhabiting the text, but this does not mean that the text is less than rigorous or less than scholarly. Indeed, this disruption of certitude is akin to critically acclaimed feminist disruptions of author-ity. Several genres would have provided appropriate means to disrupt the text from conveying a sense of certitude. A poetic approach would have disrupted a sense of certitude by constructing meaning through allusion rather than denotation. Another approach would have been to construct a richly layered text from which multiple meanings could be constructed by interacting with different layers of subtexts in different combinations. Unfortunately, both of these writing processes require a creative literary talent that I lack; a different approach needed to be adopted. Instead, I have opted to trouble the text by weaving together many lines of thought to create a rich, but single layered text. Subtexts are assuredly embedded, but these subtexts have not been specifically

composed. In addition, I have played upon the ambiguity of language by choosing terms that oscillate between meanings, such as 'execute' and 'discipline'. This approach still enables multiple readings of the arguments presented. Thus, the text refuses to come to rest, to a fixed and final meaning that would purport to render uncertainty certain.

Many sections have been rewritten repeatedly because this approach can swiftly scandalise reason, resulting in unintelligibility. St. Pierre insists that "the researcher must learn not to balk at the task of working bewilderment for all it's worth" and advances the use of figurations in this task since their "aim is to produce a most rigorous confusion as [they] jettison clarity in favour of the unintelligible" (1997, p. 281). This 'bewilderment' and 'unintelligibility' are not pursued for their own sake, however. Instead, postmodernist/poststructuralist thought strives to deconstruct humanism in an effort to think differently, and thereby exist differently (Gatens, 2000). However, care is needed. Deleuze and Guattari warn against the danger of losing oneself completely: "This is not reassuring because you can botch it. Or it can be terrifying, and lead you to your death" (1980/1987, p. 149). Therefore, a path needed to be charted between obscurity and clarity.

Pursuing this path goes against the advice offered by style guides which hold that "a standard of so-called clarity of style is the first and indispensable criterion of expository prose" (Kamuf, 1991, p. xii). However, the call for clarity was resisted as stridently as the lure of unintelligibility, although the reasons differed in each case. The call for clarity was resisted because it is premised on the assumption that language is a neutral and transparent means of conveying meaning. Postmodernist/poststructuralist theorists have thoroughly challenged all aspects of this assumption, although only three points will be mentioned here. Firstly, postmodernist/poststructuralist theorists challenge the conjunction of clarity and the neutrality of language. St. Pierre (2000b), for instance, argues that: "'Clarity' is always a distinction made through positions of power both to sanction what is legitimate (Popkewitz, 1997, p. 18) and to keep the unfamiliar at a distance

and illegitimate". Thus, clarity is far from neutral; it is contingent upon the power of concealment, which leads to the ethical dilemma of inclusion/exclusion. Secondly, the conjunction of clarity and the transparency of language has been thoroughly challenged by Derrida's deconstruction of logocentrism (1967/1976). This transparency arises from the assumption that there are correspondences between words and 'things in the world', that words simply refer. However, deconstruction "foregrounds the idea that that language does not simply point to preexisting things and ideas but rather helps to construct them" (St. Pierre, 2000b, p. 483). This problematises the question of reference as Derrida notes in an interview with Richard Kearney: "the question of reference is much more complex and problematic than traditional theories suppose" (Kearney, 1984, p. 123). The problematic nature of this complex question of reference and the wor(l)d does not admit the criterion of clarity. The logic that refuses to admit the criterion of clarity is similar to that employed in the critique of speculative reason. Just as "reason cannot cast light on itself, since to do so is to move and stand still at the same time" (Nuyen, 1991, p. 207), the word cannot clearly shed light on the wor(l)d since the word is implicated in the construction of the wor(l)d. From another angle, if one subscribes to the view that language is implicated in the construction of the wor(l)d, then one cannot subscribe to the call for clarity because the wor(l)d can, by extension, be reinscribed differently. This multiplicity of inscriptions frustrates the *modus operandi* of clarity, namely reduction. Finally, the call to clarity was resisted due to the semantic conjunctions between clarity, certainty and certitude; to be 'clear' is to be "free from doubt; certain ... free from all limitation, qualification, question, or shortcoming" (Oxford English Dictionary).

Thus, pursuing a path between clarity and unintelligibility is imperative theoretically, methodologically, politically and ethically. Like St. Pierre, though, I "wonder sometimes whether I am writing my way into a catastrophe" (1997, p, 405). Derrida insists, however, that some risks must be run (1972/1981). This is not a comforting thought, but the necessity to pursue the path between clarity and

unintelligibility is theoretically, methodologically, politically and ethically defensible.

Another two features of the writing of this thesis need to be mentioned: gender bias and density of in-text citations. This thesis is mostly free of biased language. However, gender biased language has been unchallenged in some quotations and used purposely in the text in some places to designate and confront socially constructed standards that have been cast as universal. This is especially the case in the conclusion where the term 'man' is retained to designate "a socially constructed, patriarchal standard of human behaviour applied to both man and women" (Massumi, 1987, p. xviii).

Finally, it is necessary to draw attention to the density of in-text citations used throughout this thesis. The traditional tiered distinction between data and theorising is not supported in this thesis because the data are constructed from readings of postmodernist/poststructuralist themes in the work of Barthes (1957/1972, 1968/1977, 1971/1977), Deleuze and Guattari (1980/1987), Derrida (1967/1976, 1967/1978, 1972/1981, 1972/1982, 1993/1994, 1997/1999, 1999), and Levinas (1961/1991, 1974/1991). Furthermore, the data construction is interwoven in the development of the arguments offered. The in-text citations have been minimised in order to prevent high density citations interrupting the flow of the arguments. Citation details are provided as works are introduced in each section, but they are omitted thereafter unless direct quotes are used or when the argument moves between several texts by the same author in the same section.

CHAPTER SUMMARIES

Chapter Two, Methodological (Dis)Positions and Methods, presents readings of two of the three research methods that were explored during the course of this project. The denouement of this project could be considered evolutionary, if the term 'evolutionary' is understood as a process in which relatively stable periods are punctuated by instabilities that result in major transformations rather than a gradual, continuous and accretive series of minor modifications. This

evolutionary path led to dramatic deterritorialisations and reterritorialisations of the theoretical terrain. The three research methods explored were Drees' constructive consonance (1988, 1990), Peirce's fallibilism (1931), and Deleuze and Guattari's rhizomatics (1980/1987). The readings presented in Chapter Two, however, are limited to constructive consonance and rhizomatics due to constraints on space. The inclusion of a research method that was turned aside may be considered unusual. However, Drees' constructive consonance offers a valuable framework for research projects in environmental education that are aligned to either critical theory or to mediations of critical theory and postmodernism, as per Best and Kellner (1991, 1997), Giroux (1988, 1990, 1992, 1996) and McLaren (1995, 1997). Thus, whilst constructive consonance was not chosen for this particular project, its inclusion opens up a space for alternative theorisations of uncertainty from other perspectives in environmental education.

Chapter Three, Tracing Uncertainty in Environmental Education, presents a reading of the existing engagements with uncertainty in environmental education and, in some instances, extends the already-said by following the paths that the existing engagements preconfigure. This chapter constitutes the tracing section of Deleuze and Guattari's rhizomatics; it portrays existing territories by delineating boundaries and the spaces enclosed. Whilst the number of engagements with uncertainty is relatively small in environmental education, the engagements are dispersed across diverse theoretical terrains. This chapter presents a reading of the scientific discourse of uncertainty and allied concepts, such as risk, indeterminacy and ignorance, and positions environmental education engagements with uncertainty in relation to this discourse.

Chapters Four and Five are the first two mapping chapters. As each chapter is discrete, they may be read in any order. Chapter Four, Face to Face with the Environment, draws a line of flight from the educational dimension of 'uncertainty and precaution in action' proposed by the Panel for Education *for* Sustainable Development to Levinas' ethical relationship known as the 'face to face' (Levinas, 1957/1987, 1961/1991, 1962/1996, 1968/1996, 1974/1991,

1982/1985, 1984/1996). This line of flight is enabled by the panel's attribution of plurality and a limitation of knowledge to uncertainty. This conjunction is central to Levinas' philosophy. However, Levinas' formulation of the face to face relationship exclusively attends the realm of human sociality. This restriction would result in a highly anthropocentric ethics if applied directly to environmental education. However, it is argued that when Levinas' ethics is cross-read with Heidegger and others, as per Llewelyn (1991), an ethico-political framework emerges that can inform environmental values education and environmental education's commitment to eco-political agency. This framework disavows anthropocentrism and has an undeniably deep green orientation, but it avoids many of the criticisms levelled at deep green approaches, such as apoliticism. This chapter anticipates and counters two lines of resistance that could be raised against the introduction of a Levinasian eco-ethics in environmental education. It is concluded that the relentless provocations that Levinas' philosophy presents would enable environmental education to engage uncertainty in a manner that maintains the conditions of uncertainty, rather than offering a conduit to certainty, which would defeat the purpose of engaging Levinas from the outset.

Chapter Five, Narrative Uncertainties, takes flight from Vance's (1917) rendition of certainty. Environmental education has not been articulated to Vance's work previously. However, given that Vance formulated one of the earliest versions of critical realism and given that critical realism underpins many orientations in environmental education, his philosophy is wholly germane to environmental education. This chapter exploits the egress that Vance's rendition of certainty provides into narrative theory. After taking advantage of this egress, the chapter presents readings of the three major theories of truth - the correspondence, coherence and pragmatic theories of truth - in order to anticipate and ward off possible resistance to the adoption of narrative theory in environmental education through arguments that could be used to discursively contain and diminish the theorising of narrative uncertainties that follow. Whilst, Gough (1994b) has argued against such discursive containment of narrative

theory, he has presented arguments that undermine the fact/fiction dichotomy. The thorny issue of truth has received scant attention in environmental education to date. As a matter of prudence, the chapter also counters the misreadings of Derrida's deconstruction (1967/1976, 1967/1978, 1972/1981) as a denial of (the) material environment and as a destructive and anti-environmental discourse. These misreadings have been applied widely in environmental education and deconstruction has been subjected to discursive containment and denigration as a result (Bowers, 1993b; Callicott & da Rocha, 1996; Littledyke, 1996; Sauvé, 1999; Sosa, 1996). Following these precautionary denouements, this chapter formulates four forms of narrative uncertainty and discusses how these uncertainties can be engaged in environmental education.

Chapter Six, Shifting Terrains, maps secondary lines of flight from the terrain constructed in the previous two chapters. Specifically, this chapter forges links between uncertainty and feminist theory, critical literacy and postmodernist/ poststructuralist ethics. These trajectories proliferate links with key motifs in environmental education, such as engaging indigenous voices, the construction of environmental subjectivities and eco-political agency, and environmental values education. However, the arguments presented in the chapter cause these influential themes to resonate in unfamiliar tones.

Chapter Seven, Decalcomania, enacts the final stage of rhizomatic analysis. It consists of laying the tracing of environmental education's currents engagements with uncertainty presented in Chapter Three over the maps constructed in Chapters Four, Five and Six. The purpose of decalcomania is twofold. First, this process of laying the tracing over the maps enables the identification of blockages and silences in the already-said. Thus, this aspect of decalcomania has a decidedly deconstructive aspect. Second, laying the tracing over the maps enables an exploration of the effects that the maps can induce in the tracing. There is a risk of a power take-over in this second aspect of decalcomania. The map may be hegemonically forced to conform to the tracing, thus sustaining the concepts and structures that configure the already-said. Thus, the analytical emphasis in this

chapter is that of 'plugging the map into the tracing' in order to minimise the risk of a power take-over.

Finally, Chapter Eight, In-Conclusion – Becoming-Uncertain, invokes Deleuze and Guattari's figuration of 'becoming' as a means to both trouble the notion of a conclusion and frame the reflections upon the 'aims', 'objectives' and 'findings' of this project. It is argued that becoming-uncertain is an important objective and pedagogical venture for environmental education. Becoming-uncertain is not to be taken literally; it does not designate the path to, or arrival of, incertitude. Instead, becoming-uncertain refers to the experience of thinking uncertainty differently, experiencing the capacity of uncertainty to affect and be affected, and experiencing the spaces that this opens up, transforms or forecloses. Following Gatens (2000), I subscribe to the view that to think differently, is to exist differently. Therefore, mindful that the readers will assuredly draw their own conclusions, I advance the situated and provisional conclusion that becoming-uncertain can be read as an agentive strategy to exist differently and that by thinking and existing differently we can imagine and enact more sustainable futures. The conclusion also identifies openings for further research. In keeping with the rhizomatic nature of this project, numerous possible lines of flight are identified.

CHAPTER TWO - METHODOLOGICAL (DIS)POSITIONS AND METHODS

INTRODUCTION

The denouement of this research project can be described as evolutionary if the term 'evolutionary' is understood to signify a process in which relatively extensive periods of stability are ruptured by short but intense periods that result in major transformations as opposed to a gradual but steady process of modification. The abrupt transformations of the foci, scope, and tenor of this project resulted in a nomadic wandering along fragmented paths. This compelled concomitant shifts in methodological (dis)positions and methods. The search for theoretical framings that tracked the transformations that occurred *en route* was in no way subordinate or ancillary to the transformations themselves. Surveying the methodological (dis)positions and methods, and the probing of uncertainty *per se* were treated as co-enabling elements of the research that mutually inscribed the other's possibility.

Three research methods/methodological framings were explored during the conduct of this project: constructive consonance, fallibilism and rhizomatics. Each of these framings is a form of pragmatism and, therefore, has relevance beyond environmental education theorising to the wider education arena. In addition, each addresses the issue of truth which has been closely interwoven historically with the issue of certainty. Therefore, each framing compels a rigorous examination of theories of truth. This is an important feature for environmental education theorising as the issue of truth has been neglected almost completely.

Whilst the first two methods were abandoned during the denouement of this work, each has the potential to occupy a niche within the competing epistemological orientations that collectively comprise 'the neighbourhood of' environmental education. Constructive consonance engages transformative,

interdisciplinary dialogue into which the criteria of consistency, meaning and relevance are embedded. These features have been variously identified as being necessary for postmodern curriculum theorising as per Littledyke (1996), Sauvé (1999) and Stone (1993). Whilst they may be necessary, which is contestable, they are insufficient because they can reside comfortably in a realist dialogue, which does not admit that language plays an active part in the construction of reality. Constructive consonance was discarded during the course of this project due to its adherence to critical realism. Nevertheless, constructive consonance offers as valuable medium through which to envision critical education *for* the environment and education *for* sustainability/sustainable development as per Fien (1993), Fien and Trainer (1993a, 1993b) and Huckle (1993, 1996).

Peirce's (1931) fallibilism was the second methodological (dis)position pursued. This framing directly addresses ineradicable uncertainty in a normative rather than constitutive manner, that is, fallibilism is not concerned with what constitutes uncertainty but how thought and behaviour ought to respond to ever-present uncertainty (Davis, 1972; Misak, 1991). This normative dimension is crucial to environmental education's recent emphasis on the inclusion of uncertainty as a key curriculum element (Panel for Education *for* Sustainable Development, 1998). This normative element is also wholly consistent with the aim to theorise uncertainty non-violently by asking questions such as, how should we position theory and practice in relation to uncertainty? Furthermore, Peirce's rejection of transcendence and the correspondence theory of truth, and his development of the pragmatic theory of truth resonate with elements of postmodernist/poststructuralist theorising. However, his belief in getting closer to truth through the self-correction of knowledge was problematic for this project because it signifies belief in the existence of a meta-narrative.

Deleuze and Guattari's (1980/1987) rhizomatics was the third and final method to be explored and it was chosen for this project. Rhizomatics enables the seemingly tautological aim to respect uncertainty *as* uncertain to be pursued. This is possible because rhizomatics overturns the Platonic mode of individuation by

locating identity in outward connections instead of enclosure. If the Platonic mode of individuation were retained, this project would not be possible; it would be locked in a hollow tautology. Furthermore, rhizomatics enables a *poststructuralist* theorisation of uncertainty because Deleuze and Guattari uphold the constitutive role of language in the construction of reality and emphasise the political power of language in this construction: "The unity of language is fundamentally political" (1980/1987, p.101). As a result, Deleuze and Guattari stress the need to introduce a stammering in order to render visible the artifice of the seemingly natural power of language. Rhizomatics can be read as a mode of stammering because it interrupts the seeming naturalness of dominant constructions by travelling fragmented paths. This fragmented approach affronts the smooth trajectories that the dominant discourse pre-configures and legitimates. Furthermore, and more importantly, it enables counter constructions to be mapped, which, in this instance, enables an exploration of the hope that the Panel for Education *for* Sustainable Development (1998) has placed in the possibilities that 'postmodern uncertainties' may afford for realising more sustainable futures.

This chapter offers readings of the first and last of these framings. It signals and analyses their potential contributions to the wider field of environmental education theorising and probes their strengths and limitations for this project. A reading of Peirce's (1931) fallibilism is not included due to the constraint of length. Its brief mention above, however, is to signal that it directly addresses the issues of ineradicable uncertainty and pragmatic truth, and this conjunction is germane to environmental education.

CONSTRUCTIVE CONSONANCE

Constructive consonance was considered as a prospective methodology for this project because it was developed specifically to explore the implications of chaos theory at the science/theology interface. This attracted attention because uncertainty is a leading motif in chaos theory and because environmental education interfaces many disciplines, including science. The interest in constructive consonance grew because of its explicit rejection of the

correspondence theories of truth, which is a decidedly postmodern move. The adherence to critical realism, however, renders constructive consonance as a modernist reading of postmodernism. Nevertheless, philosophical criticism in environmental education may be enhanced by exploring the possibilities presented by Willem Drees' (1988, 1990) constructive consonance, especially for those interested in mediations of critical theory and postmodernism. I would like to temporarily suspend deconstructive analysis and 'enter into' constructive consonance in order to explore the theoretical terrain and to suggest conjunctions and disjunctions between Drees' project and projects that are designated as environmental education.

Physicist/theologian Drees developed constructive consonance as a method to pursue a constructive and critical coherence between science and theology in a manner which did not compel theology to seek a binding correspondence with the results of science. Constructive consonance, as Drees writes it, aims at establishing a meta-emergent dialogue that simultaneously transcends, but maintains the distinctive integrity of, interfacing disciplines. This transcendence shifts the organising principles away from the participant disciplines to the dialogue and its interpretation. Drees' belief in the possibility of pursuing critical coherence through transcendent dialogue stems from his ontological, epistemological and methodological positions, each of which is accordant with the philosophical foundations of critical education *for* the environment. Thus, the potential of constructive consonance warrants exploration within the research arena of environmental education. The primary purpose of this reading is to initiate this exploration.

Concomitantly, this reading examines the correspondence, coherence and pragmatic theories of truth, which are integral to a full appreciation of constructive consonance, and relates these notions of truth to the critical orientation of education *for* the environment. This attention to the notions of truth in the context of environmental education begins to redress a metaphysical void. The notion of truth has received little attention in environmental education

other than incidental coverage in relation to the impact of the positivist paradigm. This incidental, but almost exclusive association, casts notions of truth in a pejorative light. However, this reading argues that the notions of truth have powerful epistemological and explanatory roles that are foundational to the transformative and emancipatory goals of critical pedagogy, and that these dimensions of truth need to be engaged in critical discourse.

Finally, this reading examines whether constructive consonance may provide a medium through which poststructuralist environmental education may be envisioned and concludes that it cannot, although it is argued that constructive consonance provides a medium to mediate critical theory and postmodernism, as per Huckle (1999).

CONSTRUCTIVE CONSONANCE - A READING OF THE ORIGINAL CONTEXT

Physicist/theologian Willem Drees devised and employed constructive consonance in order to establish a critical coherence between science and theology. This view of critical coherence involves the formulation of a theology that takes science seriously, but is not restricted to seeking a descriptive correspondence with the results of science. According to Drees (1988, p. 100), "it is not sufficient to make God-talk scientific talk and thus a superfluous duplication". Instead, Drees (1990, p. 180) seeks "a theology that is open to the results and methods of science and nonetheless maintains its critical possibilities".

The term 'constructive consonance' provides insight into the assumptions and purposes of the research method. The word 'consonance' signifies the assumption that some form of agreement, or intellectual accord, is possible between scientific and theological enterprises. When the word 'consonance' is coupled with the word 'constructive', Drees' epistemological position begins to emerge. According to Drees, consonance is dialectically constructed through interpretation, rather than found. Multiple levels of consonance are possible: correspondence of data, interpretation of data and metaphysical interpretation. Since Drees seeks a critical, rather than descriptive, coherence with science, the

first two levels of constructing consonance are inadequate and, thus, rejected. Hence, constructive consonance draws upon metaphysical interpretation as an avenue to pursue critical coherence. This leads to the first constructive dimension of Drees' methodology, the construction of a world view through critical metaphysical interpretation. (The second constructive dimension, which involves the identification of pragmatic concerns, will be discussed later.)

Drees' beliefs in the possibility of critical coherence and of its constructive character stem from his ontological position of critical realism. From this position, he argues that the 'genuine' distance that separates both science and theology from 'reality' provides a conceptual space in which to entertain a critical *dialogue* of possibilities, and that engaging in metaphysical interpretation in order to construct critical coherence may yield dialogues in which both the science and the theology are transformed[1]. This is a bold assertion, which Drees elaborates as follows:

> I am not suggesting that theologians should be directly involved in the development of science. There is ample ingenuity within the scientific community without them and, in any case, a serious contribution has to be based upon an understanding of the technical details. What I mean is that there are within the scientist certain convictions - informed by a wider perspective, to which the 'theology' of that person contributes - that occasionally play a role in the development of scientific theories. Not only in the context of discovery, but also in the choice of criteria. And people involved in 'science and religion' could make this role more visible and thereby much more open to analysis. (1988, p. 106)

In order to construct a *critical* coherence between science and theology, Drees proposes three criteria to distinguish between authentic consonance and *ad hoc*

[1] Whereas, striving for consonance at the level of data, or interpretation of the data, is most likely to result in an asymmetric interaction whereby the conceptual space is occupied by a monologue from science to theology.

constructions: consistency, meaning and relevance. He maintains that whilst these three criteria do not guarantee the truth or credibility of a theology that takes science seriously, they perform a significant role in the assessment of credibility. Mutual consistency is a minimal requirement for the construction of coherence within, between and beyond differing enterprises. However, when used as a sole criterion, consistency may simply lead to erudite non-contradiction in absurd constructions. Hence, Drees links consistency with meaning and relevance, which, in combination, lead beyond the minimalist grammar of logic furnished by consistency. Numerous theories of meaning have been developed, each fulfilling different projects depending upon factors such as the conception of meaning and context. In the context of constructive consonance, Drees maintains that a dialectical theory of hermeneutics is the most appropriate orientation for the construction of meaning. Finally, according to Drees (1990, p. 185) "the criterion of relevance makes the difference between science and theology". Drees relates the criterion of relevance to the existential function of religion and to his transformative eschatology of the present[2], which he envisions as a theological counterpart to axiology.

Drees positions the three criteria of consistency, meaning and relevance in relation to three historically influential theories of truth: the correspondence theory, the coherence theory and the pragmatic theory. Agreement does not exist in relation to a need for truth (Schmitt, 1995). However, the relations that Drees distinguishes between the three criteria and the theories of truth presupposes interrelations between truth, knowledge and meaning in a manner that closely resembles Armour's (1969, p. 243) contention that a "demand for a theory of truth arises from the fact that the concepts of meaning and knowledge will not work independently of the concept of truth". Hence, the concept of truth serves key ontological and epistemological functions in constructive consonance.

[2]Striking similarities exist between Drees' transformative eschatology of the present and the transformative goals education *for* the environment. These similarities will be discussed later.

The correspondence theory holds that a belief (statement, sentence, proposition, etc.) is true if it corresponds with the facts. Whilst this theory can be legitimately defended using both realist and idealist ontologies (Kirkham, 1992; Schmitt, 1995), its application is limited and its substance is contested. General objections to the correspondence theory pertain to questions relating to the constitution of 'facts' and the nature of 'correspondence' (Olen, 1983). However, in relation to Drees' project, these general objections may be bypassed as two specific objections conflict directly with the assumptions that underpin constructive consonance. Firstly, whilst the correspondence theory of truth can be applied discretely to both realist and idealist ontologies, it cannot be applied within the context of critical realism which interweaves elements of both. The distance that critical realism ascribes between reality and humankind's knowledge of that reality mitigates against a correspondence theory of truth. Whilst critical realism does not preclude the possibility of truthful correspondence, it does preclude recognition of such truths. Secondly, and more forcefully, the character of truth according to the correspondence theory renders Drees' project of constructing consonance false. According to Joachim, the correspondence theory of truth holds that:

> Truth is clearly independent. . . . Truth is discovered, and not invented; and its nature is unaffected by the time and process of discovery, and careless of the discoverer. (1906, p. 20)

Joachim's account of the nature of truth as construed from a correspondence viewpoint invalidates constructive consonance in two ways. Firstly, whilst Drees does not claim that constructive consonance secures truth, the notion that truth is discovered rather than constructed diametrically opposes Drees' (1990, p. 6) conviction that consonance is "a construction and not a discovery of any pre-established harmony found in reality". And secondly, the notion that truth is careless of the discoverer precludes the existential dimension of Drees' project. Therefore, constructive consonance cannot be anchored in the correspondence

theory of truth and it is rejected in favour of the coherence and pragmatic theories of truth.

The coherence theory of truth holds that a statement is true if it *coheres* with the entire system (Armour, 1969; Joachim, 1906; Kirkham, 1992; Olen, 1983; Schmitt, 1995). Hence, the coherence theory of truth is allied to an idealist ontology and has attracted criticisms reflecting the realist orientation. The coherence theory of truth has been criticised for not 'connecting with the real world'. De Paul (1995, p. 134), for example, comments that coherentism, within which the coherence theory of truth is embedded, "seems about as likely to succeed as a bucket brigade that does not end at a well, but simply moves around in a circle".

However, the objections relating to the lack of connection between the coherence theory of truth and the 'real world' bolster the critical realist assumption that underpins constructive consonance by default, rather than causing agitation over inadequacy, illusion or falsehood. Claims of this kind simply articulate the critical realist's conviction that whilst reality exists, humankind has no claim to direct or true access to that reality. This does not preclude the possibility of a true connection with reality, but it precludes recognition of any such possible occurrence.

Another common objection to the coherence theory of truth claims that a proposition may be true in one coherent set of beliefs and false in another which invalidates the very notion of truth. However, this objection is based on a fundamental misinterpretation of the coherence theory and, therefore, fatally flawed (Joachim, 1906; Walker, 1989). The coherence theory of truth holds that each proposition entails all others in the *entire* system and, according to Joachim, "there can be *one and only one* such experience" (1906, p.78, Joachim's emphasis). However, Joachim refers to this coherent whole as an Ideal Experience, not yet attained, perhaps unattainable by mere human experience.

Notwithstanding Joachim's concession that the Ideal Experience may be unattainable by mere human experience, he contends that conceivability provides

the pathway by which to strive for the Ideal Experience. To conceive according to Joachim (1906, p. 66) is to "think out clearly and logically, and to hold many elements together in a connexion necessitated by their several contents". Hence, the coherence theory of truth, as Joachim construes it, holds a deep relation to the thinker. This contrasts starkly with minimalist relation afforded to the thinker by the correspondence theory and when coupled with the notion of 'conceivability' validates Drees' project to develop critical coherence through constructive consonance and supports the criteria of consistency and meaning. However, Joachim further concedes that in striving towards the Ideal Experience, partial wholes may not adequately convey *the* whole. This concession enables Drees to invoke of the pragmatic theory of truth in order to satisfy the criterion of relevance.

The first two theories of truth pertained to 'the world' and to a system of propositions respectively. The pragmatic theory of truth concerns the third possible relation to truth, the person who tells the truth. According to the pragmatic theory, "an assertion is true if it has the right kind of effect on its believers - if it is expedient, or useful, or solves problems" (Armour, 1969, p. 140). The kinds of effects that truth may have on believers may be categorised as behavioural, cognitive or a combination of both. A sole emphasis on the cognitive dimension causes a regress to a variant similar to the coherence theory of truth (Schmitt, 1995), but it is the behavioural dimension that is most pertinent to the existential domain of Drees' constructive consonance. The pragmatic theory of truth provides a metaphysical arena within which to apply the criterion of relevance and to consider the pragmatic implications of a worldview (critical coherence) developed through constructive consonance.

Eclecticism regarding truth is not unusual, but it is problematic. Rather than mitigating the traditional criticisms endemic to each of the classical theories, eclecticism may exacerbate the range of criticism by conflating mutually exclusive conceptions of truth and incompatible epistemological functions. Hence, each instance of eclecticism requires scrutiny in order to disclose any inherent

paradoxes that may be generated. Dree's invocation of both the coherence and pragmatic theories of truth creates an unsteady alliance between mutually exclusive conceptions of truth. This conflation both pluralises and problematises truth in a manner that constitutes a generative source for on-going debate. The constructive potential of constitutive instability has been promoted by Deutscher (1997, p. 196) who argues that "contradictions may be a valid, or inevitable, negotiation of a sound argument". In the case of constructive consonance, the constitutive instability promotes the dialectic nature of constructing critical coherence. To do otherwise would contravene the epistemological premise that underpins constructive consonance, imposing a perceived stability that renders the construction of consonance as unambiguous and uncontroversial.

In summary, Drees developed the methodology of constructive consonance in order to work towards a critical coherence between science and theology. Through constructive consonance, he strives to engage a meta-emergent dialogue that transcends interdisciplinary boundaries in a manner that values and respects the distinctiveness and integrity of the different enterprises involved. The notion of a dialogue is premised upon a critical realist ontology. He argues that the gap that the critical realist orientation interposes between reality and knowledge provides a conceptual space within which to engage a dialogue of possibilities. Furthermore, he asserts that each of the participant enterprises represented in the dialogue is transformed.

Drees envisions that the constructive dimensions of constructive consonance evolve through interpretation of this transformative dialogue. These constructive dimensions involve the formulation of a worldview and the identification of pragmatic concerns resulting from this worldview. Three criteria are strategically incorporated in order to provide a means of assessing credibility in this construction of critical coherence through dialogue: consistency, meaning and relevance. Furthermore, these criteria are positioned in relation to the coherence and pragmatic theories of truth. This positioning ascribes key ontological and epistemological roles to the concept of truth in a manner that simultaneously

problematises and pluralises truth. Thus, constructive consonance promotes an on-going process of clarification and debate, rather than consensual closure.

Constructive consonance, truth and environmental education

Varying conceptions of coherence, meaning, interpretation and truth, and of their interrelations, exit within 'the neighbourhood of' environmental education. Hence, consideration of the relevance and applicability of Drees' constructive consonance to environmental education needs a clear focus as it is beyond the scope of this section to compare constructive consonance to all contemporary movements in environmental education. Therefore, this reading will be limited to the conjunctions and disjunctions between constructive consonance and critical education *for* the environment, which, according to Fien (1993), translates both the essence and intentions of the founding documents of environmental education, *The Belgrade Charter* (UNESCO-UNEP, 1976) and *The Tiblisi Declaration* (UNESCO-UNEP, 1978), into practice.

The issue of ideology is volatile in the general arena of environmental education research, with views ranging from ambivalence (Disinger, 1993) to deeply held, but varying, convictions (Fien, 1993; Huckle, 1983; Robottom, 1993; Robottom & Hart, 1993). At the 1990 symposium, "Contesting Paradigms in Environmental Education Research", one of the few points upon which Marcinkowski (1993, p. 313) and Robottom (1993) concurred was that "within the realm of environmental education research, there are deeply divisive and problematic issues". Hence, it is prudent to assess the potential to engage constructive consonance in environmental education in ideological terms.

Hucke (1993, p. 45) asserts that "the interface between education and environmental problems is complex and can only be viewed realistically with the help of different kinds of science". Huckle's explicit reference to the interfacing of different disciplines in order to maximise the efficacy of environmental education necessitates the usage of research methods that have the capacity to transcend disciplinary boundaries. Constructive consonance is, therefore, a

prospective candidate. Furthermore, constructive consonance is a strong prospective candidate given that critical education *for* the environment and constructive consonance are underpinned by the same ontological, epistemological and methodological assumptions.

Critical education *for* the environment is premised upon a critical realist ontology, a subjectivist epistemology and a transformative, dialogic methodology. The distance that the critical realist orientation interposes between reality and knowledge of that reality, which Drees identifies as a conceptual space within which constructive consonance may operate, is emphasised in environmental education theorising in a manner that demonstrates epistemological compatibility with constructive consonance. Specifically, critically oriented environmental education theorists emphasise both the non-foundationalist character of knowledge resulting from this 'ontological gap' and the interplay of historical, cultural and ethical norms in the construction of knowledge within this gap. Furthermore, the socially critically oriented theorists actively advocate critique within this realm in order to expose "the contradictions and distortions within" (Robottom & Hart, 1993, p. 11). Hence, constructive consonance may provide environmental education with a valuable medium to engage this critique.

Further epistemological accord exists between critical education *for* the environment and constructive consonance in the conceptualisation of the dynamics of critique within critical realism's ontological gap. According to Drees, constructive consonance is premised upon the epistemological notion that consonance does not exist naturally and that there are always tensions between an actual state of affairs and an ideal. This tension mirrors the critical theorists' notion of the tensions inherent in the pursuit of critical knowledge. Both Drees and critical environmental education theorists ascribe a dialectic quality to knowledge which entails a methodology of dialectic interplay. Hence, constructive consonance is commensurable with critical education *for* the environment as a result of the ontological, epistemological and methodological accord they share.

The accord between constructive consonance and critical education *for* the environment, however, extends beyond the general level of commensurability to agreement with the three criteria used to assess credibility. The first two criteria of consistency and meaning are essential elements within any structured form of inquiry. However, the criterion of relevance, as Drees construes it, is a vital component of the overt agenda of critical education *for* the environment (Fien, 1993, 1997a). For Drees, the criterion of relevance addresses values and transformations. These may be regarded as the dual imperatives of critical education *for* the environment, which aims to motivate and empower learners to become actively involved in the resolution of social injustice and environmental destruction (UNESCO-UNEP, 1976, 1978). Hence, it is essential for any methodology employed in critically oriented environmental education research to strategically incorporate a criterion to assess existential efficacy. Constructive consonance satisfies this need through the criterion of relevance.

Finally, an examination of the investigation in which Drees applied constructive consonance offers another perspective from which to assess the potential of constructive consonance to inform environmental education, albeit vicariously. Drees' application of constructive consonance to develop an eschatology of the present is particularly pertinent to the imperative of education *for* the environment. An eschatology of the present involves an unusual juxtaposition of ideas since eschatology is typically understood as "a theological imagining of the future, either of individuals beyond death or of the world" (Drees, 1990, p. 119). However, Drees emphasises the locus of eschatology in the present to motivate action, rather than promulgate complacent reliance on a future salvation from present imperfection and injustice. Drees (1990, p. 119) outlines three components of this kind of eschatology:

1. judgement on the present: it is not as it ought to be;
2. appeal to action as a response to judgement; and
3. consolation in the contexts of injustice, failure and suffering.

Environmental corollaries of each of these three features can be located readily in the seminal documents of environmental education, *The Belgrade Charter: A global framework for environmental education* (UNESCO-UNEP, 1976) and *The Tbilisi Declaration* (UNESCO-UNEP, 1978), and in contemporary environmental education literature. Further accord with environmental education may be located in the call for conversion which overarches eschatology of all forms. The environmental education counterpart is the imperative to instil in learners deeply held and enduring environmental values. Hence, the dual compatibility that exists between the transformative goals of education *for* the environment and (a) Drees' eschatology of the present and (b) the overarching call for conversion, can be invoked as an indirect source of support for the adoption of constructive consonance in environmental education research, and when viewed in conjunction with the previous points of agreement, this indirect support becomes more substantial.

Despite the multifaceted accord between constructive consonance and critical education *for* the environment outlined above, constructive consonance offers a powerful challenge to environmental education by the relations that are presupposed between truth, knowledge and interpretation. The notions of knowledge and interpretation have been, and continue to be, seriously engaged in the environmental education arena. However, the concept of truth has been largely overlooked. Almost all references to truth in the context of environmental education have been incidental and linked to positivism, either directly or indirectly. However, Robottom and Hart (1993, p. 11) provide an exception to the link with positivism by alluding to the pragmatic theory of truth: "what counts is what changes, and truth is whatever leads to the achievement of what is good, right, responsible and empowering of individuals". This pragmatist allusion links the pragmatic theory of truth to the transformative goals of education *for* the environment. Schmitt (1995) has actively promoted this connection in defence of the notion of truth. He asserts that a fairly widespread condemnation of the notion of truth is based on the claim that truth itself "has been employed precisely

to maintain the stratification and domination of cultures" (Schmitt, 1995, p. 231). This contention is based on the argument that the dominant culture claims possession of *the* truth and uses this distortion as a source of coercive oppression. However, the source of this injustice is the coercion, not the notion of truth, and just as a distorted projection of truth can be used to oppress, truth may be used to liberate. Schmitt (1995, p. 232) proposes that "the notion of truth belongs to the category of knives and other useful but sometimes lethal tools". This dismissal of the condemnation that the notion of truth has attracted exactly corresponds to the dialectic process of transformation that lies at the heart of critical education *for* the environment. Hence, engaging constructive consonance's challenge to critically debate the notion of truth may enrich theorising in environmental education.

In conclusion, constructive consonance may be invoked to inform environmental education. This assertion is based on: the general commensurability that exists between the philosophical assumptions that underpin both education *for* the environment and constructive consonance; the strategic inclusion of the criterion of relevance which is fundamental to assessing the efficacy of environmental education theory and practice; the indirect support gained from the compatibility between Drees' original application of constructive consonance and the imperatives of environmental education; and the potential enrichment of environmental education theorising by accepting constructive consonance's challenge to engage the notion of truth in critical discourse.

Constructive consonance, critical approaches to environmental education and postmodernism

Drees' rejection of the correspondence theories of truth is a decidedly postmodern turn. Nevertheless, there are elements of constructive consonance that are more aligned to critical theory. Similarly, there are elements of critical theory, as it is enacted in environmental education, that resonate with postmodern thought whilst being grounded in modernity. This has led some theorists in education and beyond to suggest the notion of mediating critical theory and postmodernism. In environmental education, Huckle maintains that (1999, p. 37)

"the critical theory and notions of participative action research that underpin critical education *for* sustainability embrace a philosophy of knowledge that lies between modernism and postmodernism". However, the view that critical theory straddles the modern and the postmodern is contestable and I join with Payne in his conviction that:

> To be sure, postmodern-inspired thinking can contribute to refining those more established but somewhat contentious critical perspectives and practices of environmental education. … However, barriers exist to reconciling critical modern and postmodern perspectives given that these 'views of the world' are often represented as a collision of competing 'ways of thinking'. … [Nevertheless,] these two ways of thinking have much to learn from each other. (Payne, 1999, p. 7)

In this section, I will identify areas of overlap and disagreement between constructive consonance, critical approaches to environmental education and postmodernism. This could be read as support for mediating the two ways of thinking, although this is not a view that I share. This discussion will be structured around the five prominent interrelated postmodern themes identified by Cahoone (1996): critiques of presence, origin, unity and transcendence, and analysis through constitutive otherness.

For the purpose of this discussion the critiques of presence and origins can be addressed together. The critique of presence rejects the belief that the objects of experience, concrete or abstract, are immediately present to consciousness. The immediacy of experience is rejected in postmodernist/poststructuralist thought in favour of the notion that all experiences are mediated by texts/discourses, which are ambidextrously inscribed by specificities such as culture, class, race, ethnicity and gender. The critique of presence is upheld by constructive consonance and critical education *for* the environment. In constructive consonance, Drees maintains that "knowledge is a product, a construction made by humans – with

the conceptual apparatus, in the mathematical and natural languages – in their encounter with reality" (1990, p. 6). Similarly in environmental education, Huckle maintains that critical education *for* sustainability "is prepared to accept the cultural mediation of reality" (1999, p. 37). In both cases, however, the support that is extended to the mediation of experience is undermined by support for origins rather than a critique of origins.

Support for the notion of origin underpins inquiries that "attempt to see behind or beyond phenomena to their ultimate foundation" (Cahoone, 1996, p. 14). The quest for origins can take many different forms, such as the recuperation of an author's intended meaning, grounding truth claims in the world beyond the text, and processes of self-discovery. Both constructive consonance and critical approaches to education *for* the environment are aligned with the second form of support for origins, even though the rhetoric suggests otherwise. Belief in an ontological reality beyond the text is not an anti-postmodernist/poststructuralist belief. However, the belief goes against the grain of postmodernist/ poststructuralist thought if an ontological reality beyond the text is used logocentrically as a legitimating function to ground the truth claims of text/discourses. Whilst Drees ardently maintains that "realism as a close correspondence between theories and realities seems too strong a claim", he proposes that "it seems a reasonable policy to treat the best theories as if they described reality accurately, and to consider the implications" (Drees, 1990, pp. 185-186). Thus, Drees positions the 'best theories' as hypothetically corresponding to a reality beyond the text from which to assess the implications of discourse. The fact that the 'best theories' are positioned as a hypothetical origin in no way weakens the support for the notion of origin or the function that an origin is to serve.

Drees' constructive consonance can be further read as being supportive of origins due to its unproblematic stance on subjectivity. Whilst Drees acknowledges the role of language in shaping our view of reality, he does not reflexively acknowledge the role of language in the construction of subjectivities.

This is key postmodernist/poststructuralist motif that has been powerfully expressed by Eco in an interview with Rosso:

> Being does not speak itself through language. … There is no Being that then speaks. There is a language that speaks Being. What being might be is always a hypothesis posed by language. But, despite coming first, it is always in front of us, with its laws, conventions, techniques, tactics, strategies. Interpretation is usually concerned with these mechanisms. Being is an effect of meaning. Meaning is the effect of culture. The cultural universe is the labyrinth. It is this that we must interpret. (Rosso & Eco, 1991, p. 251)

It must be noted, however, that it is not defensible to assume that someone does not support a particular position simply because they do not openly acknowledge it. However, the postmodernist/poststructuralist view on the constitutive role of language in the construction of subjectivity is so at odds with modernist versions of subjectivity that those who hold this view usually make it explicit. Therefore, it can be claimed that constructive consonance is likely to uphold and promote the notion of a stable, unitary subject, which endorses the notion of origin.

Critical theorists in environmental education would problematise Drees' support for the notion of origin through the 'best theories' approach by raising issues such as political power, access to funding, vested interests and disenfranchised groups. Critiquing these issues, however, can only serve to problematise Drees' qualifier of 'best'. The critique does not and cannot simultaneously critique the notion of origin because the issue of reference/correspondence has not been engaged by critical theorists in environmental education. When viewed in this context, support for the social construction of knowledge does not discredit or invalidate the notion of origin. The only defensible claims that can be made are that access to origins is inequitable and/or that correspondence is skewed, both of which wholly support

the notion of origins. The notion of origin is further upheld in critical approaches to education *for* the environment through support for the notion of emancipation through the elimination of false consciousness. Thus, like Drees, critical theorists take an unproblematic stance on the constitutive role of language in the construction of subjectivity.

Postmodernist/poststructuralist critiques of unity emphasise the plurality of meanings that are inscribed in discourses/texts/language games. Following structuralism, postmodernist/poststructuralist theories uphold that meaning is systemically and constitutively related to what is silenced. As a result, meaning is never "simple, immediate, or totally present, and no analysis of anything can be complete or final" (Cahoone, 1996, p. 15). The critique of unity entails that "there is no possibility that language games can be unified or totalized in any metadiscourse" (Lyotard, 1984, p. 36); unity is supplanted by irreducible plurality. Constructive consonance can be read as a critique of unity on the basis that it involves transdisciplinary dialogue in which the distinctiveness of the participant disciplines in not subsumed. Similarly, the openness of critical approaches to environmental education and education *for* sustainability to "a plurality of texts and voices, and the limits of grand narratives" (Huckle, 1999, p. 37) can be read as a critique of unity, although the support of these approaches for holism then becomes deeply problematic.

Both constructive consonance and critical approaches to education *for* the environment can be read as embracing the critique of transcendence in which "norms such as truth, goodness, beauty, rationality, are no longer regarded as independent of the processes that they serve to govern or judge, but are products of and immanent in those processes" (Cahoone, 1996, p. 15). When considering whether constructive consonance invokes the notion of transcendence it is necessary to separate Drees' formulation of constructive consonance from his application of it. This is necessary because Drees' application of constructive consonance involved an exploration of the science/theology interface. As a result, the issue of the immanence/transcendence of God received a high profile.

At the methodological level, however, Drees' insistence that consonance is constructed and does not involve the discovery of a pre-established harmony can be read as support for the notion of immanence.

Critical approaches to education *for* the environment can also be read as rejecting transcendence, even though notions such as truth and honesty, and specific environmental values are upheld and actively espoused. The rejection of transcendence in relation to these issues is usually implicit. However, Fien (1993, 1997a; Fien & Trainer, 1993a) has been more explicit than most in relation to these issues. He accentuates the immanence of notions, such as truth and honesty, by casting them as 'cultural universals', but it is in his treatment of environmental values that the strongest case against transcendence can be made. Fien implicitly emphasises the immanent nature of environmental values by grounding them in environmental ideologies. Thus, environmental values can be read as being socially constructed within different ideologies. There is always the risk of a power takeover, however, that would enable particular environmental values to be cast as transcendental. Fien's advocacy of committed impartiality could be read as a strategy to safeguard against this transcendental turn. This reading of critical approaches to education *for* the environment as upholding the critique of transcendence is problematic, however. It is possible to argue, as per Deleuze and Guattari (1980/1987), that the support that critical approaches to education *for* the environment lend to the notion of ideology upholds the notion of transcendence. This issue will be explored more fully in the second part of this chapter, which deals specifically with Deleuze and Guattari's philosophy.

Finally, constructive consonance and critical approaches to education *for* the environment can be read as being compatible with and supportive of the notion of constitutive otherness, respectively. The notion of constitutive otherness holds that cultural units are constituted and "maintained in their apparent unity only through an active process of exclusion, opposition and heirarchization" (Cahoone, 1996, p. 16). Whilst the application of constructive consonance involves the analysis of numerous contending positions, which may include those that are

marginalised, its description neither acknowledges that those contending positions owe their form to processes of exclusion, opposition and heirarchisation, nor nominates attention to silenced discourses. However, an extension to include the notion of constitutive otherness is wholly compatible with constructive consonance. On the other hand, critical approaches to education *for* the environment explicitly uphold the notion of constitutive otherness through support for the notion of hegemony and the promotion of anti-hegemonic practices.

In addition to analysing constructive consonance with respect to the five prominent postmodern themes, as outlined by Cahoone, more general discussions of postmodern education enable constructive consonance to be read as a postmodern approach. Engaging in dialogue, which constructive consonance employs as a medium to construct critical coherence, has been widely acknowledged as postmodern. According to Stone:

> The idea of conversations epitomizes postmodernity, based in language, relational to persons, locations and times, and "interpretive" and open-ended rather than explanatory and closed-off. (Stone, 1993, p. 2)

Furthermore, the contention that constructive consonance can be read as a postmodern approach for environmental education can be strengthened by discussions in the environmental education research arena which, independently of any consideration of constructive consonance, foretell its utility. Sauvé, for example, asserts that:

> Postmodern constructive epistemology values dialogue among different forms of knowledge (scientific, experiential, traditional and so on), where discipline[s] are no longer the organizing principles and where criteria of validity are relevant in light of the critical transformation of realities. (Sauvé, 1999, p. 13)

The elements that Sauvé has identified correspond with the constructive consonance's aim to engage meta-emergent dialogues that transcend interdisciplinary boundaries in a manner that values and respects the distinctiveness and integrity of the different enterprises, and endorses constructive consonance's criterion of relevance as an essential element in the assessment of the efficacy of postmodern education theory and practice.

In summary, there are resonances and dissonances between postmodernism, constructive consonance and critical approaches to education *for* the environment. Both constructive consonance and critical approaches to education *for* the environment uphold the critique of presence through their support for the cultural mediation of reality. This support is undermined, however, through their support for origins. Constructive consonance upholds the notion of origin by positioning 'best theories' both within and beyond the text. Critical approaches to education *for* the environment, on the other hand, uphold the notion of origin through their support for the Marxist belief of achieving emancipation through the elimination of false consciousness. Both constructive consonance and critical approaches to education *for* the environment can be read as supporting the critique of transcendence through the adoption of problematic stances toward norms: constructive consonance problematises the notion of truth, whereas critical approaches to education *for* the environment problematise normative issues such as sustainability and environmental values. The status that critical approaches afford to the notion of ideology, however, can be read as support for the notion of transcendence. Both constructive consonance and critical approaches to education *for* the environment can be read as being supportive of the critique of unity through their support for the plurality of discourses. However, the support that critical approaches to education *for* the environment lend to holism then becomes problematic. Lastly, constructive consonance can be read as being compatible with support for constitutive otherness, whereas critical approaches to education *for* the environment can be read as being a source of active support for

constitutive otherness through their embrace of the notion of hegemony and the advocacy of anti-hegemonic practices.

The resonances between critical theory and postmodernism are accentuated by those, such as Huckle (1999), who wish to mediate the modern and the postmodern, often under the banner of 'reconstructive postmodernism'. The dissonances, however, are discursively contained and subsequently dismissed through appeals to nihilism and relativism. This discursive containment denies, among other things, the constitutive role of language in the construction of knowledge and subjectivities. Whilst constructive consonance does acknowledge the constitutive role of language in the construction of reality, this is undermined by the support given to the notion of origin as a means to ground meaning beyond the text. Given that uncertainty has been minimalistically predicated in this project as a quality of propositions, the manner in which constructive consonance undermines the constitutive role of language resulted in it being rejected as a methodology.

CONCLUSION

Constructive consonance, a method of philosophical criticism developed by physicist/theologian Willem Drees, has the capacity to enrich philosophical criticism for those who support mediating critical theory and postmodernism. The adoption of constructive consonance would, however, challenge environmental education theorists to engage notions of truth in critical discourse. Whilst notions of truth have received little coverage in environmental education literature to date, the existential dimension of critical education *for* the environment implicitly embraces the pragmatic theory of truth. In contrast, both education *about* the environment and education *in* the environment can be allied to the correspondence theory of truth, a position that proponents of critical education *for* the environment must ardently reject. These mutually exclusive conceptions of truth contribute to much of the contestation within 'the neighbourhood of' environmental education, but their bearing is tacit. Elevating the notions of truth

to the level of discourse, thus, rendering the competing conceptions of truth more visible and more open to analysis would enrich the contestation within environmental education. Constructive consonance's constitutive instability, derived from its eclectic conception of truth, offers a generative medium through which to explore the existential voice of critical education *for* the environment in relation to truth.

Constructive consonance was rejected as a methodology for this project, however, because its support for origins undermines the constitutive role of language in the construction of reality and subjectivities. Acknowledging the constitutive role of language is an indispensable aspect of this project because uncertainty is predicated as a quality of propositions. Uncertainty, therefore, is posited as a dynamic element of language. Attention was briefly focussed on Peirce's fallibilism (1931) following the rejection of constructive consonance. Peirce's rejection of transcendence and the correspondence theories of truth, and his formulation of the pragmatic theory of truth resonate with postmodernist/poststructuralist theorising. However, his belief in getting closer to the truth through the self-correction of knowledge was problematic. Attention was then turned to poststructuralist perspectives and the aim was refined from a general postmodern exploration of uncertainty to a poststructuralist theorisation that respected uncertainty *as* uncertain. Deleuze and Guattari's method of rhizomatics enabled this seemingly tautological aim to be pursued.

RHIZOMATICS

Deleuze and Guattari's theorising of thought enables explorations of uncertainty that treat uncertainty *as* uncertain. This is possible because their philosophical project seeks to overturn Platonism: "the task of modern philosophy has been defined: to overturn [*renverser*] Platonism" (quoted in Patton, 1994, p. 143). Thus, Deleuze and Guattari would oppose the question, "What is uncertainty?", as it predicates identity upon a unique set of *inner* properties in contradistinction to all other identities. It is this classical depiction of identification, which requires the twofold processes of fixing and

contradistinction, that has been referred hitherto to as the impulse to deprive uncertainty of the honour of its name.

Instead of grounding identity in a unique and stable set of *inner* properties, Deleuze and Guattari render identity as being constituted through the act of making connections with other things. Thus, identity is not a stable manifestation of a fixed interiority; rather, it is a dynamic and fluid process that is animated by exteriority. This rendition of identity makes the question, "What is uncertainty?", pointless. Rather, it becomes germane to ask what uncertainty functions with, how it connects with other things, and what its capacity is to affect and be affected. These questions are pragmatic; they are "concerned with what can be done; how texts, concepts and subjects can be put to work, made to do new things, make new linkages" (Grosz, 1994, p. 200).

The subversion of Platonism that this mode of questioning strives for is essential for any theorisation of uncertainty that is committed to respecting uncertainty *as* uncertain. Indeed, such a project would be impossible if the Platonic notion of representation were retained. If uncertainty were attributed to an essentially elusive *interiority*, a paralysis would result from a principled refusal to violate that inner elusiveness through identification. No exploration would be possible. Any attempts would be thwarted from the outset, causing uncertainty to become inscrutable at the very least, possibly even sacrosanct. However, locating identity as an outwardly oriented, dynamic and fluid process perpetually frustrates totalisation. This enables explorations that respect uncertainty *as* uncertain whilst avoiding inscrutability and/or idolatry. The anti-Platonic theory of thought formulated by Deleuze and Guattari enables the possibility of this research project.

Theories of thought are not confined by disciplinary boundaries; only the willingness or unwillingness of practitioners to engage them limits their reach. Therefore, Deleuze and Guattari's rhizomatics is not confined to philosophy, which Massumi notes in the Translator's Foreword to *A Thousand Plateaus*:

> the reader is invited to lift a dynamism out of the book entirely, and incarnate it in a foreign medium, whether it be painting or politics. The authors steal from other disciplines with glee but they are more than happy to return the favor. (Massumi, 1987, p. xv)

However, the transdisciplinary potential of theories of thought does not imply that they can or ought to be mobilised indiscriminately. Notwithstanding the assertion that Deleuze and Guattari's disruption of Platonic identification enables the possibility of respecting uncertainty *as* uncertain, it is necessary to discern and assess the conjunctions and disjunctions between Deleuze and Guattari's presuppositions and central concepts, and projects designated as environmental education. This requires a closer reading of *A Thousand Plateaus*, especially in relation to the notions of rhizomatics and Bodies without Organs. At this preliminary stage, these two notions appear to be of strategic value to the topic of uncertainty and the field of environmental education, respectively. Readings of these two notions are presented below, which enables a mapping of conjunctions and disjunctions between Deleuze and Guattari's project and environmental education.

RHIZOMATICS

Deleuze and Guattari introduce rhizomatics as a new image of thought that challenges and disturbs the representational/identitarian thought that has dominated Western metaphysics since Plato. They juxtapose the metaphor of a rhizome to the metaphor of the tree, which occupies an intensely symbolic position in both Western religious and secular thought. In addition to its charismatic influence in Western religion, it "dominates our descriptions of everything from the structural theories of linguistics to the design of economic models and international telephone systems" (Mansfield, 2000, p. 140).

The communicative power of the tree metaphor is both visual and semantic and it dramatically symbolises the assumptions and investments enshrined in representational/identitarian thought by drawing upon both of these

communicative modes. The tree metaphor most strikingly symbolises unity. This 'apparent' unity is cultivated and sustained by the imposition of a hierarchical order that rests upon preordained differences. Thus, disparate elements are drawn together and arranged into a unified branching network. The movement of thought is cast as being continuous and travelling upon preset paths. Furthermore, these preset paths ultimately lead to points of termination. Thus, notions of closure and totalisation are cast as the 'natural' or 'self-evident' corollaries of unity and these notions may be deployed variously to support teleology, eschatology and determinism. Knowledge has been fixed since time immemorial and the exercise of thought enables a *tracing* of that which is inscribed in the tree.

The rhizome image of thought also draws upon visual and semantic modes of communication. Botanically speaking a rhizome is a subterranean stem that extends in every direction forming an intertwined network in which upward growth may occur at any node. Thus, the rhizome criss-crosses a flat plane; there is no organisational centre; no section can be designated as foundational. Indeed, the notion of foundationalism loses all efficacy; the rhizome "has neither beginning nor end, but always a middle [*milieu*] from which it grows and overspills" (Deleuze & Guattari, 1980/1987, p. 21). Furthermore, rhizomes may rupture at any point, which leads to innumerable de-territorialisations and re-territorialisations. The rhizome, then, is neither continuous nor stable, which perpetually frustrates totalisation and nullifies any notions of closure.

From this it follows that rhizomatic knowledge is (a) *mapping*, which Deleuze and Guattari describe as 'performance'. This knowledge as performance has an unsettling effect that cannot be brought to rest. Performance simultaneously casts knowledge as an action to be performed and a spectacle to be observed, which defies the resolution of subject and object. The actor and the act are indistinguishable, yet both are indispensable. This contrasts with the *tracing* yielded by arborescent thinking, which Deleuze and Guattari describe as 'competence'. There is no unsettling effect here; competence involves mastery by a subject of a clearly delineable and predetermined object.

A rhizomatic performance, then, does not follow the hierarchically ordered, preset paths that the tree-root metaphor both symbolises and prescribes. Instead, connections may be made, and broken, in any direction creating resonances and intensities between seemingly disparate elements. This simplistic opposition, however, is a naïve misreading of Deleuze and Guattari. They do not cast the rhizome metaphor in complete opposition to the tree-root metaphor, as this would ratify the dichotomising logic that they strive to subvert. Instead of formulating yet another binarism that carves a stable and autonomous whole into stable, autonomous sub-units, relations exist between the two metaphors, making their opposition partial: "There are knots of arborescence in rhizomes, and rhizomatic offshoots in roots" (Deleuze & Guattari, 1980/1987, p. 20). The absence of a complete and irreconcilable division into autonomous entities does not conform to the semantic code that the tree-root framework prefigures. This non-conformity results in the appearance of a 'flawed' binarism in which partial oppositions appear paradoxical and the semantically troublesome binarism is classified as both a contradiction and fallacy. As a result, dichotomising logic dictates that re(de)finement is necessary to restore stability and reveal the truth.

No amount of re(de)finement can or is required to reconcile the incontrovertible contradiction between the aforementioned quotation and Deleuze and Guattari's contention that the rhizome can uproot the tree. This contention casts the tree-root and rhizome metaphors as mutually exclusive. They are mutually exclusive *and* each inhabits the other. This is clearly a contradiction of binary logic, but it not is a contradiction that a critic might 'expose' as a weakness in Deleuze and Guattari's formulation. Instead, it is an entirely necessary contradiction; it is a constitutive instability.

This constitutive instability is the manoeuvre through which Deleuze and Guattari overturn [*renverser*] Platonism. To overturn is not to abolish or eradicate; nor are abolition and eradication unattainable ideals to be pursued despite some impossibility. To overturn the binary logic of Platonism it is necessary to subvert the either/or operation. Only the installation of either/and logic can achieve this

subversion. The complete and irreversible dissociation effected by the abolition or eradication of Platonism would unswervingly uphold the either/or logic that Deleuze and Guattari strive to subvert. In order to overturn Platonism, then, it is imperative to displace rather than replace binary logic. The dualisms of Platonism are "an entirely necessary enemy, the furniture we are forever rearranging" (Deleuze & Guattari, 1980/1987, p. 21).

The tree's sway

> The tree of life was also in the midst of the garden, and the tree of the knowledge of good and evil. Genesis, 2:9

> but of the tree of knowledge of good and evil, you shall not eat, for in the day that you eat of it you shall surely die. Genesis, 2:17

Current commentators (Alvermann, 2000; Braidotti, 1994b; Grosz, 1994; Lather, 2000) highlight the images of connectedness, orderliness, linearity and totality that the tree metaphor evokes and the influence that these motifs have exerted in shaping Western philosophy. Without detracting from these commentaries, I wish to suggest that that the sway of the tree metaphor is greater than these commentators suggest. Specifically, these commentators overlook the powerful and abiding explanatory and instructive roles of the biblical figurations of the tree of life and the tree of knowledge. I will argue that the power of these biblical figurations not only flows freely through contemporary environmental education, but that these figurations create the conditions of possibility for environmental education and legitimate its existence.

The tree of life and the tree of knowledge, which are separate and forbidden in *Genesis* 2:9, are interwoven in *Proverbs* 3:13-18. After partaking of the forbidden fruit of the tree of knowledge and acquiring the hitherto divine ability to discern good and evil, a series of transformations occur. Firstly, knowledge *per se* is posited as good, the pursuit of knowledge is cast as a virtue, and a knowledgeable person becomes virtuous and is rewarded with honour. In the second transformation, the

tree of knowledge becomes "the tree of life for those who take hold of her. And happy *are all* who retain her" *Proverbs* 3:18 (emphasis in The New King James Version). Finally, for the purpose of this argument, knowledge becomes truth, truth is righteous and speaking the truth declares righteousness.

The biblical figurations of the tree of life and the tree of knowledge symbolise the grace of God which enables the attainment of virtues such as righteousness and honour, and states of flourishing such as peace and happiness. These figurations have exerted powerful influences beyond Judeo-Christian thought. Whilst the relation between God and knowledge is severed in Western secular thought, the rewards of God's grace are retained, but they are attributed to reason and knowledge instead. For example, the freedom prized by secular liberalists and even the emancipation prized by Marxists bear the grain of the trees of life and knowledge. Thus the tree metaphor symbolises much more than the relatively impassive qualities of knowledge such as connectedness, orderliness and linearity, which are highly but dispassionately valued. It also symbolises emotively charged qualities attributed to knowledge that are highly prized, passionately guarded and fiercely defended. Commentaries to date notice the rationalism and allied isms enshrined in the tree metaphor; but the tree accommodates both poles of the rational/emotional binary, which strengthens its endurance to withstand onslaught.

The current commentators of the tree metaphor (Alvermann, 2000; Braidotti, 1994b; Grosz, 1994; Lather, 2000) accentuate that the root metaphor symbolises the philosophical qualities of connectedness, orderliness, linearity and totality, and psychoanalytical formulations of the unconscious as per Freud and Lacan. Again, without detracting from these commentaries, I wish to suggest that the root metaphor is also steeped with figurative meanings of biblical origin. For example, *Proverbs* 2:22 teaches that the wicked will be severed from the root and that the unfaithful will be uprooted, causing both to famish. Thus the integrity of the root is preserved since "the root of the righteous cannot be moved" *Proverbs* 12:3 and "the root of the righteous yields fruit" *Proverbs* 12:12 and that fruit is truth.

Current commentaries notice how the tree and root metaphors symbolise the properties of knowledge. This aspect of the metaphor highlights epistemology, which is hardly surprising given that the tree-root metaphor is being used to image thought and knowledge. But the biblical figurations of the tree and root metaphors draw an entirely different aspect into view. Rather than focusing on the properties of knowledge, they highlight the moral virtues and states of flourishing gained through the acquisition of knowledge. Thus, the biblical figurations draw the field of virtue ethics into view. Put simply, virtue ethics may be distinguished from other systems of ethics in that it focuses on virtues that are intimately connected, teleologically, divinely, or deterministically, to states of human flourishing; whereas other systems of ethics focus variously on what is obligatory, permissible or wrong (Slote, 1997).

The tree-root metaphor is deeply symbolic in religious thought, secular ethics and epistemology. Current commentators notice that the tree-root metaphor is ingrained in orthodox epistemology and note the strength that this lends to the metaphor's endurance in secular thought. However, the might of the tree-root metaphor in secular thought is greater than current theorising suggests. The entrenchment of the metaphor in secular ethics increases the tree's sway, not only into the philosophy of ethics, but into any field that upholds virtue-based ethics.

Theorising in environmental education thoroughly supports the secularisation of the biblical figurations of the tree-root metaphor through its endorsement of virtue ethics. Both this endorsement and the trace that it bears are unrecognised in environmental education literature, but the centrality and importance ascribed to secularised virtues and the conviction that these virtues are intimately connected to states of flourishing are indisputable as the following quotation demonstrates.

> How do we create truly sustainable, ecologically sound, resilient and healthy systems and societies? If education is for anything, it has to be reoriented for this. We need to re-vision environmental

> education, indeed all education, so that today's young people – let alone tomorrow's – are socially and environmentally aware, self-reliant, critical, creative, confident, flexible, deeply empathetic to themselves, others and the environment, and empowered through appropriate skills, knowledge and values to create a better, greener, gentler and self sustaining world. (Sterling, 1993, pp. 95-96)

The cardinal virtues of prudence (practical wisdom), courage, temperance, and justice motivate environmental education and when coupled to the notion of states of flourishing they collectively constitute both its global aim and justification. The cardinal virtues, however, are known by different names. They have been rewritten and dispersed into critical thinking, eco-agency, eco-conscience and precaution in action, and eco-justice, respectively. Competing groups within environmental education, then, advocate various combinations of these virtues as providing the pathway to the ultimate state of flourishing – environmental sustainability. Whilst there is neither agreement regarding the nature of these virtues nor how they ought to be pedagogically cultivated, they are nevertheless deeply valued and fiercely defended. Indeed, commitment to these virtues and faith that they are necessary for ecological flourishing/sustainability delineate the contemporary field of environmental education.

Given that environmental education wholly supports the figuration of the tree, although this support is unrecognised, it would seem unlikely that the rhizomatic subversion of the tree figuration would find support within environmental education. But this is not the case. On the contrary, many within environmental education regard the dominant mode of thought as being deeply implicated in the environmental crisis and they emphasise the necessity and urgency for new modes of thought (Robottom & Hart, 1993). The figuration of the tree, then, is simultaneously upheld and challenged in environmental education. This will be explored further in the section on the conjunctions and disjunctions between Deleuze and Guattari's project and environmental education. However, a reading of Deleuze and Guattari's notion of Bodies without Organs will precede the

section on conjunctions and disjunctions. Like rhizomatics, the notion of Bodies without Organs draws previously unseen ambiguities into relief.

BODIES WITHOUT ORGANS

Deleuze and Guattari borrow the phrase 'Bodies without Organs' (BwO) to designate the limit of extroversion that inevitably follows from locating identity in *outward* connections as opposed to *inner* connections. The phrase is provocative and at first glance it may seem utterly inimical to environmental education. However, a closer reading of Deleuze and Guattari's designation of Bodies without Organs suggests that it may be of great strategic importance. Before exploring this possible strategic importance, however, it seems prudent to confront two potential misreadings of the phrase 'Bodies without Organs' that have the potential to prejudice environmental education against Deleuze and Guattari's philosophy.

The first of these misreadings implicates Deleuze and Guattari's thought with a repudiation of scientific knowledge. This would be a damaging misreading since environmental education relies upon scientific knowledge to justify the promotion of pro-environmental behaviours and policies. Secondly, Deleuze and Guattari's rendition of Bodies without Organs could be misread as a devaluation of corporeality as per Descartes' formulation of mind-body dualism. This would be a damaging misreading since environmental education regards Cartesian thought as being deeply implicated in the environmental crisis precisely due to its devaluation of corporeality.

In response to the first possible misreading, Deleuze and Guattari do not repudiate scientific knowledge. The phrase 'Body without Organs' is not opposed to anatomy or any other branch of science. Deleuze and Guattari do not deny that higher-order, biological organisms possess organs, nor do they deny that the functions of these organs are necessary for life. They distance themselves from such a misreading openly and often: "the BwO is not at all the opposite of organs. The organs are not its enemies" (Deleuze & Guattari, 1980/1987, p. 158). Instead

of repudiating scientific knowledge, they deploy the phrase 'Bodies without Organs' to repudiate the Platonic notion that identity is grounded in internal structure and the isolation that this introversion enforces: "Bodies are not defined by their genus or species, by their organs and functions, but by what they can do, by the affects of which they are capable – in passion as well as action" (Deleuze & Parnet, 1977/1987, p. 60). Identity is ecological.

A biological Body without Organs *definitely has* organs, but Deleuze and Guattari contend that these organs are irrelevant to identity. This is a blunt simplification, but it is provides an effective means to approach the second possible misreading of Deleuze and Guattari, which aligns their thought with that of Descartes. The contention that organs are irrelevant to identity does not devalue corporeality; it simply locates identity in sociality. This is not at all the same as Descartes' contention that: "it is certain that I am really distinct from my body and that I can exist without it" (1641/1998, p. 62). This non-coincidence arises from at least two key differences between Descartes and the Deleuzian project. Firstly, Descartes arrived at this claim by imagining the most extreme isolation in order to avoid being deceived: "I convinced myself that there is nothing at all in the world" (1641/1998, p. 23), whereas Deleuze and Guattari imagine limitless relationality. Secondly, the 'I' to which Descartes refers is the human soul, whereas Deleuze and Guattari utterly reject the notion of a psychic interior and appeals to transcendent, extra-natural essences. Furthermore, they consider the notion of identity well beyond the human realm. Thus, engaging with the philosophy of Deleuze and Guattari cannot be construed as an acceptance of Descartes' mind-body dualism or a devaluation of corporeality. Rather, engaging with Deleuze and Guattari constitutes an utter rejection of both of these elements of Cartesian thought. This is an important philosophical consideration for environmental education theorising given that Cartesian thought is vilified as being deeply implicated in the environmental crisis.

Repudiating each of these misreadings does not automatically align Deleuze and Guattari with environmental education theorising by default. Rather it

indicates that there is no reason to foreclose further inquiry on the basis of these possible misreadings. From here, it is necessary to ascertain and discern conjunctions and disjunctions between Deleuze and Guattari, and environmental education. This does not lead to a simple, reductionist reckoning of pros and cons. As Grosz notes (1994, p. 197): "not only are there possible conjunctions and interactions, but also possible points of disjunction, of disruption, and of mutual questioning that may prove as fruitful as any set of alignments or coalition of interests". The following section attempts to chart the conjunctions and disjunctions between Deleuze and Guattari, environmental education and this particular research project into uncertainty.

CONJUNCTIONS AND DISJUNCTIONS

Much of the environmental education theorising in Australia (Fien, 1993; Gough, 1994a, 1998d; Robottom & Hart, 1993), England (Huckle, 1993, 1996, 1999; Sterling, 1993, 1996) and Canada (Hart, 1993; Selby, 1999) can be read as a sustained challenge to Platonism; although Platonism is rarely, if ever, named. Instead, the challenge to Platonism is channelled through attacks on positivism, postpositivism, behaviourism and their translation into education. Whilst none of these movements or their translations into education can be equated with Platonism *per se*, it is the Platonic elements within these movements that are the targets of attack. The arguments in environmental education trace these elements back to Galileo, Descartes, Bacon and Newton without not(ic)ing that these prominent Enlightenment figures instigated a whole-scale revival of Platonism couched in the language of modern science. The counter-Enlightenment discourse in environmental education is simultaneously a counter-Platonism discourse.

Deleuze and Guattari strive to overturn Platonism and the counter-Enlightenment discourse in environmental education is engaged in a sustained challenge of Platonism. Each strives to diverge from Platonism, but this does not constitute a partnership. A partnership would require a common conception of

'overturning Platonism' at the very least and this is not the case here. Deleuze and Guattari overturn Platonism through displacement, yet many in environmental education desire the (impossible) death of Platonism (Fien, 1993; Hart, 1993; Huckle, 1993, 1996, 1999; Robottom & Hart, 1993). Thus, Deleuze and Guattari, and environmental education do not travel in tandem, but this does not preclude encounters along the way.

Concepts may migrate when such encounters occur, but this does not result in routine transactions that can be tallied in a ledger of concepts. Such a ledger would require concepts to be discrete, contained within their contours. A Platonic ledger would be required and this is thoroughly inadequate to mark the transaction of concepts as per Deleuze and Guattari. This inadequacy arises from Deleuze and Guattari's formulation of a concept in terms of its capacity to transform the field into which it enters. The concept is not marked by its content, but by its capacity to affect, to de-territorialise and re-territorialise zones of discernability. The sceptic may object at this juncture and point out that concepts in Platonic form can reconfigure zones of discernability and that they have often done so spectacularly. This is undeniable, but the distinction here is that in Platonism the concept is logically prior to and therefore separable from the transformation, which is secondary and derivative. Deleuze and Guattari deny the division between the concept and its subject. Thus, this assessment of the conjunctions and disjunctions must focus on the dynamism that Deleuze and Guattari's concepts can exert *within* environmental education, rather than seek conjunctions and disjunctions *between* Deleuze and Guattari, and environmental education. It is a matter of comparing how Deleuze and Guattari's concepts transform environmental education (mapping) with what has already been laid out within the field (tracing). Although an exception to this approach is made in relation to Deleuze and Guattari's repudiation of ideology, which would suggest that there could be no more than a momentary encounter of repulsion between critical strands of environmental education, and Deleuze and Guattari. This will be addressed next in order to dispel any notion that such an encounter would be

fleeting, thereby enabling the remaining discussion to traverse all the major movements within environmental education.

Deleuze and Guattari displace binary logic rather than seek its eradication. They both construct and dismantle binarisms, "invok[ing] one dualism only in order to challenge another" (1980/1987, p. 20). In this way they challenge the 'juridical' dualism (Gatens, 2000) that opposes a plane of immanence (experience) to a plane of transcendence (principle). They collapse this dualism by embedding the plane of transcendence within the plane of immanence. Thus, Deleuze and Guattari utterly repudiate ideology: "There is no ideology and never has been" (1980/1987, p.4).

At first glance this repudiation of ideology would appear to proscribe any engagement with Deleuze and Guattari by those who endorse critical theory within environmental education, given that supporters of critical curriculum theory assert that ideological critique is an indispensable element of environmental education. (Fien, 1993; Huckle, 1993). Further, some of these critical theorists (Fien, 1993; Huckle, 1993, 1999) actively promote the integration of the ecosocialist ideology into the curriculum. Yet Deleuze and Guattari's repudiation of ideology turns on their denial of transcendence. They insist that "it is on the plane of immanence that the other arises, working to block movements, fix affects and, organize forms and subjects" (Deleuze & Parnet, 1977/1987, p. 133). Given that environmental education appeals to the power of ideologies to block movements, fix affects and, organise forms and subjects in ways that result in either pro- or anti-environmental behaviours, any opposition to Deleuze and Guattari's repudiation of ideology would be an affirmation of transcendence. This seems to be a most unlikely scenario given that environmental education contends that dichotomising logic is deeply implicated in the environmental crisis due to the pernicious effects that it has on environmental behaviour. Thus, advocates of critical theory in environmental education need not disalign themselves from Deleuze and Guattari on the basis of the latter's repudiation of ideology.

The proponents of ideological critique in environmental education (Fien, 1993; Fien & Trainer, 1993a; Huckle, 1993, 1996, 1999; Robottom & Hart, 1993) justify their position, in part, on the basis that "environmental problems are a result of our world view of who we are, and efforts to rectify environmental problems require fundamental change in our view of the reality of our existence" (Robottom & Hart, 1993, p. 29). Other groups in environmental education, such as those that advocate more holistic approaches (Sterling, 1993), similarly defend the view that a new mode of thinking about (the) world and individuation is an imperative in environmental education. Identity is at stake here.

Rethinking our view of reality changes our existence, as Gatens notes in her reading of Deleuze and Guattari through Spinoza: "to think differently is, by definition, to exist differently: one's power of thinking is inseparable from one's power of being and vice versa" (Gatens, 2000, p. 63). It follows, then, that if the Platonic mode of thought is displaced by rhizomatic thought, identity is *radically* altered. It is not that rhizomatics merely provides an alternative description of a stable referent. Instead, identity is transformed: "TO BE IS TO CONNECT" (Søby, 1999, p. 93, Søby's emphasis). Indeed, this transformation is so great that the term 'identity' must be abandoned and 'the body' or 'Body without Organs' must be used instead. When the body is viewed in this manner, immediate links proliferate between key themes/issues in environmental education that are regarded as discrete insomuch as the relations between are seen to be derivative.

Rethinking the body as a rhizomatic construction wholly supports environmental education's motif of interdependence and extends it to heights and complexities that have not been engaged in environmental education, except through Gough's work (1993, 1994b, 1995, 1996). Thinking of the body as a complex that is constructed by forging rhizomatic connections on the plane of immanence embeds the natural, social and symbolic domains (in) the body itself. The interconnectedness of these domains is emphasised in environmental education, but not to this degree. This degree of connectedness, however, can both assist and unsettle environmental education.

Embedding the natural, social and symbolic (in) the body itself assists environmental education to oppose the dualisms that it holds as being deeply implicated in environmental problems. The opposition to these dualisms has, hitherto, placed environmental education in a double bind. Whilst environmental education sought to undermine these dualisms through its insistence that the natural, social and symbolic domains are interconnected, it maintained that these dualisms *affected* the body rather than *constituted* the body. This creates a 'distance' between the domains that enables transcendence to be upheld and it is precisely this transcendence that environmental education has sought to dismantle. Thus, the plane of immanence offers environmental education a line of flight out of the double bind that it has otherwise been unable to escape. This line of flight, however, is not created by the eradication of the dualisms. As noted in an earlier section, Deleuze and Guattari do not dialectically supplant dualisms as this would ratify rather than displace Platonism. The dualisms remain as textual elements that require ongoing negotiation. Deleuze and Parnet explain that:

> [The dualisms are] very much a part of language. ... we must pass through dualisms. ... it's not a case of getting rid of them, but we must fight, invent stammering, not to get back to a prelinguistic pseudo-reality, but to trace a vocal or written line which will make language flow between these dualisms. (Deleuze & Parnet, 1977/1987, p. 34)

The plane of immanence also offers challenges to environmental education. The construction of the body across the ontological boundaries that transcendence configured renounces the ontological purity that deep green environmental education theorists, such as Van Matre (1979), ascribe to the earth and nature. The challenges that arise from the crossing of ontological boundaries are not confined only to deep green strands of environmental education, however. The challenges traverse the whole field, for example, by creating the conditions for embedding technology in the definition of the body. Rhizomes create cyborgs, constructions that fuse technology with the organic, thereby,

transgressing ontological boundaries and threatening to dismantle discursive systems of exclusion, opposition and heirarchisation that are built upon such ontological boundaries.

Recasting identity through the fusion of technology and the organic poses a challenge to environmental education, given that environmental education adopts an uneasy posture toward technology. This relationship arises from the conviction that whilst technological intervention may provide an effective solution to specific environmental problems, the use of such technological interventions is merely palliative because it fails to redress the prevailing cultural, political and economic milieux that created the conditions for the problems to arise. Furthermore, environmental education advocates the adoption of a critical suspicion toward technological interventions in order to ascertain whether green opportunism is at play. The promotion of nuclear power as a means to eliminate the problem of acid rain resulting from coal burning power stations is an example of such green opportunism (Fien & Trainer, 1993b). Environmental education utterly opposes locating technology in a salvation narrative in which the 'happy ever after' is just 'business as usual'.

Other challenges to the inclusion of cyborgs in environmental education discourse may be drawn from the reservations expressed by feminist theorists, including Cuomo (1998) and Plumwood (1998). These reservations stem, in part, from the fact that technology is spawned from "the history of Western thought that perpetuated, rationalized, and legitimated the erasure of women and women's contributions from cultural, sexual, and theoretical life" (Grosz, 1994, p. 190). Thus, whilst cyborgs transgress the boundary between the mechanic and the organic, an uncritical embrace of cyborgs may inadvertently lend support to phallocentrism. This may underpin one of the difficulties that Gough has encountered (1995) when deploying cyborgs as a textual strategy in curriculum inquiry:

> One persistent difficulty that arises from manifesting cyborgs in the curriculum is the tendency for some popular stereotypical images of cyborgs (including most of the Arnold Schwartzenegger look alikes and their characteristically violent behaviours) to be appropriated as ideological legitimators by both conservative humanists and naïve technophiles. (Gough, 1995, p. 77)

However, Gough has found deconstruction of the machineries of texts to be an effective means to confront the stereotypical images of cyborgs. This approach also provides a means to interrogate, respond to, accept responsibility for, and contest phallocentrism. Thus, taking up Gough's conviction that "we need not only to manifest cyborgs in curriculum inquiry but also to proliferate them" (Gough, 1995, p. 80) offers environmental education a productive means of interrogating technological intervention into environmental problems.

Deconstructing the phallocentrism inscribed in stereotypical representations of cyborgs is clearly an ethical and political act. This ethico-political dimension, however, is not unique to the topic of cyborgs or to the practice of deconstruction. Imaging the body as a rhizomatic construction casts the construction of a Body without Organs as an ethico-political act. Deleuze and Guattari emphasise the political aspect of constructing Bodies without Organs, but the ethical aspect is less pronounced. Perhaps one of the clearest references to the ethical aspect of constructing Bodies without Organs can be found in a rhetorical question posed by Deleuze and Guattari: should we "love, honour, and serve degeneracy wherever it surfaces" (Deleuze & Guattari, 1980/1987, p. 152)? They reply that "we must define what comes to pass and what does not come to pass" (1980/1987, p. 152). Thus, forging the connections that constitute a Body without Organs is a selective process; we can exercise choice in the formation of environmental subjectivities, policies and practices, institutions and communities. Thus, Deleuze and Guattari's figuration of Bodies without Organs offers a means of affirming and interrogating environmental education's commitment to environmental values education and political literacy. Furthermore, the

contention that 'we must define what comes to pass and what does not come to pass' can be read as affirming the direct teaching of particular values as per Fien (1993), and Deleuze and Guattari's warning against the dangers of 'microfascism' can be read as being parallel to environmental education's response to the risk of indoctrination.

Notwithstanding this support, there are significant differences in the theorisation of ethico-political action between Deleuze and Guattari, and environmental education. Firstly, Deleuze and Guattari's sustained rejection of transcendence precludes appeals to transcendent values systems. Thus, whilst Deleuze and Guattari can be read as an affirmation of the direct teaching of environmental values as per Fien's (1993, 1997a) formulation of critical education *for* the environment, they would reject his appeal to ecosocialist *ideology* because of its link to transcendence. Secondly, whilst Deleuze and Guattari would insist that ecosocialist values are embedded in the plane of immanence, they would reject the notion that ecosocialist values hold *the* key to environmentally sustainable behaviour. This rejection turns on their denial that good and bad are immutable, given that immutability could be achieved only through transcendence. Thus, Deleuze and Guattari assert that "good and bad are only the products of an active and temporary selection, which must be renewed" (Deleuze & Guattari, 1980/1987, p. 10). Thirdly, whilst Deleuze and Guattari emphasise interconnectedness on the plane of immanence, they join with Lucretius in their rejection of totality: "Nature is indeed a sum, but not a whole" (Deleuze, 1969/1990, p. 266-267). Deleuze and Guattari arrive at this position by arguing that it is impossible to totalise a process of becoming, unless one accepts a notion of eschatology, which they do not. Thus, they would oppose the promotion of a holistic philosophy that is spreading throughout otherwise competing strands of environmental education (Fien & Trainer, 1993b; Selby, 1999; Sterling, 1993).

The purpose of this section thus far has been to sketch the dynamism that Deleuze and Guattari's figurations might exert in environmental education; that is to discern how existing themes in environmental education might be further

mobilised and to explore new linkages that might develop. It has been argued that key themes and issues in environmental education are linked directly, rather than derivatively, through the figurations of the rhizome and Bodies without Organs acting within the plane of immanence. Not only are these key themes and issues, such as interdependence, environmental values education and political literacy education, affirmed and extended, they are seriously shaken as ambiguities and silences are drawn into relief. Thus, rhizomatics has a decidedly deconstructive aspect. The disruptions that occur as a result of this deconstructive aspect of rhizomatics are productive; they open up spaces that enable further lines of flight to occur. These 'secondary' lines of flight have not been pursued here as they quickly travel beyond the scope of this section.

In addition to providing an alternative and strategically generative mode of thinking that affirms, deconstructs, and extends key environmental education themes, rhizomatics enables this project to theorise uncertainty in a non-violent manner. To recapitulate briefly, rhizomatic thought makes it possible to theorise uncertainty in a manner that respects uncertainty *as* uncertain. This is possible because rhizomatics displaces the Platonic mode of individuation. Instead of deploying the reductive processes of limitative distribution and heirarchisation, the individuation of a concept (a text, a person or an institution) relies upon the connections that can be forged. In other words, rhizomatic thought "does not immure itself in the edifice of an ordered interiority; it moves freely in an element of exteriority" (Massumi, 1987, p. xii). Relinquishing the notion that identity is a stable enclosed interiority frustrates totalisation, which would render uncertainty certain. Eco's incisive description of the rhizome, tendered in an interview with Rosso, succinctly accounts for the impossibility of totalisation and the possibility of this project to respect uncertainty *as* uncertain: the rhizome "is structurable but never definitely structured" (Rosso & Eco, 1991, p. 248).

Cartography

Deleuze and Guattari's figuration of the rhizome is an image of thought *and* a research method. Various terms are used when the figuration refers to method: cartography, rhizoanalysis, nomadism, schizoanalysis, and micropolitics. The term 'cartography' will be used throughout this project, although alternative terms will appear in quotations and these alternative terms will be used in discussions around the quotations.

Cartography involves three distinct processes: mapping, tracing and decalcomania. Mapping and tracing are metaphors for rhizomatic and arborescent methods of constructing knowledge, respectively. Mapping, then, refers to forging "connections between fields, the removal of blockages on bodies without organs, the maximum opening of bodies without organs onto a plane of consistency" (Deleuze & Guattari, 1980/1987, p. 12), whereas tracing refers to proceeding along the preset paths that the arborescent method of knowledge dictates. Deleuze and Guattari refer to the latter as the "oldest and weariest kind of thought" (1980/1987, p.5), but this in no way constitutes a denial of the rigour and expertise that may be required to generate and understand arborescent knowledge Instead, their opposition to tracing is based upon the opportunities that the arborescent method forecloses.

Cartography, however, employs both modes of thought. This is entirely consistent with Deleuze and Guattari's insistence that any manoeuvre to supplant the Platonic mode of thought unwittingly ensures its continuation. They displace the sovereignty of the Platonic mode of thought by drawing it into an asymmetrical partnership with rhizomatics. Both mapping and tracing are indispensable to cartography, but tracing is subordinate to mapping. After maps and tracings have been constructed, the tracing is put back over the map. This is the third phase of cartography, decalcomania. Laying the tracing over the map draws lines of flight and blockages into relief. This sets the stage for the generation of new knowledge rather than producing a movement toward

"something that comes ready-made" (Deleuze & Guattari, 1980/1987, p. 12). New knowledge may be produced by following lines of flight, removing blockages, or by grafting rhizomatic pathways to arborescent pathways so as to "put them to strange new uses" (Deleuze & Guattari, 1980/1987, p. 14).

Yet the generation of new knowledge is not the only possible outcome when a tracing is placed over a map. A power takeover can result in the deformation of a map so that it conforms to a tracing. Nuyen's critique of the modernist version of tolerance, which is grounded in arborescent logic, is helpful in explaining this power takeover.

> Given the nature of reason, that is its intolerance to what eludes its rule, we are in fact encouraged to be intolerant towards the unreasonable, even the nonreasonable. Reason masks this contradiction by assuring us that what it cuts out is of no consequence. (Nuyen, 1997, p. 5)

Deleuze and Guattari recognise the powerful but de facto normalising function that reason, as per the Platonic *tradition*, exerts. In this case, reason encourages us to equate lines of flight with flights of fantasy. Deleuze (with Parnett) strenuously repudiates this pejorative association by stating that: "The great and only error [lies] in thinking that a line of flight consists in fleeing from life; the flight into the imaginary, or into art. On the contrary, to flee is to produce the real, to create life, to find a weapon" (Deleuze & Parnet, 1977/1987, p.46).

Whilst Deleuze and Guattari oppose the blockage of lines of flight by Platonic oppression, which deforms maps into conformity with tracings, they do not advocate the abandonment of restraint in following lines of flight. As noted in the previous section, they emphasise the role of ethics in deciding whether to remove blockages. Forging connections in mapping is not a matter of chance; connections are selected. Therefore, map making is not a lawless enterprise, but it does not submit to Platonic law.

The three separate stages of cartography are clearly delineated in this thesis. The following chapter traces the existing engagements with uncertainty in environmental education. Chapters Four, Five and Six are the mapping chapters in which new spaces and ways of engaging uncertainty are opened up. Finally, Chapter Seven enacts the last phase of cartography, decalcomania. There are two aspects to decalcomania and both are performed: firstly, the tracing is placed over the maps to identify blockages and discern silences that constrain current theorising of uncertainty in environmental education; and secondly, the maps are 'plugged into' the tracing to see what effects are induced in order develop new understandings of how environmental education can engage uncertainty.

CONCLUSION

Deleuze and Guattari's figuration of the rhizome, which is both a metaphor for the landscape of thought and a method, enables this project to theorise uncertainty in a manner that respects uncertainty *as* uncertain. This seemingly tautological aim is possible because concepts in Deleuze and Guattari's rhizomatic logic are individuated by outwardly oriented, dynamic and fluid connections. Thus, rhizomatic logic avoids the violence of totalisation, which in this instance would render uncertainty certain. This *avoidance* is essential. Rhizomatic logic does not abolish totalisation or the Platonic logic to which it belongs. Rather, it displaces totalisation and Platonic logic. If rhizomatics were to abolish Platonic logic rather than avoid it, then rhizomatic logic would have upheld the dichotomising logic that it sought to disrupt.

Despite the agreement between the aim of this project and rhizomatics, it cannot be assumed that rhizomatics, or any other logic, can be indiscriminately transferred from one context to another. It was necessary to discern and assess the conjunctions and disjunctions between projects designated as environmental education and rhizomatics. This exploration argued that Deleuze and Guattari's rhizomatics affirms, deconstructs, and extends key environmental education themes such as interdependence, environmental values education and political

literacy education. Moreover, leading environmental education theorists have argued that a new mode of thinking about (the) world and individuation is imperative. Specifically, they defend the view that: to think differently, is to exist differently (Robottom, 1993; Selby, 1999;Sterling, 1993). The conjunctions and disjunctions identified between environmental education and rhizomatics suggest that rhizomatic logic may provide a means to thinking and existing in a more environmentally sustainable way.

CONCLUSION

The changing methodological (dis)positions and methods pursued throughout this project mark transformations that occurred as this project unfolded. Periods of stability were disrupted by abrupt changes in direction; philosophical framings changed, which resulted in concomitant changes in foci, scope and tenor. The first method to be explored, constructive consonance, has the capacity to enrich philosophical criticism in environmental education, especially for those who uphold the notion of mediating modernism and postmodernism, a stance that often goes by the name of 'reconstructive postmodernism'.

Constructive consonance and environmental education share many philosophical assumptions and Drees' notion of an 'eschatology of the present' resonates with environmental education's overt ethico-political agenda. However, whilst constructive consonance rigorously examines the nature and function of truth, the notion of truth has received little other than incidental coverage in environmental education. Therefore, engaging constructive consonance challenges environmental education to elevate notions of truth to the level of discourse, thereby making its status and role more visible to analysis. This would enhance contemporary debates in environmental education because the various arguments presented in these debates uphold different theories of truth, although the implication of theories of truth is invariably tacit.

Constructive consonance was not chosen as the research method for this project, however, because of its support for the notion of origin and because of

the unproblematic stance that it adopts toward the constitutive role of language, especially with respect to the construction of subjectivity. As a result, the philosophical framing of this project shifted from a mediated version of postmodernism to poststructuralism, which critiques the notion of origin and accentuates the constitutive role of language. This accentuation is imperative for this project given that uncertainty is minimally predicated as a quality of propositions. Furthermore, the poststructuralist contention that language plays a constitutive role in the construction of subjectivity opens up subjectivity as a site to explore and theorise the play of uncertainty. The philosophical shift to poststructuralism concomitantly reshaped the aim from a general exploration of uncertainty to a commitment to respect uncertainty *as* uncertain. This shift resulted from the poststructuralist commitment to guard against the violence of totalising thought.

Deleuze and Guattari's rhizomatics, which is both a metaphor for the landscape of thought and also a method, was finally chosen as the epistemology and method for this project. The displacement of Platonism that rhizomatics effects enables a positive and non-violent theorisation of uncertainty. The term 'positive' is taken to signify that rhizomatics avoids the paralysis that is frequently and erroneously attributed to postmodernist/poststructuralist thought. The figuration of the rhizome is also wholly compatible with the figuration of 'the neighbourhood of'. The two figurations are, in fact, almost identical in both the meanings that they invoke and the dynamics they convey. However, the figuration of 'the neighbourhood of' accentuates notions of belonging, dwelling and home. As these notions are deeply ingrained in environmental education discourse, the figuration of 'the neighbourhood of' was not replaced by the rhizome; both figurations are used.

CHAPTER THREE - TRACING THE THEORETICAL TERRAIN

INTRODUCTION

This chapter presents a reading of the theorisation of uncertainty within 'the neighbourhood of' environmental education. This reading is a tracing, as opposed to a map, because it follows the denouement of what has been laid out within the field. Tracings portray existing territories; they delineate boundaries and the spaces enclosed. Tracings, then, are discursive. Maps, on the other hand, follow lines of flight that rupture boundaries to reveal new vistas. Mappings of uncertainty occur in the following three chapters.

It has been noted earlier that the notion of uncertainty has become both popular and respected in environmental education. Uncertainty is increasingly being acknowledged in the environmental education literature, especially in the literature from the United Kingdom and Canada. Most frequently, however, this acknowledgement is perfunctory. Thus, whilst much environmental education literature refers to uncertainty, engagements with uncertainty are sparse.

The sparsity of engagements with uncertainty restricts this tracing to the work of a small number of environmental education theorists. Specifically, this tracing will be constructed from the works presented by Adams (2001), Ashley (2000), Diduck (1999), Gough and Scott (2001), Hardy (1996, 1999a, 1999b), the Panel for Education *for* Sustainable Development (1998), Rosenbaum and Bressers (2000), and Scott (2001). Despite this limited domain, considerable variation exists between these theorisations.

The theorisations presented by Adams (2001), Diduck (1999), Gough and Scott (2001), Hardy (1996, 1999a, 1999b), Rosenbaum and Bressers (2000), Scott (2001) and the Panel for Education *for* Sustainable Development (1998) relate to scientific uncertainty, but the implications that are drawn out for environmental education differ widely. These differences arise from varying pedagogical

commitments and from the identification of different target audiences. For example, both the Panel for Education *for* Sustainable Development and Diduck embrace critical pedagogy, but the first addresses learners in formal school settings, whereas the latter addresses informal adult education. Scott's work can be read as being allied to both of these former projects, but he neither advocates critical pedagogy nor specifies an intended audience. Rosenbaum and Bressers provide an interesting contrast to each of the above in two ways. Firstly, their input comes from beyond the conventionally recognised confines of environmental education. Rosenbaum is a professor of political science who specialises in environmental and energy policy, and Bressers is a professor of policy studies and environmental policy. Neither has contributed to the field of environmental education previously. Secondly, the model of environmental education that they envisage is a transmission model that is designed to redress what they perceive to be a knowledge deficit in the general population. As Scott notes, the deficit model of education has been widely criticised in the social sciences. Thus, whilst Rosenbaum and Bressers take scientific uncertainty as their starting point some aspects of their work are incompatible with the other theorisations that adopted the same starting point.

In contrast to this first grouping, Gough and Scott (2001) do not appeal to scientific uncertainty. Instead, Gough and Scott engage uncertainty within the framework of poststructuralist narrative theory. Rather than asking what uncertainty is, they focus on the conditions that enable uncertainty and suggest how environmental education should respond to these conditions in terms of the processes of curriculum development.

The variety of the approaches used to engage with uncertainty and the differing implications drawn out for environmental education result from the contrasting philosophical assumptions embedded within the engagements. Several of the works within this contrasting array of philosophical positions rely upon totalisation, which has been explicitly resisted in the formulation and conduct of this research project. These works, especially those presented by Diduck (1999)

and Scott (2001), seek to capture uncertainty in a concept and then proceed to carve up the interiority of this concept into a taxonomy in which some forms of uncertainty can be classified as being more intractable than others.

The conflicts that arise between the philosophical position adopted within this project and the philosophical positions embedded in the readings presented here are not an issue for tracing existing engagements with uncertainty. Deconstructive analysis can be temporarily suspended in order to 'enter into' these projects, to explore their terrain and sketch their contours. Tracings can also alter the terrain since existing contours and boundaries are hospitable to extensions the directions that the already-said preconfigures. In Deleuze and Guattari's terms, the extensions are ingrained in the tree, awaiting articulation. This stretching of boundaries occurs in this tracing through the construction of arborescent connections both within and beyond the confines of environmental education.

TRACING THE THEORETICAL TERRAIN

Theorisations of uncertainty have a history that can be traced to Aristotle's formulation of chance. However, whilst the theorisation of uncertainty has a long history, it is discontinuous. The episodic engagements with uncertainty have been intense, but brief, and the intervening periods have been marked by a distinct bias toward the generation of certain knowledge. The current revival is notable, however, because interest has been sustained for about forty years across the natural sciences, the social sciences and philosophy. This duration and reach has eclipsed all interest since the decade of 1660 which marked the advent of probability theory (Smithson, 1989).

Environmental education's engagements with uncertainty have been most prominent since 1998. These engagements connect with either scientific discourses on uncertainty or with poststructuralist philosophical/literary discourses. Given the incompatibility of the philosophical assumptions that configure these discourses, there is very little overlap between the two strands of theorising uncertainty in environmental education. However, it would be

misleading to consider them as being completely divorced as there are some convergences in the implications that they draw out for environmental education theory and practice. Nevertheless, the two strands differ sufficiently to warrant dealing with them separately. Prior to this, however, an interlude into scientific uncertainty and allied concepts is required.

SCIENTIFIC UNCERTAINTY AND ALLIED CONCEPTS

As scientific discourse is founded upon Platonic thought, it employs a reductive approach to identification. Reductive identification relies upon "the determination of the exclusive set of properties possessed by each term in contradistinction to the others" (Massumi, 1987, p. xi). By employing this means of limitative distribution, the exclusive set of properties that constitute uncertainty can be ascertained. This, then, enables uncertainty to be set in contradistinction to the allied concepts of risk and ignorance, which, together with uncertainty, can be placed in genealogical arrangement.

Following Stirling (1999), risk and uncertainty are allied because it is possible to ascertain the full set of outcomes in a given situation, but they can be distinguished by the ability or inability to assign probabilities to the outcomes, respectively. Uncertainty and ignorance, on the other hand, are allied because both preclude the allocation of probabilities, but they can be distinguished because the full set of possible outcomes is fulfilled for uncertainty, but not fulfilled for ignorance. Stirling defines these three terms as follows:

> [T]he well-established formal definition of risk is that it is a condition under which it is possible both to define a comprehensive set of all possible outcomes and to resolve a discrete set of probabilities (or a density function) across this set of outcomes. (Stirling, 1999, para. 50)
>
> The strict sense of uncertainty, by contrast, applies to a condition under which there is confidence in the completeness of the defined

> set of outcomes, but where there is acknowledged to exist no theoretical or empirical basis for the assigning of probabilities to these outcomes. (Stirling, 1999, para. 51)
>
> [Ignorance] applies in circumstances where there not only exists no basis for the assigning of probabilities (as under uncertainty), but where the definition of a full set of outcomes is also problematic. In short, it is the acknowledgment of surprises. Here, it is not only impossible to rank the options but even their full characterisation is difficult. (Stirling, 1999, para. 52)

Stirling's categorical formulation of risk, uncertainty and ignorance suggests that these terms and the relations between them are fixed and agreed upon. However, uncertainty and its allied concepts are cast differently in other taxonomies. Smithson (1989), for example, deploys a different set of criteria to construct a taxonomy which casts uncertainty as a subset of ignorance. For Smithson, uncertainty is a specific form of ignorance that arises from the incompleteness of knowledge. At this level of generality, Smithson's rendition of uncertainty can be equated with Stirling's rendition of ignorance, and vice versa. Thus, terms switch when moving between taxonomies. However, they can also switch within taxonomies without any alteration to the criteria used to construct the taxonomy. This switching of terms within taxonomies can result from questioning philosophical assumptions. For example, if the assumption that totalities can be known is questioned, then risk, uncertainty and ignorance converge. This challenge to the assumption that totalities can be known does not need to step outside of scientific discourse; it can be questioned by raising the well-worn arguments against inductive reasoning.

The differences between taxonomies are relatively uninteresting as they can be dismissed as merely being disagreements that await resolution. This expectation can attend differences within taxonomies as well, but not in this instance. This expectation is precluded because the differences arise from the questioning of

assumptions. Assumptions elude dialectical resolution toward truth since the truth of the assumption can never be any more than a regulative article of belief. Thus, it could be said that the fluidity that arises within taxonomies as a result of the questioning of assumptions is an irreducible uncertainty (although the term 'uncertainty' in this instance does not comply with either of the formulations given above).

ENGAGING SCIENTIFIC UNCERTAINTY IN ENVIRONMENTAL EDUCATION

Scientific uncertainty has been engaged by Adams (2001), Ashley (2000), Diduck (1999), Hardy (1999a), the Panel for Education *for* Sustainable Development (1998), Rosenbaum and Bressers (2000), and Scott (2001). This array of engagements is unusual in that whilst each engages scientific uncertainty, each is discrete. None of these engagements draws on any other within the array in any way. Furthermore, none of these engagements even acknowledges the existence of the other works. There is no commonality other than the articulation of scientific uncertainty to environmental education. As a result, the engagements differ widely.

Within this array of engagements, the works developed by the Panel for Education *for* Sustainable Development (1998) and Diduck (1999) have been developed into detailed curriculum visions. They surpass the other works in this respect. The work by the Panel for Education *for* Sustainable Development has been adopted within formal education in the United Kingdom, and Diduck's project has been developed, trialled and evaluated in a non-formal education setting in Canada (for details of the evaluation process and the findings see Diduck and Sinclair (1997a, 1997b)). In contrast, the other projects sketch implications for engagements with scientific uncertainty in environmental education without integrating these implications within broader frameworks for implementation. Thus, the works developed by the Panel for Education *for* Sustainable Development and Diduck will be engaged more deeply than most of the other formulations. However, my previous exploration of the potential of

chaos theory to inform environmental education (Hardy, 1996, 1999a) will also be explored in depth. The reason for this two-fold. The first reason is that the connections advanced between environmental education and scientific uncertainty differ markedly from those forged by the Panel for Education *for* Sustainable Development (1998) and Diduck (1999). The inclusion of this work in some depth, then, highlights the diversity of the engagements of scientific uncertainty in environmental education. The second reason for engaging this previous work in depth is that it enables the divergence of this current project to be accentuated. Comparisons between my earlier work and this current project are presented in Chapter Seven.

The Report from the Panel for Education for Sustainable Development

The Panel for Education *for* Sustainable Development (1998) has developed and organised global educational objectives for education *for* sustainable development around seven key themes: interdependence; citizenship and stewardship; needs and rights of future generations; diversity; quality of life, equity and justice; sustainable change; and uncertainty and precaution in action. The placement of 'uncertainty and precaution in action' as the last theme is significant. The panel contends that uncertainty and precaution in action are the logical consequence of engaging each of the other themes. Thus, acting with uncertainty and precaution may be regarded as the ultimate achievement in education *for* sustainable development.

The conjunction of uncertainty and precaution in action has an unacknowledged supplementary function; it commits the panel's curriculum vision to supporting scientific uncertainty. This support is unavoidable because the panel upholds and actively promotes the precautionary principle, which is incontrovertibly linked to scientific uncertainty. This link is most clearly and concisely expressed by Raffensperger and Tickner who state that "scientific uncertainty about harm is the fulcrum of [the precautionary] principle" (1999, p. 1). Notwithstanding this unequivocal assertion, it is widely acknowledged that the

precautionary principle is vague. In a recent tracing of the history of the precautionary principle, Jordan and O'Riordan comment that: "the precautionary principle still has neither a commonly accepted definition nor a set of criteria to guide its implementation. ... While it is applauded as a 'good thing', no one is quite sure what it means, or how to implement it" (1999, p. 22). This leads them to the grim conclusion that: "The Precautionary Principle is vague enough to be acknowledged by all governments regardless of how well they protect the environment" (Jordan & O'Riordan, 1999, p. 32). However, the vagueness to which Jordan and O'Riordan and others (Cameron, 1994; Santillo, Johnston, & Stringer, 1999) refer arises from the usual inclusion of a cost-benefit clause. The relationship between the various formulations of the precautionary principle and scientific uncertainty, on the other hand, is not vague at all.

The most influential formulation of the precautionary principle for environmental education is that which appears in *Agenda 21*:

> In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation. (UNCED, 1992, principle 15)

This formulation clearly allows for economic equivocation concerning intervention for environmental protection, but the relationship to scientific uncertainty is clear. However, the manifest relationship between the precautionary principle and scientific uncertainty is rendered inconspicuous in environmental education discourse. The manner in which the precautionary principle has been paraphrased into environmental education discourse has resulted in the perennial problem in which simplification creates imprecision. The most extreme example of this occurs in the latest environmental education package from UNESCO, which maintains that: "The precautionary principle says

that thoughtful action should be taken to address a problem when there is reasonable evidence to indicate that the situation could get worse" (UNESCO, 2000). The links to scientific uncertainty and economic cost-benefit analysis are both lost in this formulation. Other formulations in environmental education acknowledge the relationship between the precautionary principle and scientific knowledge, but in a way that erases the direct relationship to scientific uncertainty. O'Riordan, for example, defines the precautionary principle as "thoughtful action in advance of scientific proof" (quoted in Ashley, 2000, p. 272). This formulation connotes that the precautionary principle is a response to a provisional absence of scientific proof. This is a gross misrepresentation because, as noted earlier, scientific uncertainty obtains when "there is confidence in the completeness of the defined set of outcomes, but where there is acknowledged to exist no theoretical or empirical basis for the assigning of probabilities to these outcomes" (Stirling, 1999, para. 50). The determination of an exhaustive set of outcomes and the determination that it is impossible to assign probabilities to the outcomes require rigorous proof.

The emphasis being placed here on the distorted paraphrasing of the precautionary principle into environmental education discourse does not signal pedantic foundationalism. I wholly endorse the position that posits language as being dynamic and the conviction that terms can be critically appropriated and put to entirely new uses. For the latter to occur, however, critical appropriation must involve a thorough examination of the metaphysical baggage that accompanies the terms so that the assumptions that are inscribed in those terms can be accepted, modified or rejected. This has not occurred in environmental education with respect to the precautionary principle. Therefore, the scientific, economic and legal assumptions that are inscribed in the precautionary principle surreptitiously enter environmental education discourse.

In light of the manner in which the precautionary principle is presented in environmental education discourse, it is not surprising that the link to scientific uncertainty is unacknowledged in the report from the Panel for Education *for*

Sustainable Development. However, the inescapable link that the panel has forged to scientific uncertainty through its embrace of the precautionary principle creates a deep tension within its curriculum vision. This tension arises from the panel's contention that students "should understand the concept of cultural change in the shift from the certainties of the modern age to the uncertainties of the postmodern age, and what opportunities this may afford for realising a more sustainable society" (Panel for Education *for* Sustainable Development, 1998, p. 11). Whilst the panel does not give any indication as to what it is designating as 'postmodern uncertainties', it is reasonable to assume that 'postmodern uncertainties' defy the modernist notions of metaphysical presence, totalitarian thinking and closure. Yet, the panel's tacit support of scientific uncertainty, which obtains when all possible outcomes have been disclosed, commits the panel to upholding the modernist assumptions that postmodern uncertainties would renounce. In light of this irreconcilable contradiction, it does not seem unreasonable to suggest that not only is the panel's support of scientific uncertainty unacknowledged, it is unintended as well.

Interestingly, the panel's support of the precautionary principle, which leads to this modernist/postmodernist dilemma, prevents the panel's curriculum vision from being paralysed by the irreconcilable contradictions that emerge. Supporting the precautionary principle enables the panel's curriculum vision to move beyond the scientific/economic/legal discourse within which the precautionary principle is framed. As Jordan and O'Riordan (1999, p. 19) note, "if precaution involves acting before the availability of full scientific information, then grounds other than "good science", such as ethical, moral, or political, are required to legitimate policy decisions".

The contention that ethical, moral and political considerations lie beyond the province of science remains contentious and will not be entered into here, except to note that others within the scientific community who have undertaken extensive studies into the relationship between science and the precautionary principle do not share the view that Jordan and O'Riordan express. Stirling (1999),

for example, argues strongly against the creation of a 'dichotomy trap' which casts science and the precautionary principle in opposition. Whilst acknowledging potential tensions, he maintains that divisive manoeuvres risk foreclosing creative and productive thinking. The divisiveness that Stirling argues against arises if the scientific community is precluded from engaging in ethical, moral and political discourses. However, accepting that the scientific community engages in these discourses does not posit ethical, moral and political discourses within scientific discourse.

Following Foucault and Lyotard, we participate in many discourses or language games, each of which is configured by its own set of assumptions and rules. Implementing the precautionary principle as per Jordan and O'Riordan upholds the plurality of discourses. Adopting this approach is essential if the Panel for Education *for* Sustainable Development is to avoid paralysis resulting from the contradiction that emerges from its dual support for scientific uncertainty and 'postmodern uncertainties'. Thus, education *for* sustainable development can engage alternately with both scientific uncertainty and postmodern uncertainties by participating in different discourses. Whilst the panel acknowledges neither Foucault nor Lyotard explicitly, the panel's support for cultural and social diversity can be read as a rejection of the modernist drive toward meta-narratives that both Lyotard and Foucault reject. Furthermore, the educational benefits that can be distilled from the panel's educational objectives listed under the key theme of 'uncertainty and precaution in action' signify an implicit support for the plurality of discourses. The most notable educational benefits in this respect are:

- an ability to learn from different voices; and
- an understanding that different cultures and different belief systems influence how the environment and resources are viewed/constructed.

However, these educational benefits do not necessarily indicate that the panel supports the postmodernist/poststructuralist rejections of totalising narratives. These benefits could simply denote a belief that the ultimate meta-narrative is still being written and that at present we can only work with the threads that are available.

In this context, movement between discourses is cast as an instrumental strategy that maintains the Enlightenment ideals. Gondàlez-Gaudiano refers to this approach as the 'interdisciplinary stitch', which he describes as an essentialist pretension that seeks to "use interdisciplinarity as a seam, to close the gaps and to overcome the lacks and deficiencies of current disciplinary knowledge in a renewed attempt to give unity to the available knowledge set" (2001, p. 158). Gondàlez-Gaudiano ardently argues against the adoption of this stance in environmental education. Rather than seeking unification and closure through interdisciplinarity, he supports open-ended interdisciplinarity as a cradle of possibilities, which *must* be multiple if the term 'possibility' is to be authentic. The panel's report may be read as being aligned with Gondàlez-Gaudiano's rejection of the 'interdisciplinary stitch' and with his promotion of authentic possibilities. This alignment is most evident through the panel's contention that students should "be able to envision and critically assess alternative scientific, technological, economic, political and social futures" (Panel for Education *for* Sustainable Development, 1998, p. 11). An acknowledgment of multiple futures does not necessarily signal the rejection of meta-narratives. Meta-narratives are more than capable of accommodating, promoting, and validating multiple futures. What is of interest in this objective, however, is that these multiple futures are discrete. There is no suggestion of an 'interdisciplinary stitch'. Thus, it is possible to suggest that that the panel supports the postmodernist/poststructuralist notions of the plurality of discourses, which overcomes the modernist/postmodernist dilemma that was identified earlier. Therefore, the panel's report can support both scientific uncertainty and 'postmodern uncertainties' without collapsing into contradiction.

Finally, as noted previously, the panel places hope in the opportunities that engaging with 'postmodern uncertainties' may afford for realising a more sustainable future. This optimistic stance is significant given that the panel's report aims to translate and implement the recommendations of *Agenda 21* into the local context of education in the United Kingdom. The significance lies in the direct opposition that the panel's report offers to the sentiment that *Agenda 21* expresses toward uncertainty. *Agenda 21* casts uncertainty negatively; it portrays uncertainty as an encumbrance that needs to be reduced. This is expressed most directly in its recommendation to the scientific community to make substantial improvements in using the precautionary principle in order to "gain more time for reducing uncertainty" (UNCED, 1992, para 35.6b).

In summary, the Panel for Education *for* Sustainable Development has engaged uncertainty deeply. It has conjoined uncertainty with the precautionary principle to create an organising theme for education *for* sustainable development and has proposed educational objectives within this theme. Furthermore, the panel has listed this theme as the last of seven themes. This placement is important as the panel contends that the last theme is "a logical consequence of those that precede" (Panel for Education *for* Sustainable Development, 1998, p 4). Thus, engagement with uncertainty occupies a special position in education *for* sustainable development.

The panel's report implicitly promotes engagement with scientific uncertainty and explicitly promotes engagement with 'postmodern uncertainties'. This has the potential to create deep tensions within the report. However, the panel's support for the precautionary principle can alleviate this tension if the precautionary principle is read as a cue to engage different discourses in a manner that affirms the fragmentary nature of knowledge rather than as a pursuit of a meta-narrative. If the precautionary principle is read this way, education *for* sustainable development can engage 'postmodern uncertainties' through ethical, moral and political discourses, without the metaphysical baggage of scientific uncertainty. This is not at all a rejection of scientific discourse, but it is a rejection of the

universality of scientific discourse. This positioning of scientific discourse is wholly consistent with the recommendation from the National Curriculum Council (UK) that schools "should encourage their pupils to question the often exaggerated view of the infallibility of science as the only means of understanding the world, and of the equally exaggerated view of the inadequacy of religion and philosophy" (quoted in Ashley, 2000, p. 272).

Critical environmental assessment education

Critical environmental assessment education is a detailed curriculum theory for non-formal adult education developed by Diduck (1997a). It was developed in response to Sinclair and Diduck's (1995) finding that education is a crucial aspect of the public involvement processes of environmental assessment. However, this study also indicated that the nature and role of education in public involvement processes were poorly defined and underdeveloped. In response to these findings, Diduck undertook to clarify the role that education can play in environmental assessment by exploring theories of critical pedagogy and transformative learning. This led to the development of critical environmental assessment education, which Diduck (1997a, p. 85) describes as "a means to facilitate and improve public involvement [in resource management] and, thereby, empower local communities to take greater control of resource use decisions affecting their lives".

Critical environmental assessment education was devised, developed and trialled in the context of a resource assessment project. This project involved the development and implementation of a water supply scheme that would supply a stable, long-term solution to water related problems in the Pembina Valley, southern Manitoba, Canada. More specifically, the project was to supply potable water for municipal, industrial and agricultural use. With seven rural municipalities and eight towns affected, there was scope for considerable public involvement. Diduck's analysis of this public involvement yielded strong empirical support for the concepts of critical environmental assessment education (Diduck & Sinclair, 1997a).

Critical environmental assessment education takes change, complexity, uncertainty and conflict as four enduring themes that impact upon resource and environmental management. In Diduck's curriculum vision, two-way relationships exist between environmental assessment education on the one hand, and risk, uncertainty, ignorance and indeterminacy on the other. Risk, uncertainty, ignorance, and indeterminacy create the conditions within which environmental assessment education must operate. Yet, Diduck argues that environmental assessment education also impacts upon each of these conditions.

Like the report from the Panel for Education *for* Sustainable Development (1998), Diduck's curriculum vision positions itself in relation to scientific uncertainty. Although unlike the report from the Panel for Education *for* Sustainable Development, this positioning is explicit. Diduck draws on Wynne's (1992) four categories of uncertainty:

> - risk – workings of the system are known and the probability of various outcomes can be derived;
> - uncertainty – probability of various outcomes cannot be determined, although key variables or parameters of the problem are apparent;
> - ignorance – impending circumstances escape recognition, i.e., the problem is not apparent; and
> - indeterminacy – cause and effect relationships are not apparent and understanding is not possible. (Diduck, 1999, p. 93)

Wynne's dual use of the term uncertainty to signify both a broad condition and also a more specific subset of that condition creates a semantic obstacle that impedes discussions that address both senses of the term either simultaneously or in close connection. However, given that Wynne's more precise formulation of

uncertainty is equivalent to Stirling's formulation of scientific uncertainty, the expression 'scientific uncertainty' will be deployed to refer to Wynne's more precise formulation of uncertainty in which all possible outcomes are known but the respective probabilities cannot be determined. In contrast, the term 'uncertainty' will be deployed to refer to Wynne's broad formulation of the term, which encompasses risk, scientific uncertainty, ignorance and indeterminacy.

Diduck positions his curriculum vision in relation to both uncertainty and scientific uncertainty. Scientific uncertainty is, by definition, ineradicable and irreducible; whilst it is possible to define a comprehensive set of all possible outcomes, there is no valid theoretical or empirical means to determine the probabilities of the outcomes. Therefore, the relationship between scientific uncertainty and environmental assessment education is asymmetrical. Scientific uncertainty is a condition that impacts upon environmental assessment education conducted within the context of environmental resource management projects, but environmental assessment education cannot impact upon scientific uncertainty. Diduck recognises this and draws no implications from his curriculum vision for scientific uncertainty.

He does, however, posit uncertainty and environmental assessment education in a two-way relationship. Specifically he argues that whilst ignorance and indeterminacy impact upon the contexts in which environmental assessment education is implemented, environmental assessment education also has 'positive' implications for these conditions. The term 'positive' is used here to denote that engaging environmental assessment education can function in a corrective capacity. Diduck sees environmental assessment education as playing a significant role in the reduction of ignorance and uncertainty. In this respect he asserts that:

> Increased awareness can illuminate unknown situations and help identify problems, thereby reducing ignorance. Discourse and interest analysis inherent in EA [environmental assessment]

> education, can reveal 'causal' chains and, thereby reduce indeterminacy. (Diduck, 1999, p. 93)

Diduck also notes that environmental assessment education can reveal further complexities, which results in the proliferation of uncertainty, but his notion that education acts as a corrective implies that continued applications of environmental assessment education should ultimately serve to resolve this situation. Diduck's commitment to the reduction of uncertainty aligns his curriculum vision with the sentiment expressed toward uncertainty by *Agenda 21* (UNCED, 1992).

Diduck makes several additional claims in relation to engaging uncertainty through education, which do not fare well under close scrutiny. Firstly, Diduck (1999, p. 93) claims that engaging with uncertainty "confirms the value of the Frierean approach to education, with its emphasis on critical thinking, empowerment and problem solving". He justifies this claim on the basis that critical pedagogy is less reliant on the certainty and veracity of information than more didactic models. Following this reasoning, engaging with uncertainty can confirm and affirm a variety of other approaches to education, such as those founded upon constructivist and poststructuralist pedagogies. Thus, Diduck's affirmation of critical pedagogy is unjustifiably narrow.

Secondly, Diduck (con)fuses certitude and certainty. Specifically, he contends that environmental assessment education "has implications for uncertainty because, when people are agents of change, they become more certain in their actions as they drive change toward a desired future" (Diduck, 1999, p. 93). Being certain of one's action is clearly certitude, which is a psychological state, whereas certainty is a quality of propositions. This distinction is argued in depth by Vance (1917) in his formulation of critical realism. Given that Diduck is manifestly operating within critical realism, the terms certainty and certitude should be neither fused nor confused. Furthermore, given the definitions of uncertainty that Diduck explicitly adopts, it is clear that certainty and uncertainty are not

symmetrical opposites. Therefore any claim about the movement from uncertainty to certainty needs to be argued in much greater depth.

In summary, Diduck's curriculum theory of environmental assessment education engages uncertainty broadly, as per Wynne's (1992) categorisation, and also engages with scientific uncertainty as a specific subset of that categorisation. Environmental assessment education is designed as a component of the public involvement processes of resource and environmental management, and has been implemented and evaluated in that context. The resultant empirical evidence yielded strong support for the concepts of environmental assessment education. Some claims made by Diduck, however, are unconvincing, but these are ancillary, rather than central, to environmental assessment education.

There are numerous similarities and differences between Diduck's project and the report presented by the Panel for Education *for* Sustainable Development (1998). The most significant of these in context of this tracing are that: whilst both engage scientific uncertainty, this is explicit in Diduck's project, but implicit in the panel's report; the panel's report challenges the negative portrayal of uncertainty in *Agenda 21*, whereas Diduck supports that negative sentiment and strives for the reduction of uncertainty; and whilst the panel strives to connect with 'postmodern uncertainties', Diduck does not acknowledge postmodernism at all.

Investigations of the potential of chaos theory to inform environmental education.

Chaos theory excited the academic imagination within and beyond the mathematical and scientific arenas in the 1980s. Knodt (1995, p. xvi), for example, commented that developments such as chaos theory "are beginning to captivate the postmodern imagination, provoking an already ambiguous fascination with techno-science that combines post-structuralist motives and political-aesthetic impulses to form an explosive mixture". Many education theorists welcomed engagements with chaos theory, although their justifications differed. Most education theorists welcomed engagements with chaos theory on

the basis that they might provide generative metaphors for the dynamics of education (Doll, 1993; Green & Bigum, 1993; MacPherson, 1995; Sawada & Caley, 1985). To anticipate a more direct application, according to MacPherson, "would be taking the mathematics of chaos *too* seriously" (1995). Others, however, have sought more direct applications, especially with respect to educational leadership (Sungaila, 1990).

The polarisation within the broader education arena is reflected in environmental education by the positions presented by Gough (1998d) and Hardy (1996, 1999a, 1999b). Gough explores chaos theory for its heuristic value in animating curricular and pedagogical discussions. He stands opposed to more direct links between chaos theory and environmental education due to the conflation that such an approach compels between 'natural' and 'social' realms. Specifically, he contends that:

> If chaos and complexity theories provide us with generative metaphors for thinking about organizational behavior it is because *we make them so* not because they appear to describe 'natural' behavior. (Gough, 1998d, p. 64, Gough's emphasis)

Hardy, on the other hand, forges closer links with education and chaos and complexity theories. Thus, Hardy engages more directly with the possible implications of scientific uncertainty for environmental education. As a result, this section will concentrate on Hardy's work; however, Gough's work is engaged extensively in the chapter dealing with narrative uncertainties.

Hardy's work probes relations, both associative and dissociative, between the philosophical implications of chaos theory and environmental education. In order to explicate the philosophical implications of chaos theory, Hardy traces the development of chaos theory in contemporary mathematics and also explores findings from the applied natural sciences which demonstrate that chaotic behaviour is not restricted to idealised mathematical systems. Chaotic systems can demonstrate a variety of behaviours; the behaviour that is of key interest for this

discussion, however, is self-organisation. This can be defined as a process in which abrupt and often dramatic changes spontaneously occur in systems that are far from equilibrium. Both the timing and the outcome of self-organisation are unpredictable and given that this unpredictability arises within deterministic systems; self-organisation provides a context for scientific uncertainty, as per Stirling (1999) and Wynne (1992).

Given that there is a vast body of literature that provides evidence of self-organisation in environmental processes, it is wholly appropriate that environmental education engages this aspect of scientific uncertainty through science oriented components of environmental education programs. This would align Hardy's articulation of environmental education and scientific uncertainty with the projects developed by Diduck (1997a) and the Panel for Education *for* Sustainable Development (1998). It would also align Hardy's project with Ashley's (2000) and Scott's (2001) advocacy for the inclusion of risk literacy in environmental education. However, Hardy does not pursue this line of inquiry, although it would be a logical extension of her work. Instead, she explores links between self-organisation and learning itself. This line of inquiry takes its lead from research in the fields of neural physiology and social behaviour. Specifically, Hardy draws on neurological research that contends that learning follows self-organising processes (Allman, 1993; S. J. A. Kelso, 1997; Tillmann, Bharucha, & Bigand, 2000).

The contention that uncertainty attends learning is hardly new to educators. Educators are constantly faced with the emergence of unexpected learning outcomes in the complex milieux of education. The interplay of external and internal factors constantly *impact upon* learning. However, the uncertainty that education theorists explore through engagements with chaos theory is an uncertainty of a different order. Viewing learning as a self-organising process posits uncertainty as being *constitutive* of learning. Hardy goes on to propose that educators should stimulate learning by driving "the stable state of [the learners'] inner non-equilibrium to a highly sensitive, far-from-equilibrium state 'which can

be a new source of order whenever the fluctuations that constitute it can no longer be absorbed within a particular regime' (Sungaila, 1990, p. 8)" (Hardy, 1999a, p. 130). This argument also maintains that educators need to create the 'essential tension' to prevent self-organising processes erupting into chaos. In keeping with the notion of self-organisation, Hardy emphasises that "specific educational objectives cannot be foreseen in self-organising educational settings" (1999a, p. 131), wherein lies the link to uncertainty.

In order to develop specific curricular implications for environmental education, Hardy draws upon Doll's transformative postmodern curriculum vision which translates the abstractions of science and mathematics into concrete education concepts. Hardy examines the conjunctions and disjunctions between Doll's curriculum vision and Fien's (1993) formulation of critical education *for* the environment and concludes that Doll's vision offers both a powerful perturbative influence from which new understandings may emerge to enrich and promote the current curricular debate in environmental education and a means to amplify the performative aspect of uncertainty in the process of learning. Ironically, however, Hardy crosses the metaphor/correspondence divide by drawing on Doll's work.

In summary, Hardy's exploration of the possible implications of chaos theory for environmental education posits uncertainty as being constitutive of learning. Articulating uncertainty and environmental education in this manner differs markedly from the articulations presented by Diduck and the Panel for Education *for* Sustainable Development, both of which view uncertainty in relation to environmental outcomes of sustainable/unsustainable practices. Furthermore, Hardy does not posit uncertainty *per se* as being 'good' or 'bad', as the Panel for Education *for* Sustainable Development and Diduck advance, respectively. Hardy does, however, imply that creating conditions that promote uncertainty is right on the basis that this is likely to promote learning, although uncertainty can be promoted without appeals to chaos theory.

Uncertainty as environmental education

This provocative subheading is borrowed from Rosenbaum and Bressers (2000) who engage uncertainty and environmental education from beyond the environmental education arena. Neither Rosenbaum nor Bressers is an education theorist; Rosenbaum is a professor of political science, and Bressers is professor of policy studies and environmental policy. In their article entitled "Uncertainty as environmental education", they engage many of the themes that have emerged independently from explorations of uncertainty in the environmental education arena. These points of intersection, which include the inevitability of uncertainty, the need for continuous learning, and the need for genuine dialogue and trust, are raised in the context of promoting adult 'civic environmental education'. Rosenbaum and Bressers focus on the importance of civic environmental education for the successful implementation of environmental policies.

Rosenbaum and Bressers do not propose a detailed curriculum vision; they leave this to the education sector. They do, however, note the need for civic environmental education to provide reliable, current data for use in decision making and the necessity of an ethical dimension to frame environmental decision making. As their project is not curriculum development, they do not explore epistemological and pedagogical issues that would be relevant to the civic environmental education that they have in mind. They do, nevertheless, offer a glimpse of their pedagogical orientation, which is antithetical to current environmental education theorising and to the broader realm of education. Specifically, Rosenbaum and Bressers exhibit a condescending attitude to those who would be the recipients (rather than participants) of civic environmental education:

> It has been conventional wisdom among risk management professionals in the United States and other nations where public attitudes to risk have been elaborately studied that the public is badly misinformed and almost neurotically reactive about the health

> and safety risks associated with various hazards. It is thus encouraging that Halfacre and her colleagues found evidence that the public is capable, at least sometimes, of transcending narrow self-interest to seek a more socially inclusive "communitarian" conception of risk management. (Rosenbaum & Bressers, 2000, p. 670)

There is no hint of satire in Rosenbaum and Bressers' article; they are not satirically suggesting that the public is more deserving than they are given credit for. Their attitude is condescending through and through. This condescending attitude toward those who might participate in civic environmental education is not raised here as an object for scorn or ridicule. Rather it is raised to highlight that attitudes that may be regarded as antiquated or even bygone by those in the education arena are not as antiquated as we might like to believe, that they still circulate and still hold some currency in certain circles. Rosenbaum and Bressers demonstrate a manifest lack of respect for the potential 'recipients' of civic environmental education, yet at the same time they speak about the need to actively cultivate genuine dialogue and trust. Flagrant disregard of the conditions necessary for mutual respect, such as that demonstrated by the foregoing quotation, seriously blight attempts to engage in genuine dialogue, and trust is clearly impossible (given that trust does not admit of degree, although it can be modulated by scope). This has important implications for environmental education, given that all engagements with sustainable development highlight the importance of enhancing participatory decision making across disciplines and across sectors of society, especially when faced with situations that involve uncertainty.

Notwithstanding the above criticism of Rosenbaum and Bressers' pedagogical orientation, there are other aspects of their work that articulate, in a non-hostile manner, to current theorising of uncertainty through environmental education. Like Diduck, Rosenbaum and Bressers seek to reduce uncertainty: "analysing our way out of uncertainty will be a continual process" (Rosenbaum & Bressers, 2000,

p. 668). Yet unlike Diduck, Rosenbaum and Bressers emphasise the positive outcomes that working with uncertainty compels. In this respect, they refer to the 'benefience of uncertainty' (Rosenbaum & Bressers, 2000, p. 669). The beneficial outcomes that they attribute to working under conditions of uncertainty include:

- the creation of new multi-national institutions, founded upon structural and administrative transformations, for the management of environmental problems;
- a democratisation of administrative processes that has broadened the participation of the public and non-government organisations in decision making;
- the emergence of epistemic communities that organise, conduct and politically propagate environmental research within international communities;
- the generation of new or significantly revised environmental policies in response to the problematic nature of scientific data available for characterising various conditions; and
- the growth of formal and non-formal environmental education, not only for the general public, but also for policy makers.

Thus, whilst Rosenbaum and Bressers share Diduck's commitment to strive for the reduction of uncertainty, they also share the optimistic attitude to working in the face of uncertainty expressed by the Panel for Education *for* Sustainable Development.

A POSTSTRUCTURALIST PHILOSOPHICAL/LITERARY ENGAGEMENT WITH UNCERTAINTY

There are fewer poststructuralist theorisations of uncertainty in environmental education than engagements with scientific uncertainty. To date only two poststructuralist engagements could be located: one that I wrote (Hardy, 1999b) and the other by Gough and Scott (2001). My postmodernist/poststructuralist

engagement with uncertainty, *Fractal Alterity*, can be read as simply an extension of my previous work on the possible implications of chaos theory for environmental education with a postmodernist/poststructuralist twist. As such, it can be considered to be an engagement with scientific uncertainty and will not be covered here on that basis. Therefore, this section will present a reading of Gough and Scott's engagement only.

Gough and Scott's theorisation of uncertainty is embedded within their analysis of the relations between curriculum development and sustainable development. Following their analysis of these relations, they propose a model to guide the process of curriculum development. Uncertainty is not an overt element of this model, although their poststructuralist theorisation of uncertainty, in conjunction with other considerations, shaped the model. Thus, Gough and Scott's articulation of environmental education and uncertainty differs from the other readings presented both in terms of its philosophical stance and in the specific connection that it forges with uncertainty. None of the other theorisations has articulated uncertainty to the processes of curriculum development.

Gough and Scott's theorisation of environmental uncertainty is directly linked to literary theory. Their theorisation turns upon reading (the) environment as text, a position that is exerting an increasing influence in environmental education following Gough's promotion and use of narrative theory (Gough, 1993, 1994a, 1994b, 1997, 1998a, 1998b, 1998c, 1998d, 1999a), and Stables' formulation and promotion of environmental literacies (Stables, 1996, 1997, 2001a, 2001b; Stables & Bishop, 2001). Specifically, Gough and Scott adapt Strain's (2000) formulation of uncertainty, which follows the poststructuralist notion of the Death of the Author as per Barthes (1968/1977), Derrida (1972/1981) and Foucault (1969/1988). According to poststructuralist notions of the Death of the Author, meaning is problematised by shifting the locus of meaning from the author to the reader and by shifting the time of meaning from the past to the present. Therefore, "every text is being rewritten *here and now*" (Barthes, 1968/1977, p. 145,

Barthes' emphasis). Thus, meaning can no longer be held as a pre-given, stable and self-sufficient feature of text.

Drawing on these themes, Gough and Scott present a two pronged argument for the emergence of a "new kind of uncertainty" (Gough & Scott, 2001, p. 144). Deploying Barthes' conviction that text is rewritten with each reading, Gough and Scott argue that each time that (the) environment is read, the less it *actually is* (the) environment that we began reading. Furthermore, this rewriting of (the) environment is proliferated given that (the) environment will be rewritten differently according to the grammar of the particular discourse that the reader is operating in. Biologists and economists, for example, will rewrite (the) environment differently. This proliferation is further amplified given that we each operate in multiple discourses. Thus, rewriting (the) environment precludes the condition for certainty as a quality of propositions.

The other prong to their argument deepens their argument. Specifically, Gough and Scott draw attention to changed notions of 'self', which have shifted from notions of a unitary, stable self to notions of the self as being multiple and fluid. This dynamic portrayal of the self can be linked to Barthes' (1971/1977) notion that rewriting the text simultaneously rewrites the self. Thus, Barthes casts the self as text. Whilst Gough and Scott do not make this connection, it is a wholly consistent extension of their argument. Thus, the reading/writing of (the) environment and the reading/writing of (the) self are mutually enfolded. This mutual inscription defies the discrete resolution of subject and object, which in turn precludes the conditions for establishing certainty.

Gough and Scott use this 'new kind of uncertainty' to argue against top-down curriculum development and offer an alternative. Numerous arguments have been raised against top-down curriculum development in environmental education, but Gough and Scott have presented a new argument. Furthermore, their literary theorising of environmental uncertainty clearly has relevance for other environmental education themes, such as environmental agency. The

poststructuralist ideas that they have drawn on are explored further in Chapter Seven.

CROSS-READING UNCERTAINTY IN ENVIRONMENTAL EDUCATION AND BEYOND

Uncertainty is valued in environmental education. This claim can be upheld at the most general level on the basis that: in order to be noticed, something must be deemed to be worthy of attention. Noticing is normative. However, the normative aspect of environmental education's engagement with uncertainty goes well beyond this broad view of value theory. The existence of the engagements from which this tracing is constructed indicates that in addition to noticing uncertainty, detailed explorations of uncertainty have been judged to be worthwhile. These explorations further affirm the value of engaging uncertainty by advocating the articulation of uncertainty to major structural components of environmental education, namely, the subject matter (Adams, 2001; Ashley, 2000; Diduck, 1999; Panel for Education *for* Sustainable Development, 1998; Scott, 2001), theories of learning (Hardy, 1996, 1999a) and the process of curriculum development (Gough & Scott, 2001).

Within these articulations, some theorists posit uncertainty as being either 'good' or 'bad'. The Panel for Education *for* Sustainable Development (1998), for instance, casts uncertainty as 'good'. The positive value that the panel assigns to uncertainty is instrumental rather than intrinsic given that the panel casts uncertainty as 'good' on the basis that it may afford opportunities for realising a more sustainable society. In contrast to the panel's stance, both Diduck (1999) and Rosenbaum and Bressers (2000) seek to reduce uncertainty. Thus, Diduck and Rosenbaum and Bressers assign a negative value to uncertainty. However, Rosenbaum and Bressers also refer to the beneficence of uncertainty. This description refers to the positive outcomes that attend working in the face of uncertainty. Thus, Rosenbaum and Bressers assign both a negative intrinsic value and a positive instrumental value to uncertainty.

In addition to this broad allocation of value, the majority of projects that engage with uncertainty in relation to the unpredictability of the effects of human activity upon environmental processes (Ashley, 2000; Diduck, 1999; Panel for Education *for* Sustainable Development, 1998; Rosenbaum & Bressers, 2000; Scott, 2001) deepen the normative aspect of their work by promoting the inclusion of risk literacy into environmental education and by emphasising that this risk literacy must be coupled to ethical and moral decision making. Each of the projects that articulate uncertainty and environmental education in this manner emphasises that interdisciplinary participation in ethical decision making is imperative. However, Adams' (2001) study is the exception; it does not make explicit links to moral education or interdisciplinarity.

The calls for dialogue and ethical decision making in an interdisciplinary forum in order to translate the precautionary principle into practice accord with Drees' (1988, 1990) formulation of constructive consonance. To recapitulate briefly from the previous chapter, Drees' constructive consonance strives to engage a meta-emergent dialogue that transcends interdisciplinary boundaries in a manner that values and respects the distinctiveness and integrity of the enterprises involved. The nature and purpose of this dialogue are configured by Drees' metaphysical convictions. Specifically, Drees upholds a critical realist ontology and a dialectical, constructivist epistemology. These metaphysical convictions enable him to interpose a 'gap' between knowledge and reality, which provides a conceptual space within which to engage a dialogue of possibilities. Drees emphasises the existential capacity of such dialogue and he positions his notion of an 'eschatology of the present' within this forum.

An eschatology of the present involves an unusual juxtaposition of ideas since eschatology is associated with notions of fulfilment, perfection and consummation, etc., beyond death or beyond the world. Drees' formulation of an eschatology of the present, then, strives to motivate action toward a better life sooner rather than later. It is this aspect of Drees' project, which is embedded within an interdisciplinary forum of dialogue and ethical decision making, that can

contribute to the works developed by Ashley (2000), Diduck (1999), the Panel for Education *for* Sustainable Development (1998), Rosenbaum and Bressers (2000) and Scott (2001). Each of these projects shares Drees' metaphysical convictions. They share his existential conviction as well, albeit in a secular form. Drees' eschatology of the present is inextricably tied to an overarching call for conversion. So too are these environmental education engagements, each of which seeks a conversion toward sustainable practices.

In addition to the resonances between translating the precautionary principle into action and Drees' eschatology of the present, Drees' formulation of constructive consonance offers a challenge to environmental education, which if met, can enhance environmental education's contribution to implementing the precautionary principle. This challenge involves critically engaging notions of truth in environmental education. Constructive consonance embraces both coherence and pragmatic theories of truth. This eclecticism creates instabilities that mirror critical realist engagements with scientific uncertainty and the precautionary principle. Given that coherence theories of truth hold that a proposition is true if it coheres with the whole system and pragmatic theories of truth hold that a proposition is true if it is expedient, or useful, solves problems (Armour, 1969; Joachim, 1906; Kirkham, 1992; Schmitt, 1995), the identification of scientific uncertainty is allied to the coherence theories of truth (or the correspondence theories, see previous chapter) and the implementation of the precautionary principle invokes pragmatic theories of truth. Thus, if environmental education engages with Drees' constructive consonance, it can not only employ a thoroughly researched and fully developed program that is wholly suited to implementing the precautionary principle, it must elevate its engagements with truth to the level of discourse. Hitherto, all environmental education engagements with truth have been either tacit or incidental. But critical engagements with ethical inquiry require explicit engagements with truth, and especially with the pragmatic theories of truth.

CONCLUSION

The purpose of this chapter has been to construct a *tracing* of the engagements of uncertainty in environmental education. Tracing is not simply a reiteration of what has already been laid down within the field. Tracings may extend the already-said by following the logic that has been deployed. In other words tracings may follow the paths that existing engagements have preset in order to extend existing terrains. Furthermore, these extensions may result in articulations between domains that have been hitherto regarded as separate. Both types of extensions have been deployed frequently within the construction of this tracing. The explication of the implicit support for scientific uncertainty that the Panel for Education *for* Sustainable Development compels through its support of the precautionary principle is an example of the first kind of extension. Whereas, the possible articulation of the report presented by the Panel for Education *for* Sustainable Development to Foucault's theorisation of discourse and Lyotard's theorisation of language games are examples of the second kind of extension. The latter extension is purely speculative given the limited information provided by the report in relation to this matter. However, this type of extension need not be speculative. The connection forged between Gough and Scott's theorisation of uncertainty and Barthes' notion of reading/writing the self is not speculative given the clarity of the path that Gough and Scott preset in this direction.

This process of tracing has drawn diverse terrains into relief from a very small number of engagements. Those projects that focus on scientific uncertainty articulate environmental education to the uncertainty of environmental processes, especially, although not exclusively, in relation to the unpredictable consequences of human activity. From this platform, they argue for curricular inclusions such as risk literacy into environmental education. Further to this, they emphasise the importance of dialogue and ethical decision making in an interdisciplinary forum in order to translate the precautionary principle into practice. Engaging with Drees' project of constructive consonance may enhance this process. Not only does Drees' notion of an 'eschatology of the present' mirror the translation of precautionary principle in practice, it challenges environmental education to

elevate engagements with truth to the level of discourse. This is an important task for environmental education because allying oneself to the pragmatic theories of truth is indispensable when engaging the precautionary principle.

An exception to articulation of scientific uncertainty to the unpredictability of environmental processes and the subsequent call for precautionary action is to be found in Hardy's work. Whilst this work is wholly compatible with this line of thought, Hardy has taken a different path which led to an exploration of uncertainty as a constitutive aspect of learning. This argument draws on the findings of chaos theory and cognitive biology/psychology, which together posit learning as a self-organising process in which unexpected outcomes emerge in wholly deterministic systems. Hardy articulates these findings to Doll's postmodern vision of a transformative curriculum, which he developed in response to a metaphorical engagement of chaos theory. This leads Hardy to argue that environmental education should engage pedagogical strategies that are likely to promote uncertainty and, thereby, promote learning.

Lastly, Gough and Scott's engagement with postmodernist/poststructuralist literary theory articulates uncertainty to the notion of the fluidity of texts. Specifically, Gough and Scott draw on the poststructuralist notion of the Death of the Author to support the ever-changing, social construction of (the) environment. Viewing (the) environment as text and accepting that text is rewritten with each reading precludes fixed points of reference from which to begin to search for certainty. Reference points are constantly being forged and dismantled, which highlights the groundlessness of attempting to privilege a particular set of reference points in the quest for certainty. This theorisation of uncertainty is 'deepened' by the reflexive manoeuvre that problematises the self in the same manner. Thus, Gough and Scott can be read as equating uncertainty with flux, and they embed this theorisation of uncertainty in their model of curriculum development.

The diverse array of positions developed from such a small number of engagements with a particular theme within the same field is quite extraordinary. There is one thread of commonality within these engagements, however. Each of these engagements articulates uncertainty and environmental education normatively, although the particularities of the normative positions differ. Some of the engagements assign a positive value to engaging uncertainty as a result of its generative capacity, whereas other engagements assign a negative value to uncertainty and strive for its reduction. Some projects go beyond this broad view of value theory and explicitly argue for the need to engage ethical inquiry in response to uncertainty. Environmental education's engagement with uncertainty is normative through and through. This common thread, however, frays in many directions.

No mention has been made of rhizomes or Bodies without Organs while tracing environmental education's engagements with uncertainty. This is because these figurations attend the second aspect of Deleuze and Guattari's cartography, namely mapping. Both tracings and mappings forge connections, but tracings forge connections that are preordained and utterly constrained by Platonic logic. Mappings, on the other hand, forge connections that ignore the blockages and rupture the boundaries imposed by Platonic logic.

Whereas the purpose of this chapter has been to construct a tracing, the following two chapters provide lines of flight from which to construct maps. These lines of flight forge links between environmental education, Levinas' ethics of responsibility for the Other and narrative theory. These chapters can be read in any order as they are discrete. The third mapping chapter, Shifting Terrains, forges connections between the two lines of flight and these connections are linked to major themes in contemporary environmental education discourse. The tracing that has been constructed in this chapter will then be superimposed upon these maps in order to discern the silences and blockages that constrain the contours of this tracing and to open up new spaces within which to experience the concept of

uncertainty differently. This final stage of cartography is undertaken in Chapter Seven.

CHAPTER FOUR - LEVINAS AND ENVIRONMENTAL EDUCATION

INTRODUCTION

This first mapping chapter forges a line of flight from environmental education to Levinas' ethics of responsibility for the Other. Emmanuel Levinas has been acclaimed as "one of the most significant ethical thinkers of the twentieth century" (Kearney & Rainwater, 1996, p. 122), as "the greatest moral philosopher of this century" (Bauman, 1992, p. 41) and as one whose thought "can make us tremble" (Derrida, 1967/1978, p. 82). These outstanding accolades from leading figures in contemporary philosophy follow assiduous engagements, both critical and interpretive, with Levinas' ethics of responsibility for the Other (1961/1991, 1974/1991). Attention to Levinas' thought has not been confined to the philosophy arena, however. Levinas' thought has attracted transdisciplinary attention and Levinas' influence is beginning to be felt in education.

Whilst the number of engagements with Levinas in education is limited to date, three distinct foci can be discerned: the conduct of educational research (Child, Williams, Birch, & Boody, 1995; Dykeman, 1993); the dynamics of the teacher-student relationships (Biesta, 2003; Chinnery, 2003; Säfström, 2003; Todd, 2001); and philosophy of education (Biesta, 2003; Chinnery, 2003; Nuyen, 2000; Säfström, 2003; Simon, 2003; Todd, 2003a, 2003b) In each of these lines of inquiry, Levinas' thought is being linked to interpersonal practices in education. This focus on interpersonal practices is not surprising given that Levinas' ethics of responsibility specifically attends the realm of human sociality. In this chapter, however, I introduce a fourth line of inquiry that affiliates Levinas' thought with environmental education's curriculum interests in both 'postmodern uncertainties' (Panel for Education *for* Sustainable Development, 1998) and environmental values education. This chapter explores the plausibility of this affiliation by examining of some aspects of Levinas' philosophy that enable this affiliation to be suggested, raises some of the possibilities and challenges that this affiliation could

introduce into environmental education, and concludes by considering how environmental education could engage with Levinasian eco-ethico-political action.

RESONANCES BETWEEN LEVINAS AND ENVIRONMENTAL EDUCATION

The report presented to the Department for Education and Employment (DfEE) and the Qualifications and Curriculum Authority (QCA) by the Panel for Education *for* Sustainable Development in the Schools Sector (1998) contributes to the current National Curriculum Review in the United Kingdom and to international debates in education *for* sustainability and environmental education. This report identifies uncertainty as an intrinsic element of sustainable development and includes uncertainty as one of seven dimensions that are indispensable for education *for* sustainable development.

The report assigns two meanings to the term 'uncertainty'. In the section that introduces the seven principles or dimensions of sustainable development, uncertainty is described in terms of "limits of knowledge" (Panel for Education *for* Sustainable Development, 1998, p. 4). Yet an additional sense of uncertainty is clearly articulated in the statements of specific learning outcomes at key stages within the dimension on uncertainty. For example, the report stipulates that at the end of key stage two, pupils should be able to: "Understand that people may have different views on sustainability issues and that these may often be in conflict" (1998, p. 8).

This objective clearly links uncertainty to pluralism. Statements that acknowledge and affirm pluralism are standard in education documents. Typically, their inclusion serves to signify a commitment to social justice by respecting the diversity of human experiences. This statement is noteworthy, however, because it is conjoined to an epistemological stance on uncertainty. Simultaneously viewing uncertainty as plurality and the limitation of knowledge enables the possibility of affiliating environmental education with the philosophy of Emmanuel Levinas.

UNCERTAINTY AND PLURALITY

Statements such as the previously quoted objective may be read as appeals to promote the virtue of tolerance. But tolerance is a troubled term. According to Marcuse (quoted in Nuyen, 1997, p. 1), "what is proclaimed and practised as tolerance today [in our advanced industrial society] is ... serving the cause of oppression". This oppression results from the form of tolerance that recognises both difference and sameness, but which seeks to find and accentuate similarities that can tolerantly unite differences. This is violence. The subordination of difference to sameness, which ultimately aims to erase difference under the banner of tolerance, deforms. This violence deforms not by:

> injuring and annihilating persons [but by] interrupting their continuity, making them play roles in which they no longer recognise themselves, making them betray not only commitments but their own substance, making them carry out actions that will destroy every possibility for action. (Levinas, 1961/1991, p. 21)

Many commentators accentuate that this violence privileges the dominant point of view (Burbules, 1997; Nuyen, 1997). If environmental education is to successfully conjoin uncertainty and plurality it must stridently resist viewing difference from the dominant point of view as this eradicates any possibility of uncertainty. The philosophical thought of Emmanuel Levinas is wholly relevant to this conjunction since his thought is underpinned by the question: "What meaning can community take on in difference without reducing difference" (Levinas, 1961/1991, p. 154)?

The possibility of a non-violent engagement with difference occurs in the relationship that Levinas calls the 'face to face'. This relationship is also germane to the other mode of uncertainty that appears in the report from the Panel for Education *for* Sustainable Development in the Schools Sector, namely the limitation of knowledge. Levinas argues that the exposure to the utter excessiveness that occurs in the face to face relationship defies conceptualisation

and thematisation. Hence, there is an irreducible residue that defies being captured in concepts and conveyed by language. This irreducible residue imposes an unbreachable limitation on knowledge.

The following section presents a brief reading of the face to face relationship in a manner that focuses on its constitutive ethical character. This announces a third resonance between Levinas' thought and environmental education since environmental education is characterised by its commitment to an overt affective agenda.

THE FACE TO FACE – A MORAL SUMMONS

Levinas' ethics draws on Descartes' formulation of the infinite both as exceeding the idea of infinity and preceding the finite to introduce a new ethical relationship into philosophy. Infinity, the notion of an idea in me that exceeds me, that overflows me, ruptures the notion of a self-sufficient, knowing subject. The utter excessiveness of the idea in me that exceeds me defies totalisation which would result in its being brought into my knowledge and understanding, into my possession. The idea that exceeds me is the Stranger; it is irreducible and inassimilable alterity; it is the other (*l'Autre*). How, then, can I know and speak of this that exceeds me? Levinas argues that I know and can speak of it through my exposure to it, through what it says to me, the 'saying' (*le Dire*), rather than my thematisation, the 'said' (*le Dit*).

Exposure to the utter excessiveness of one's fellow human being, the neighbour, the Other (*l'Autrui*), radically decentres the subject, disclosing a relationship prior to the constitution of the knowing subject. Levinas employs the term 'transcendence' to refer to this relationship with the Other that does not reduce the Other to the same. According to Levinas (1961/1991, p. 41), "[t]ranscendence designates a relation with reality that is infinitely distant from my own reality, yet without this distance destroying this reality and without this relation destroying the distance". Furthermore, Levinas argues that as this relationship precedes conceptualisation, transcendence precedes ontology.

This transcendent relationship is an ethical encounter with Levinas' formulation of the 'face'. The face is the revelation, or 'epiphany', of the Other who exceeds "*the idea of the other in me*" (Levinas, 1961/1991, p. 50, Levinas' emphasis). Levinas argues that the epiphany of the face is an ethical encounter because the face simultaneously appeals and summons me to not commit murder. This is a simultaneous appeal / summons to respect alterity. It is an ethical invocation to resist both conceptualisation which excises the otherness of the Other in order to capture it within a concept and thematisation, which offers "the world to the Other in speech" (Levinas, 1961/1991, p. 209). As Child et. al. (1995) have noted, the simultaneous appeal / summons to resist thematisation resounds in the voice of bell hooks[3]:

> I am waiting for them to stop talking about the "Other", to stop even describing how important it is to be able to talk about difference. It is not just important what we speak about, but how and why we speak. ... Often this speech about the "Other" annihilates, erases: "No need to hear your voice when I can talk about you better than you can speak about yourself. No need to hear your voice. Only tell me about your pain. I want to know your story. And then I will tell it back to you in a new way. Tell it back to you in such a way that it has become mine, my own. Rewriting you I write myself anew. I am still author, authority. I am still the colonizer, the speaking subject, and you are now at the center of my talk." Stop. (hooks, 1990, pp. 151-152)

Conceptualisation and thematisation dispossess the Other of otherness and displace the Other, now the Same, faceless into the world of the same. From the Enlightenment perspective, this extends the autonomous freedom of the thinker by extending the landscape of the known. More specifically, conceptualisation and thematisation promote autonomy as they provide a means "through which to

[3] bell hooks does not adhere to the convention of capitalising the first letters in her name.

comprehend others; to render them intelligible; to respond to them; while also neutralising their threat to my autonomy" (Child et al., 1995, p. 172). But according to Levinas, the possibility of freedom is presented by the plea of the Other to resist conceptualisation and thematisation. Levinas argues that:

> [t]he being that expresses itself imposes itself, but does so precisely by appealing to me in its destitution and nudity – its hunger – without my being able to be deaf to that appeal. Thus in expression the being that imposes itself does not limit but promotes my freedom, by arousing my goodness. (1961/1991, p. 200)

Facing the Other creates the possibility for freedom. This possibility of freedom is heteronomous, but not in the familiar connotation that associates heteronomy with tyranny and oppression. Instead, facing the Other creates the possibility for freedom through an ethical relationship that resists the tyranny and oppression of conceptualisation and thematisation.

The possibility of freedom that the face to face encounter offers has another dimension that is inextricably linked to the plea / summons of the Other. The invitation from the Other to enter into a transcendent relationship restructures subjectivity. To become a complete 'I' in the metaphysical sense, I have to listen to the Other. This is only possible by resisting conceptualisation and thematisation which annihilate the otherness of the Other. It is necessary "to avoid and forestall the instant of inhumanity" (Levinas, 1961/1991, p. 35) in order to achieve full subjectivity. This is only possible by accepting ethical responsibility for the Other. Consequently, "this responsibility is something that I, as an I in its full subjectivity, cannot shirk" (Nuyen, 1999, p. 46).

Both the possibility of freedom and the fulfillment of ethical subjectivity are inextricably interwoven in the heteronomy of the face to face. Levinas clearly signals the implications that this new relationship has for education by asserting repeatedly that to face the Other is to be taught.

THE OTHER AND THE ENVIRONMENT

Levinas' ethics of responsibility specifically attends the realm of human sociality. However, the question – Who is the Other? – has been asked repeatedly in readings, re-readings and cross-readings of Levinas. Can the Other be God? the feminine? animals other than humans? living organisms in general? the environment? An extension of the realm of the Other is necessary if Levinas is to be engaged within environmental education as a basis for *eco*-ethico-political action. It may be argued that an imperative for such an engagement has been set in *World Conservation Strategy* by the International Union for the Conservation of Nature, in collaboration with the United Nations Environment Program and the World Wildlife Fund (IUCN, UNEP & WWF):

> Ultimately the behaviour of entire societies towards the biosphere must be transformed if the achievement of conservation objectives is to be assured. A new ethic, embracing plants and animals as well as people, is required for human societies to live in harmony with the natural world on which they depend for their survival and wellbeing. The long term task of environmental education is to foster or reinforce attitudes and behaviour compatible with this ethic. (IUCN UNEP WWF, 1980, Section 13)

This statement may be read variously, however. If the 'new ethic' desired is simply an extension of human ethics *into* the non-human realm, an extension of the Other is unnecessary. This seems to be Levinas' position. During an interview in which he was asked whether we have ethical obligations towards animals, he replied that: "It is clear that, without considering animals as human beings, the ethical extends to all living beings. … But the proto-type of this is human ethics" (Wright, Hughes, & Ainley, 1988, p. 172). Whilst Levinas circumspectly signaled the possibility of the extension of the Other beyond the human realm when questioned further in the same interview, this extension was severely restricted. But the possibility that the Other may be extended in a wholly environmental sense that embraces all living organisms and the non-living components of

environments has been developed and defended by Llewelyn (1991). This constitutes an extension of the realm of the Other and it accords more with the notion of 'transformation' called for by IUCN, UNEP and WWF than an extension of *human* ethics which carries ecocolonialist connotations.

In cross-reading Levinas, Heidegger and others, Llewelyn develops an eco-ethics that embraces the non-human Other. This eco-ethics is developed and justified from an identification of the needs of the Other in the non-human realm. This is achieved by drawing upon Heidegger's fourfold space, which consists of four regions - Sky, Earth, Mortals and Gods – that are infinitely and internally related. The internal relatedness of the fourfold provides a matrix in which the four regions are connected by an ecological interdependence. This entails a mutuality of needs, which is central to the development of Llewelyn's eco-ethics. Specifically, he argues that this needfulness is sufficient to endow me with responsibility: "no specific characteristic other than its in someway needing me is required in order that I should be directly responsible for another thing" (Llewelyn, 1991, p. 254)).

The responsibility endowed by the needfulness of the Other signals a link to the exigent need of the Other that is expressed in the appeal / summons to not commit murder. But this is not sufficient to establish a direct link between this eco-ethics and the face to face. For this, it is necessary to establish that the encounter is transcendent in Levinas' sense. That is, it is necessary to show that this responsibility is pre-ontological, *beyond being*. This challenge is met by introducing the notion of non-qualitative difference. Non-qualitative difference cannot be thematised or conceptualised. It is, therefore, alterity. The non-qualitative difference of a thing being other than me announces a transcendent encounter in which "the naked alterity of a finite vulnerable thing suffices to put me under direct responsibility toward it" (Llewelyn, 1991, p. 254, p. 255). This forges the link between Llewelyn's eco-ethics and the transcendence of Levinas' face to face. The face may express itself from any region of the fourfold: "it is not only with another human being that I can be face to face" (Llewelyn, 1991, p.

256). The face may be another animal, a plant or an inanimate object such as a cliff face.

Through this cross-reading of Heidegger and Levinas, Llewelyn extends the ethical realm of the face beyond the human realm, rather than extending human ethics into the faceless realm of the non-human, in a manner that retains the integrity of Levinas' formulation of the face. As Llewelyn (1991, p. 246)) notes "no one has it in his [sic] power to move the limits of the employment of a word anywhere he likes and still be sure of being able to get that word to do all the jobs that it used to do". In this case, a redefinition of the face would remove Levinas' ethics from the argument before it had even begun. Therefore, in order to extend the realm of the face and preserve its integrity, Llewelyn extends the 'source' of alterity that the face expresses by deploying the notion of non-qualitative difference.

THE THIRD PARTY AND ECO-POLITICAL AGENCY

Levinas' ethics of responsibility and Llewelyn's cross-reading, as they have been read so far, present the face to face encounter as a relation between unmediated singulars. But this condition of unmediated singularity is dissolved by the epiphany of face: the third party (*le tiers*) is always present. The unwavering 'copresence' of the third party interrupts the transcendence of the face to face, causing a movement from ethics to justice and politics. It is this vital movement effected by the third party that enables the possibility of engaging with Levinasian ethics in environmental education. The following discussion outlines the inseparability of the Other and the third party, the aporia that this inseparability creates, the movement that this aporia effects from ethics to justice and politics, and the possibility of appropriating this movement to inform environmental education via Llewelyn's cross-reading of Levinas.

The primordial responsibility of the face to face is an "unlimited ethical demand" (Levinas, 1982/1985, p. 114). It is "an offering of oneself" (Levinas, 1974/1991, p. 54), a substitution to the point of taking "the bread out of one's

own mouth, to nourish the hunger of another with one's own fasting" (Levinas, 1974/1991, p. 56). It is hardly surprising, in light of the foregoing quotations, that Levinas' ethics has been charged with utopianism (Levinas, 1982/1985; Wright et al., 1988). However, such charges obtain only when the face to face occurs as a relation between unmediated singulars. Only then can the face to face entail the absolute self-sacrifice of the I. But the face to face enigmatically demands and dissolves the condition of unmediated singularity, within which the summons for ultimate self-sacrifice arises, since the Other (*l'Autrui*), whom I face, "is both the *singularity* of every human being and the singularity of *every* human being" (Llewelyn, 1991, p. 41, Llewelyn's emphasis). A third party unwaveringly inhabits the face qua face and prevents the self-sacrifice of the I by protecting the I from the "violence potentially unleashed in the experience of the neighbor and of absolute unicity" (Derrida, 1997/1999, pp. 32-33).

The third party is the Other's Other who "looks at me in the eyes of the Other" (Levinas, 1961/1991, p. 213). As the Other's Other, the third party does not represent a numerical increase in the number of Others whom I face simultaneously. Rather, the third party is other than the Other. The manifestation of the third party, who is there "from the first" (Levinas, 1974/1991, p. 157), shatters the transcendence of the face to face as it compels the comparison of incomparables within the pre-conceptualising and pre-thematising relationship. An aporia is created that instantly shatters the transcendence of the face to face. But as the third party is there from the first, the epiphany, or revelation, of the face is simultaneously manifested and shattered.

Is, then, the 'event' (Nuyen, 1999) of Levinas' ethics a non-event? (a)an (non)event neutralised by its own (im)possibility? In the typical conception of diachrony as a continuous temporal flow, this would necessarily be so: as "this interruption of the ethical immediacy, is itself immediate" (Derrida, 1997/1999, p. 32), the ethical relationship fails from the first. But Levinas argues that the diachrony of the *otherwise than being* is on the hither side of the temporal flow, "a diachrony that is refractory to all synchronization, a transcendent diachrony"

(Levinas, 1974/1991, p. 9). Hence, the epiphany and dissolution of the face concur in an unpresentable 'moment' as a trace, "a past that was never present" (Levinas, 1974/1991, p. 161). This 'event' marks "the birth of the question: What do I have to do with justice" (Levinas, 1974/1991)? The dissolution of the face to face through the 'Contra-Diction' (Derrida, 1997/1999, p. 30) of the third heralds the movement from the ethical relationship of the Saying to justice and politics in the Said. The *responsibility* of the face to face is abruptly transformed to *response ability* in the world. Furthermore, "there is also justice for me ... [m]y lot is important" (Levinas, 1974/1991, p. 159-161). This justice for me is not a means of *self*-preservation (*conatus essendi*) that arises opportunistically from the reversion from the Saying to the Said. Rather, responsibility and justice for me are bestowed, from the first, by the Other's Other, from the third party.

The movement from the Saying to the Said that the third party compels, together with Llewelyn's extension of the realm of the face, enables explorations of Levinas' ethics of responsibility and eco-political agency from an irreducible platform of environmental ethics. As Llewelyn's argument has been presented thus far, his deployment of the notion of non-qualifiable difference precludes any notion of hierarchisation, or comparison of incomparables in Levinas' terms. This results in unconditional bioequality and problems of distributive justice follow. For example, Llewelyn notes that the primordial responsibility of the I extends to a cancer virus as well as the person whose body it may be destroying. In the absence of any consideration of the third party, this aporia results in paralysis, a paralysis caused by incomparable and inassimilable responsibility. But the entry of the third party ruptures the transfixity of this aporia.

It is *crucial* to emphasise at this juncture that neither Levinas nor Llewelyn advocates the abandonment of hierarchisation and prioritisation. Llewelyn "does not say that what we are seeking, absurdly, is incomparability in the sphere of the human in comparison with the human or non-human being, or indeed incomparability where the class of comparison is animals or other non-human beings" (1991, p. 250). What Levinas and Llewelyn *do* say is that we should not

confuse the ethical with the political. Both Levinas and Llewelyn situate comparisons in the *political* realm. Therefore, they can uphold unconditional equality in the ethical face to face encounter, which in Llewelyn's formulation leads to a biocentric ethics. The unwavering presence of the third party, however, shatters the transcendence of the face to face, effecting a movement from the ethical realm to the political realm, where problems of distributive justice can be tackled.

For Levinas the unwavering copresence of the third in "the epiphany of the face qua face opens humanity" (Levinas, 1961/1991, p. 213). In Llewelyn's cross-reading, then, the third party opens the matrix of ecological interdependence, indeed even the matrix of cosmological interdependence. The questioning look of the third party jolts the I from the pre-concepualising and pre-thematising state of the face to face by forcing attention to questions such as: "What are the other and the third for one another? What have they done to one another? Which passes before the other?" (Levinas, 1974/1991, p. 157) and "Who passes before the other in my responsibility?" (Levinas, 1984/1996, p. 168). This breach of transcendence effected by the third party necessitates that the "Saying is fixed in the Said, is written, becomes a book, law and science" (Levinas, 1974/1991, p. 159). In Llewelyn's cross-reading, the questions that assail the I within the ecological matrix of interdependency require heedfulness of ecological principles. Specifically, Llewelyn states that:

> If the responsibility that such a green ethic entails is to give rise to practical policies heed must be given to the findings of ecological science understood as the study of the relations between organisms and their environment and to the technologies by which those policies are put into effect. (Llewelyn, 1991, p. 269)

Therefore, the form of eco-political agency that arises from a relation with the non-qualitative difference, or irreducible and inassimilable alterity, of the Other is

neither solipsistic nor relativistic as may, perhaps, be expected. It is accessible to either deconstruction or critique.

To state that environmental values education and eco-political agency should be heedful of ecological principles and conducive to critique is hardly news in environmental education. But, this discussion has not simply arrived at a platitude. When ecological science is conceived from the perspective that acknowledges the *otherwise than being*, the nature and status of environmental science differ radically from the perspectives that typically circulate in environmental education. Environmental science cannot fully elucidate ecological relations, not because "there always remains something more to be described, but because there always remains something that exceeds theoretical description" (Llewelyn, 1991, p. 268). The study of ecology shall always be a partial description of relations due to the reduction of the Saying when it is fixed in the Said.

In addition to imposing an irreducible limitation on knowledge, fixing the Saying into the Said suggestively signals possible links between Levinas' ethics and viewing knowledge within the frame of narrative theory. However, Levinas' deployment of these terms is both unique and precise which prevents a simple transition from ethics to narrative theory. But this is a transition that can and must be made if Levinas' ethics is to inform action in the world and Levinas provides numerous clues to this necessary transition. Perhaps the most unequivocal link can be drawn from a rhetorical question posed by Levinas following the presentation of *Transcendence and Height*: "But, all things considered, what is the empirical? The purely empirical is that which receives signification, not that which gives it" (Levinas, 1962/1996, p. 22). This rhetorical question provides a basis from which to construct a credible argument that posits the fixing of the Saying into the Said as a narrative enterprise which "must not be taken for an anonymous law ... governing an impersonal totality" (Levinas, 1974/1991, p. 161). From this, it may be argued that the field of ecology is a storied domain as it is constructed within the realm of the Said.

Linking Levinas' thought to narrative theory enables the possibility of forging further links within postmodernist / poststructuralist thought. For example, when Levinas' notion of irreducible and inassimilable alterity is viewed in light of narrative theory, resonances form between Levinas and Lyotard, especially Lyotard's conviction that "it should be made clear that it is not up to us to *provide reality* but to invent illusions to what is conceivable but not presentable" (Lyotard et al., 1992, p. 24) in an effort to wage a war against totality. Furthermore, Levinas' denial of anonymity and impersonality resonate with the Foucauldian type of questions posed by Mazel in relation to environmental issues:

> What has counted as the environment, and what *may* count? Who marks off the conceptual boundaries, and under what authority, and for what reasons? Have those boundaries and that authority been contested, and if so, by whom? With what success, and by virtue of what strategies of resistance? (Mazel, 1996, p. 143)

Drawing on the thoughts of Levinas and Llewelyn, within the frame of narrative theory, enables the advocacy of a critical form of eco-political agency within environmental education that can draw on a complementary, but by no means univocal, repertoire of postmodernist / poststructuralist thought. The point to be emphasised at this stage, however, is that the assertion made earlier - that the heedfulness of ecological principles that engaging Llewelyn's cross-reading of Levinas requires – is not simply a repetition of an 'accepted fact' in environmental education since the argument that led to this concurrence and the line of thought that follows differ radically from the nature and status afforded to environmental science within the majority of environmental education theorising. There are some exceptions, however. Both Noel Gough (1993, 1994a, 1997, 1998a, 1998b, 1998c, 1998d) and Andrew Stables (1996, 1997, 2001b), for example, have strongly advocated viewing both environmental science and environmental education from a narrative framework. These works provide contemporary environmental education sources from which support may be drawn for the position presented here. However, the two positions are not

synonymous with the position being presented here, as neither Gough's nor Stables' position entails commitment to radical alterity as a constitutive element.

CHALLENGES FOR ENVIRONMENTAL EDUCATION

If a positive response is to be made to the increasing calls for the introduction of postmodernist / poststructuralist perspectives into environmental education (Callicott & da Rocha, 1996; A. Gough, 1997, 1999; Littledyke, 1996; Sosa, 1996), then postmodernist / poststructuralist ethics must be engaged by virtue of environmental education's commitment to environmental values education. Llewelyn's eco-ethics offers a lens through which to theorise postmodernist / poststructuralist environmental values education and its corollary of eco-political agency. Any such engagement with Levinas, via Llewelyn, will abound with constitutive tensions and these tensions must be welcomed in keeping with the commitment to uncertainty and plurality. This section anticipates two tensions that could receive high profiles in environmental education. The first of these tensions involves the impossibility of developing *an* eco-ethics from Llewelyn's cross-reading of Levinas. This would and must be an unrelenting challenge. The second challenge is a non-challenge. It concerns possible disparagement of engaging with Levinas and Llewelyn, by linking their ethics to the familiar criticisms of deep ecology that reverberate within environmental education. Unlike the essential endurance of the first challenge, the second challenge can be dispensed readily.

AN ECO-ETHICS VIA LEVINAS AND LLEWELYN IS IMPOSSIBLE

Llewelyn's eco-ethics, via Levinas, will not provide environmental education with *an* eco-ethics. It will not and cannot fulfill the task of environmental education, as conceived by IUCN, UNEP & WWF, to provide the "new ethic, embracing plants and animals as well as people" (IUCN UNEP WWF, 1980, Section 13) if this new ethic is expected to be embodied as a code of ethics. This impossibility arises from a (con)fusion of the term 'ethics'. For Levinas, ethics is a pre-ontological relationship rather than an ontological code of ethics. Derrida accentuates this distinction in *Violence and Metaphysics* by referring to Levinas'

ethics as the "Ethics of Ethics' and notes that 'this Ethics of Ethics can occasion neither a determined ethics nor determined laws without negating and forgetting itself" (Derrida, 1967/1978, p. 111).

Any hope for the development of a code of eco-ethics via Levinas and Llewelyn is at best misguided and at worst a betrayal. Such hope is a betrayal if it arises from a belief that a code of ethics would 'accomplish' Levinas' ethics since a desire for accomplishment concomitantly strives to render the face to face relationship redundant. This desire for a code of ethics violates the summons/plea of the Other: "Thou shalt not commit murder" (Levinas, 1982/1985, p. 89). Instead of respecting and welcoming the alterity of the Other, approaches that hope for a code of ethics wittingly, or unwittingly, scheme to exile the Other. hook's (1990, p. 152) characterisation of the coloniser echoes here: "No need to hear your voice when I can talk about you better than you can speak yourself". The hope for a code of ethics is simply misguided, however, if it arises from a (con)fusion that could be remedied by a clarification of terms. The movement from the ethical relationship with the Other to justice and politics does not occur via an intermediate code of eco-ethics; instead, the transition is a direct bridge from the irreducible ethical transcendence of the face to ethico-politics. If this conceptual shift from a code of eco-ethics to eco-ethico-political action is compatible with the IUCN, UNEP, and WWF's aspiration to a 'new ethic', then the IUCN, UNEP, and WWF has prepared the way for the engagement of Levinas' ethics in environmental education via Llewelyn's cross-reading.

However, just as there is not *an* ethics, Levinas notes that "there is no politics for *accomplishing* the moral but there are certainly some politics which are further from it or closer to it" (Wright et al., 1988, p. 177, emphasis added). Two important points can be drawn from Levinas' statement. Firstly, *the* ethico-politics is an ideal. This does not impede or devalue striving toward an ideal as Levinas notes: "This utopianism does not prohibit you from condemning certain factual states, nor from recognizing the relative progress that can be made" (Wright et al., 1988, p. 178). The pursuit of an unattainable ideal is not futile and the pursuit of

an ethico-eco-politics in environmental education can be assisted and supported by the work of others in the constellation of postmodernist / poststructuralist thought, such as Lyotard and Foucault, as noted earlier. The other point to note is that there is an undeniably pragmatic dimension in Levinas' thought. This pragmatic dimension can both affirm and provide a positive means of interrogating environmental education's commitment to its overt affective agenda in the pursuit of eco-ethico-political action.

DEEP ECOLOGY AND ECO-ETHICS VIA LEVINAS AND LLEWELYN

The unconditional biocentric equality that the deployment of non-qualitative difference brings to Llewelyn's eco-ethics, when combined with the restructured notion of subjectivity that is explicit in Levinas' work and implied in Llewelyn's, leads to what may appear to be another problem for engaging Levinasian eco-ethics in environmental education. Biocentric equality and the restructuring of subjectivity signal links between Llewelyn's eco-ethics and deep ecology. This signals a challenge as the criticisms of deep ecology reverberate within environmental education.

One of the most concise and vitriolic summaries of these criticisms has been provided by Stark (1995, p. 275-276), who views deep ecology as postmodern environmentalism. Specifically, he asserts that:

> The philosophical foundations of deep ecology are abundantly clear, wholly unpromising, and logically indefensible. ... In its rejection of reason (Silorski, 1993), postmodern environmentalism renders questions of knowledge, ethics, and politics utterly unresolvable... Postmodern environmentalists claim to do away with real problems by philosophically ignoring them and by appealing to spiritual, intuitive claims. They offer us metaphors (Gardiner, 1990) like "ecocentrism," "non-anthropocentrism," "bioregional diversity," "biospherical egalitarianism," devoid of any content, rich in emotional appeal to tacit knowledge (Botwinick, 1993) and fraught

> with retrograde political implications. ... The issue imposed by postmodern environmentalism is not the fate of the planet. What is at issue is the fate of reason in radical environmentalism. (Stark, 1995, pp. 275-276)

In summary, Stark's objections to deep ecology stem from what he perceives to be its rejection of reason, knowledge, ethics and politics, and its embrace of spirituality. However, any challenges that may be anticipated for theorising environmental education through Llewelyn's eco-ethics, via Stark's objections, are non-challenges. None of Stark's objections can be upheld in relation to Levinas' ethics of the face to face or Llewelyn's eco-ethics. Each of Stark's objections will be addressed in turn in relation to the ethics of Levinas and Llewelyn, excepting the claims regarding the rejection of ethics and politics. The need to address these criticisms has been forestalled by the previous readings of Levinas' and Llewelyn's ethico-politics.

In response to Stark's first objection that deep ecology rejects reason, neither Levinas nor Llewelyn underestimate reason or its aspiration to universality. Neither works denounce rationality nor advocate non-rationality or irrationality. Instead, they emphasise that the movement of reason is self-referentially confined to the realm of the said. Reason cannot venture beyond the realm of the said into the realm of the saying because reason's reason for existence – conceptualisation – is annulled by alterity. As a consequence, the cutting edge of reason annuls alterity: "reason is a sharp instrument that can cut ruthlessly" (Nuyen, 1997, p. 5). Both Levinas and Llewelyn emphasise reason's violence toward the other and its capacity to mask this violence. This does not constitute a rejection of reason. Romantic-thinker is thinker-romantic.

Stark's objection that deep ecology rejects knowledge cannot be sustained in relation to Levinas' face to face either. In a similar vein to the response to Stark in relation to reason, Levinas' position is that knowledge is confined to the world of the same/said and it must, therefore, forever be incomplete: "knowledge is a

relation of the *Same* with the *Other* in which the Other is reduced to the Same and divested of its strangeness" (Levinas, 1996, p. 91, Levinas' emphasis). Knowledge is immanent: it is welded to the metaphysics of presence. This does not constitute a rejection of the notion of knowledge, and it does not mean that meaning cannot be constructed, circulated and transformed within the world of the same. But it does curtail any aspiration to Absolute knowledge.

Finally, Stark's objection to deep ecology based on the claim that it invokes spirituality cannot be transferred to Levinas' face to face or Llewelyn's eco-ethics. The non-qualitative difference, the naked alterity, that Llewelyn invokes to provide his eco-ethics with the transcendent character of the face to face does not involve imbuing nature with a psychic dimension. Therefore, this eco-ethics is not panpschyic. It is not pantheistic either as non-qualitative difference does not embody God in nature.

None of Stark's objections can be upheld as a disparagement of engaging Llewelyn's cross-reading of Levinas in environmental education. There is, however, another objection to deep ecology that Stark has overlooked that must be raised and explored. This objection concerns the misanthropy that is promoted by some individuals and groups within the deep ecology movement. The most extreme position of misanthropy is proclaimed by VEHMENT – the Voluntary Human Extinction Movement. Dryzak (1997, p. 157) notes that "these extreme forms of misanthropy are not at all representative of deep ecology in its entirety, and so many take pains to distance themselves from the misanthropes". Such a distance must be clearly delineated here as well due to the resonances between Llewelyn's eco-ethics and deep ecology. Any hint of a suggestion of linking education and misanthropy would be dire indeed for the position presented here since education is construed to be a 'positive' process across the broad spectrum of ideological perspectives. Thus, education and misanthropy are diametrically opposed.

As outlined earlier the face to face is an "unlimited ethical demand" (Levinas, 1982/1985, p. 114) which potentially entails self-sacrifice of the I under the condition of unmediated singularity. But the unwavering copresence of the third party prevents any instance of unmediated singularity; the "relationship with the third party is an incessant correction of the asymmetry" (Levinas, 1974/1991, p. 158) of the face qua face. Through this correction of asymmetry, the third party bestows responsibility and justice to me, and I "become an other like others" (Levinas, 1974/1991, p. 161). The bestowal of responsibility and justice for me is as a gift from the third party. A gift, of course, can be refused or thrown away later, but this does not annul the giving. The gift from the third party is, in part, a disavowal of altruistic self-sacrifice. In terms of Llewelyn's cross-reading, then, the third party's gift forbids the misanthropic intentions promoted by some individuals and groups within the deep ecology movement. Whether or not this prohibition is heeded is a different matter. The misanthropes can choose to refuse or throw away the gift from the third party if they wish. But a positive response to engaging with Levinas via Llewelyn in environmental education requires the acceptance of the third party's gift through an utter rejection of misanthropy.

ENGAGING LEVINAS IN ENVIRONMENTAL EDUCATION

None of the objections levelled at deep ecology can be upheld as a disparagement of engaging Levinas in environmental education, yet given that Llewelyn's cross reading furnishes neither an eco-ethics nor the eco-politics it may appear that Levinasian eco-ethics has nothing tangible to *offer* to environmental education. But this lack, this 'essential poverty' (Derrida, 1999), is precisely that which can actively add to, rather than detract from, environmental education. Indeed, this lack is entirely necessary to engage Levinasian eco-ethics.

The lack of a code of eco-ethics arises from the aporia that the third party creates in the face to face. The copresence of the third party in the face to face relationship compels the I to compare incomparables. The plea of the Other is urgent, but the I is transfixed by irreducible uncertainty: *I have a responsibility...This*

responsibility is mine and mine alone...I cannot shirk or delegate this responsibility...I must decide...I must act... The ethical moment is an ordeal of hesitation.

An ordeal of ethical hesitation is not unique to Levinas. Kierkegaard and Derrida have described such ordeals, but the unconditional bioequality of the ordeal of hesitation as per Llewelyn's cross reading of Levinas bears direct relevance for environmental education. The ordeal of hesitation is invoked irrespective of the Other's predicates. This disavows *a priori* exclusivity and prejudice that favour human beings. Therefore, anthropocentrism is impossible when the non-human enters the realm of the face to face. It is important to emphasise again that this ethical ordeal, which arises from the impossibility of prioritising the needs of the Other and the third party, does not preclude processes of hierarchisation. It *does*, however, situate such processes in the political realm. Levinas excludes hierarchisation from the ethical realm.

Whilst anthropocentrism is ardently renounced in environmental education, it is unlikely that the argument thus far would convince theorists within the field of Levinas' relevance to environmental education. Attention needs to be turned to the issue of individualism. This is a highly contentious issue in environmental education and those committed to critical theory could be expected to be extremely sceptical of any link between Levinas and environmental education based on his exclusive use of first person in the theorisation of the face to face.

The face to face is indeed asymmetrical; whilst the whole of humanity may face the I through the eyes of the Other, the I is always singular. The face to face *is* an individual ordeal. The ethical responsibility *is* individual. But with the dissolution of the face to face the *responsibility* of the I becomes *response ability* in the world. This dissolution marks the movement from ethics to politics. It forces attention to the multiplicity of subjectivities in which " a sharp distinction must remain between the ethical subject and the civic one" (Derrida, 1997/1999, p. 32). This movement from the ethics to civics also marks the lifting of the individualism

that the face to face imposes on the I. The individualism that is constitutive of the ethical relation of the face does not automatically flow into the political realm.

Environmental values education operates within the political realm when viewed from the Levinasian perspective. Thus, engaging with Levinas' ethics does not prescribe individualism in environmental values education; it does not proscribe individualism either. Therefore, any argument levelled against engaging Levinas in environmental values education on the basis that the face to face is inherently individualistic misses the mark because the mark is elsewhere, *beyond being*. The individual ordeal of the face to face precedes environmental values education.

Levinas emphasises that facing the Other "is to be taught" (Levinas, 1961/1991, p. 50). This simple statement carries a double meaning. On the one hand, facing the Other is to be taught *by the Other* in the ethical relationship. On the other hand, the act of *facing the Other* is to be taught by educators. Both of these nuances have pedagogical implications. The first reading, to be taught *by* the other, is to "*receive* from the Other beyond the capacity of the I" (Levinas, 1961/1991, p. 51, Levinas' emphasis). The utter excessiveness of the pedagogical encounter in the face to face places the I in a position of vulnerability and precludes any certainty regarding the meanings that students may construct. Thus, teachers need to be sensitive and receptive to both the vulnerability of the students and the unforeseeable meanings that they may construct. In order for this situation to occur, however, teachers need to provide students with learning experiences that promote receptivity to difference. This is the second nuance.

Both of these nuances have direct relevance for education generally (see Todd, 2001). The second nuance, however, has a special relevance for environmental education since the face to face encounter with the non-human Other marks the site of Levinasian eco-ethics as per Llewelyn. Thus, environmental educators need to provide students with learning experiences that promote a receptivity to the difference of the non-human Other. This alone, however, is insufficient. As

discussed earlier, the presence of the third party shatters the transcendence of the face to face by compelling the I to compare incomparables. This both jolts the I from the singularity of the face to face encounter and appeals to the I to engage in ethico-political action amid the teeming sociality of the world. Thus, environmental educators need to help learners to become sensitive to the moment of hesitation that shatters the transcendence of the face to face. This does not mean that educators should promote hesitation as a virtue. Rather, educators ought to encourage learners to challenge the myth of seamlessness in which hesitation can be disparagingly equated with weakness, inexperience and incompetence.

Educators can assist learners to challenge the myth of seamlessness by accentuating the fractured movement from of the ethical to the political. In the broad arena of education these ethical encounters are most likely to be interpersonal: student-student or student-teacher. The realm of these ethical encounters would be broadened in environmental education to include face to face relationships with the non-human as well.

CONCLUSION

The notion of uncertainty, as the Panel for Education *for* Sustainable Development in the Schools Sector (EfDSS) presents it, arises from the conjunction of plurality and the limitation of knowledge. This conjunction is exemplified in Levinas' formulation of the face to face relationship. Therefore, Levinas' thought is wholly relevant to environmental education's engagement with uncertainty. Linking uncertainty to plurality can be successful only if the difference that plurality emphasises is approached *as* difference. If the pluralism is approached otherwise, that is from the violent form of 'tolerance' that emphasises sameness, uncertainty is eradicated and the conjunction dissimulated. The face to face exemplifies approaching difference *as* difference. The face to face also exemplifies the conjunction of uncertainty and the limitation of knowledge since the exposure to the utter excessiveness of difference that occurs in the face to face relationship defies conceptualisation and thematisation. Therefore, the face to face

exposes an irreducible residue that defies being captured in concepts and conveyed by language. This irreducible residue imposes a limitation on knowledge that cannot be transgressed.

It has been noted, however, that engaging Levinas via Llewelyn furnishes neither *an* eco-ethics nor *the* eco-ethico-politics. The inability to provide *an* eco-ethics results from Levinas' unique deployment of the term 'ethics' to designate the pre-ontological relationship with the face. The face to face cannot be 'packaged into' a code of ethics. Instead, the movement is from the ethical relationship of the face to face to eco-ethico-political action. Levinas' denial of *the* ethico-politics turns on the impossibility of attaining the "ideal of saintliness" (Wright et al., 1988, p. 177). The impossibility of attaining an ideal, however, in no way impedes or devalues the pursuit of it. To engage Levinas is to undertake the pursuit. Thus, the inability to provision *an* eco-ethics or *the* eco-ethico-politics is not an example of the negative response that Child et al. (1995) and others note that many educators confront when they turn to postmodernist / poststructuralist theories. Levinas positively signals what ought to be pursued.

In environmental education this pursuit involves going beyond Levinasian eco-ethico-political abstraction toward Levinasian eco-ethico-political action. This pursuit does not admit the stance of 'anything goes' that is frequently, and erroneously, attributed to postmodernist / poststructuralist thought. There is an unmistakably pragmatic dimension in Levinas' thought. This does not ease the relentless challenge that engaging Levinas in environmental education would entail, but drawing upon the constellation of postmodernist / poststructuralist thought, including that of Lyotard and Foucault, can support the task.

Specifically, the task involves providing learning experiences that promote receptivity to difference and accentuating the ordeal of ethical hesitation. It also involves accentuating the fractured movement from the ethical realm to the political realm. By engaging these implications of Levinas' thought, environmental

education can highlight the mythical aspect of seamlessness, which pejoratively links hesitation to notions of weakness and incompetence.

Accepting the invitation to pursue Levinasian eco-ethico-political action enables the participants of environmental education to operate within a frame that maintains the conditions of uncertainty. It does not offer a conduit from uncertainty to certainty, which would defeat the purpose of engaging with Levinas in the first instance.

CHAPTER FIVE - NARRATIVE UNCERTAINTIES

INTRODUCTION

The rhizomatic method adopted in this project stands in opposition to arguments that trace linear trajectories. Linear arguments designate a point of origin from which to proceed in an accretive process. In contrast, rhizomatic approaches deny the efficacy of designating a point of origin. According to Deleuze and Guattari: "Perhaps one of the most important characteristics of the rhizome is that it has multiple entryways" (1980/1987, p. 12). This chapter maps another 'entryway' for engaging uncertainty in environmental education. The argument presented here does not develop what the previous chapter preconfigured; instead, it forges another line of flight into narrative theory.

In one of the earliest formulations of critical realism, *Reality and Truth: A Critical and Constructive Essay Concerning Knowledge, Certainty and Truth*, Vance (1917, p.217) casts certainty as "a quality of propositions". This positioning dissociates certainty from perspectives that logocentrically locate certainty in *the* world. This dissociation is operationalised here. Vance's rendition of certainty enables explorations that depart from the logocentrism of critical realism, which (cl)aims to establish truth or validity from beyond text (Derrida, 1967/1978). Thus, Vance provides an egress to explore notions of certainty and uncertainty from structuralist and poststructuralist perspectives of narrative theory. This is significant for environmental education since many of the orientations that comprise this contested field embrace critical realism (Fien, 1993; Huckle, 1993; Robottom & Hart, 1993). Hence, the possibility of this egression, *pace* Vance, is germane to a broad spectrum of environmental educations.

Narrative theory and narrative approaches have received high profiles in education theorising throughout the last decade. Their applicability and possible implications for education are a source of ongoing contestation that hinges, in

part, on multiple perspectives regarding the scope of narrative theory. According to Knoepsel (1991, p. 101, emphasis added), "narrative theory invites us to think of *all* discourse as taking the form of a story". This is the position that is adopted in this chapter. However, many education theorists dispute the inclusiveness of this stance and endorse restrictions on the domain of narrative theory and approaches by appealing to either classical notions of truth or to a fact/fiction dichotomy (Fenstermacher, 1997, 1994; Phillips, 1997). Arguments that appeal to a fact/fiction dichotomy as a means to dismiss or restrict narrative perspectives have been rebutted in the environmental education arena by Gough (1994b) and in the broader arena of social science by Haraway (1989). These rebuttals challenge the supposed polarity of fact and fiction by demonstrating their interrelations, thereby predicating narrative as availing knowledge and supporting Stoicheff's view that:

> Our worldly narratives, through which we construct what we think of as reality, are themselves the tissue of previous narrative texts with which they blend and clash, and which we ought to interpret in various ways. Whatever we call reality it is revealed to us through the narratives we compose. (Stoicheff, 1991, p. 95)

This chapter will not reiterate arguments that support the potential of narrative theory for environmental education by opposing a fact/fiction dichotomy, since this dimension of narrative has been engaged by Gough (1994b). However, the other line of argument that critics deploy against an inclusive perspective of narrative knowledges, namely opposing narrative and truth, will be explored since this aspect of the narrative debate has not been engaged in environmental education to date. Specifically, this will be addressed in relation to the correspondence, coherence and pragmatic theories of truth (Armour, 1969; Joachim, 1906; Kirkham, 1992; Schmitt, 1995; Walker, 1989). From poststructuralist perspectives, the disparagement of narrative through appeals to these classical theories of truth are, to borrow a phrase from Rorty, examples of "scratch[ing] where it does not itch" (quoted in Wolfe, 1998, p. 48.9).

Nevertheless, sidestepping the issue would be imprudent. The thorny issue of truth must be confronted in order to forestall criticisms of the explorations of narrative uncertainties from the platform of truth versus narrative.

The issue of truth is the first topic to be addressed in this chapter. This discussion, which recapitulates and extends the discussion of truth that was prerequisite for the reading of constructive consonance in Chapter Two, demonstrates that disparagements of poststructuralist narrative inquiries that appeal to the issue of truth cannot be sustained. When this discussion is viewed in conjunction with Gough's rebuttal of the declamations against narrative inquiry based on the fact/fiction dichotomy, it would appear that poststructuralist narrative inquiry could be advanced as a legitimate means of availing knowledge in environmental education. It would be naïve, however, to expect that these arguments would be sufficient to incline many in environmental education toward narrative approaches. Other issues can be anticipated to emerge following the rebuttals of arguments that appeal to truth and the fact/fiction dichotomy. One possible issue concerns the perceived inability of poststructuralisms to be deployed in projects committed to notions of improvement. This issue has implications for environmental education as it raises the question of whether poststructuralist narrative inquiries can provide a medium for ethico-political environmental agency. Gough believes that this is possible (1994b), but he does not provide a justification for this belief. MacLure (1994), on the other hand, does not believe that notions such as betterment are possible within poststructuralist perspectives and she provides a justification for her claim. The second section in this chapter examines the issue of whether poststructuralist narrative inquiries can contribute to ethico-political agency and concludes that this is possible without resorting to modernist manoeuvres.

Another issue that is anticipated to emerge arises from Derrida's famous remark that "*there is nothing outside of the text*" (1967/1976, p. 158, Derrida's emphasis). This statement has been widely read as a denial of concrete existence. This charge was levelled at idealism prior to Derrida's formulation of

deconstruction and Derrida's proclamation was taken as unequivocal confirmation of this reading of idealism. However, this is a misreading of both idealism and Derrida, yet it is accepted without challenge within anti-deconstructionist spheres and is largely ignored by proponents of deconstruction. The failure of critics and proponents alike to examine this misreading has not only enabled its endurance, but also elevated it to the status of orthodoxy among anti-deconstructionists. This misreading has the capacity to suppress support for poststructuralist narrative approaches in environmental education. This chapter will demonstrate that Derrida's famous proclamation can be embraced in environmental education without relinquishing belief in the materiality of (the) environment.

Confronting and countering the existing and anticipated disparagements of poststructuralist narrative approaches does not create an *entrance* for poststructuralist narrative approaches in environmental education. Gough, (1993, 1994b, 1998a, 1998d) and Stables (1996, 1997, 2001a, 2001b; Stables & Bishop, 2001; Stables & Scott, 1999) have advocated and employed poststructuralist narrative approaches in environmental education for almost a decade. Furthermore, they have addressed many key obstacles that face narrative theory in environmental education, such as the privilege afforded to scientific discourse. However, they have not explored in any depth the resistance through appeals to truth, the perceived inability of poststructuralisms to contribute to projects committed to notions of betterment, and the denial of concrete existence. Nor have they addressed narrative theory in terms of uncertainty. Thus, the themes that are addressed in this chapter strengthen and advance the role and status of narrative theory in environmental education by challenging further lines of resistance, and by exploring how narrative theory can support environmental education's engagement with uncertainty, respectively.

In order to explore how environmental education can engage uncertainty through narrative, this chapter probes narrative theory from both structuralist and poststructuralist perspectives and formulates from these four forms of narrative uncertainties. The first form of narrative uncertainty is subjunctive uncertainty,

which attends the openness and plurality of narratives. Subjunctive uncertainty has the capacity to promote the utopianism of environmental education's commitment to transformation. The second form of narrative uncertainty is decentred uncertainty, which arises from the loss of transcendental signifiers. This form of uncertainty confronts the widely accepted logocentric perspectives in environmental education theorising, which treat (the) environment as a prediscursive given. The third form of narrative uncertainty is allegorical uncertainty. This uncertainty arises in a conservative form from clashes that may occur between denotative and connotative readings of narratives and in a radical form from the anti-identitarian position that meaning overflows words and concepts. Finally, the fourth form of narrative uncertainty, which is related to the third, is *poietic* uncertainty. This uncertainty arises from the motif of the Death of the Author as per Derrida (1967/1978), Barthes (1968/1977) and Foucault (1969/1988). These four forms of narrative uncertainties are not mutually exclusive; numerous interrelations play between these formulations. Furthermore, these formulations are not exhaustive; they are not tendered as a means of encapsulating narrative uncertainties. This disclaimer regarding the lack of exhaustiveness is not grounded in belief that uncertainty is too complex or multifaceted to summarise; it arises, instead, from the conviction that uncertainty defies closure.

NARRATIVE VERSUS TRUTH

Approaching education research as a storying endeavour has attracted a great deal of attention lately, with several journals devoting special editions to narrative inquiry. The attention has not all been positive however. Several critics have denounced narrative inquiry by appealing to the virtue of truth. Dennis Phillips (1994, 1997), who stands out as perhaps the most vocal critic of narrative inquiry, raises a banner for the truth, the whole truth, and nothing but the truth. He recently proclaimed that in education "we do not want to be fobbed off with a credible fiction ... we want the *true* account, the *real* reasons" (Phillips, 1997, p. 107, Phillips' emphasis). He then continued to cast narrative inquiry in a milieu of

futility by asking "if there are just more-or-less engrossing narratives, none of which can be said to be true or false – why would one bother to expend the energy to carry out rigorous inquiries" (Phillips, 1997, p. 166)? When this claim is supplemented by others from beyond the education arena, the prospects for narrative inquiry seem bleak indeed. Take for instance Schmitt's (1995, p. x) comment that "it is now common among literary theorists, sociologists of science, anthropologists, educational theorists and others to deride classical theories of truth". He continues: "I don't suppose people who declaim such ancient virtues as truth and consistency ought (if they are consistent!) to care much about the accuracy of their claims".

But what is truth? It is clearly not a univocal concept and many critics in education do not stipulate their affiliations when it comes to his question. Dennis Phillips is no exception. In *Telling the Truth about Stories*, he appeals to truth as an intuitive given; he does not stipulate what his conception of truth is. Nevertheless, given that Phillips (1999, p. 246) describes himself as "unrepentantly modernist" and his restricted references to Popper, it may be inferred that he endorses a correspondence theory of truth.

The correspondence theories of truth, which have attracted the support of notable thinkers from Plato and Aristotle to Bertrand Russell and Karl Popper, hold that a statement is true if it corresponds with the facts or the state of affairs. Historically, the correspondence theories of truth have been associated with realist ontologies. However, they are not solely confined to realist positions; correspondence theories of truth can be upheld within certain versions of idealism (Kirkham, 1992; Schmitt, 1995). Perennial objections to correspondence theories of truth, of either realist or idealist orientation, pertain to questions involving the constitution of 'facts' and 'the state of affairs', and the nature of 'correspondence'. Each of these general objections has been augmented in recent times by the emergence of poststructuralist perspectives. Poststructuralist perspectives reject the notion that the reach of a proposition extends all the way down to the 'thing itself', the referent. Thus, they reject realist notions of correspondence.

Furthermore, poststructuralist perspectives reject the symmetry between signifier and signified that is essential to idealist versions of correspondence. Given that correspondence cannot obtain in asymmetrical systems, poststructuralist perspectives must reject idealist versions of the correspondence theories of truth. Following the rejection of realism and the nature of the critiques of idealism, poststructuralist narrative theories cannot accommodate any versions of the correspondence theories of truth. Therefore, any criticism of poststructuralist narrative theory that appeals to the correspondence theories of truth is as hollow as criticising red for not being blue.

The coherence theories of truth cannot be accommodated either. The coherence theories of truth hold that a statement is true if it *coheres* with the entire system (Armour, 1969; Joachim, 1906; Kirkham, 1992; Olen, 1983; Schmitt, 1995). Hence, the coherence theories of truth are allied to an idealist ontology and have attracted criticisms reflecting realist orientations. Armour, for example, notes that the coherence theory of truth has been criticised for not 'connecting with the real world':

> The proponent of the coherence theory . . . goes about comparing propositions and begins building himself [sic] a world of propositions as a substitute for whatever world there is. It must seem then that his substitute world can be huffed down by any passing wolf of a realist who troubles to point out what the problem of truth is all about. (Armour, 1969, p. 20)

Dennis Phillips may, perhaps, aspire to being this wolf of a realist in the education arena. However, these objections relating to the lack of connection between the coherence theories of truth and the 'real world' bolster poststructuralist critiques of metaphysical presence by default, rather than causing agitation over inadequacy, illusion or falsehood. These claims simply articulate and advance poststructuralist convictions that whilst reality may exist, humankind has no claim to direct or true access to that reality.

Another common objection to the coherence theories of truth claims that a proposition may be true in one coherent set of beliefs and false in another which invalidates the very notion of truth. On the surface, this objection may seem to support poststructuralist commitments to multiple and competing readings of texts and the celebrations of instability, fluidity and contradiction, via Nietschze and others. However, this objection's appeal to the principle of non-contradiction (which is not upheld by the paraconsistent logicians' recognition that both p and $\sim p$ can both be true) is based on a fundamental misinterpretation of the coherence theories and, as such, cannot inform any stance at all (Joachim, 1906; Walker, 1989). The coherence theories of truth hold that each proposition entails all others in the *entire* system and, according to Joachim (1906, p. 78, Joachim's emphasis), "there can be *one and only one* such experience". Joachim refers to this coherent whole as an Ideal Experience. This belief in the existence of an Ideal Experience constitutes a belief in the existence of The Greatest Story Ever Told – The Ultimate Meta-Narrative. Following Lyotard (1984), aspirations of The Ultimate Meta-Narrative are antithetical to poststructuralist perspectives and so any criticism aimed at narrative inquiry for failing to strive toward the univocal truth of The Ultimate Meta-Narrative misses the point and does no damage.

Having briefly outlined why neither the correspondence theories nor coherence theories of truth may serve as anchors for poststructuralist narrative inquiry, only one more major class of theories will be considered here. This is the class of pragmatic theories of truth. According to the pragmatic theories, "an assertion is true if it has the right kind of effect on its believers - if it is expedient, or useful, or solves problems" (Armour, 1969, p. 140). Allegations of indoctrination and propaganda lie waiting to be sprung and Dennis Phillips has aimed these (de)vices directly at narrative inquiry, as advocated by Polkinghorne (1995), and Phillips is worth quoting at some length on this issue. He argues that:

> the narratives told by racists to justify discrimination or even genocide certainly seem to satisfy the subjective needs of their audiences, and these stories do not challenge any prior convictions

> but are fully compatible with the racist assumptions held by members of the audience. Are we to say that because these narratives meet Polkinghorne's desiderata that they are satisfactory explanations of genocide? Apart from their moral bankruptcy, racist narratives are not *true*; they make use of faulty notions of genetic superiority and of race, they refer to the mythical virtues of blood and breeding; and they often contain distortions of history. They do not stand up to critical empirical and theoretical scrutiny, and so they are defective explanations. (Phillips, 1997, p. 107, Phillips' emphasis)

Whilst, like Phillips (1997), members of the environmental education community would be expected to recoil from racist narratives due to environmental education's overt commitment to social justice, the pragmatic theory of truth is endorsed within some sectors of environmental education. Robottom and Hart (1993, p. 11), for instance, maintain that "what counts is what changes, and truth is whatever leads to the achievement of what is good, right, responsible and empowering of individuals". Should Robottom and Hart (1993), and those who share their conception of truth, disalign themselves from the pragmatic theory of truth on the basis of the link that Phillips (1997) implicitly suggests between the pragmatic theories and atrocities such as genocide? The answer to this question is a resounding NO. Phillips' (1997) narrative fails to exercise the theoretical scrutiny that he champions. Therefore, it is he who has produced a defective and coercive explanation, the type of explanation that he so openly deplores. These are strong claims to level at an accomplished and a respected education theorist. But I contend that in this instance they are warranted on the basis that Phillips (1997) suggests that in the absence of truth as he construes it, we are duty bound to gullibility, that is we are duty bound to uncritically accept any narrative that comes our way. This stance is premised upon the dual misconceptions that normative elements do not exist in poststructuralist

perspectives and that poststructuralisms reject notions of truth. Yet neither of these claims can be upheld.

The first misconception, which holds that normative elements do not exist in postmodernist/poststructuralist theorising, ignores the normative elements in the works of Derrida (1967/1978), Levinas (1961/1991, 1974/1991, 1982/1985) and Lyotard (1984, 1985) just to name a few. These normative elements enable the evaluation of interpretive possibilities. Thus, Phillips' suggestion that narrative inquiry compels gullibility cannot be sustained within the sphere of poststructuralist narrative inquiry. The second misconception, which holds that postmodernisms/poststructuralisms reject truth, cannot be sustained either. Postmodernist/poststructuralist theorising does not and cannot reject truth. Such a stance is a logical impossibility; to argue that truth is an illusion or invalid requires an implicit commitment to the notion of Truth. Yet postmodernist/poststructuralist theorising is not simply resigned to the intractability of truth. Instead, notions of truth are explicitly supported. Foucault, for example, maintains that "truth is a thing of this world" (Foucault, 1980, p. 131) and that it is "something that can and must be thought" (Foucault, 1985, p. 7). For Foucault the central question is not *what* is true, but *how* truth is produced, circulated, transformed and used. Likewise, Derrida insists on the necessity of truth:

> it goes without saying that in no case is it a question of a *discourse against truth* or against science. (This is impossible and absurd, as is every heated accusation on this subject.) ... *we must have [il faut] truth* ... we must recognise in truth "the normal prototype of the fettish". How could we do without it? (Derrida, 1972/1981, p. 105, Derrida's emphasis)

Poststructuralisms, then, are vindicated of the kind of declamations levelled by Phillips (1997) and Schmitt (1995), which presume an ambivalence toward, or rejection of, truth. Far from rejecting notions of truth, many poststructuralist

theorists exhort the necessity of truth. Further, poststructuralist narrative inquiry avoids the crippling relativism which constitutes a major component of Phillips' sweeping objections to narrative inquiry. This is avoided by the presence of normative elements that enable the evaluation of interpretive possibilities. This does not, however, vindicate all forms of narrative inquiry from the objections raised by Phillips; it vindicates only poststructuralist narrative inquiry. This is an important distinction as the support for the pragmatic theories of truth, which Phillips indirectly condemns through his denunciation of narrative theory, arises in environmental education mainly among those committed to critical theory. Thus positioned, these theorists must adhere to classical versions of the pragmatic theories of truth which maintain that the effects that truths have on their believers have a prediscursive, objective, factual basis (which has led to interesting debates regarding the utility of false beliefs). Thus construed, pragmatic truths are useful and incontestable 'givens' in the world. In the absence of the normative elements embedded in poststructuralist perspectives, analytical narrative inquiries need to heed Phillips' warning of the potential for evil that lurks in the pragmatic theories of truth.

Before leaving the topic of narrative versus truth, another declamation levelled against both poststructuralisms and narrative theory warrants exploration since it tacitly appeals to environmental truths. Many within the broader arenas of eco-philosophy and eco-criticism reject the notion of environment as text on the basis that it is socially and ecologically irresponsible (Kellert, 1995; Sessions, 1996/97; Shephard, 1995; Snyder, 1996/97; Waller, 1996/97). This notion of irresponsibility relates to the intentional creation of a discursive space in which it becomes valid to ask "If nature is only a social and discursive construction, why fight hard to save it" (Hayles, 1995a, p. 47)? This questioning, it is argued, has the potential to promote further environmental exploitation and degradation by furnishing vested groups with fake authorial leverage for access to power and resources. This position was used in an unsuccessful attempt to dissuade editors Michael Soulé and Gary Lease (1995b) from publishing *Reinventing Nature?*

Responses to Postmodern Deconstruction, even though most of the chapters declaim deconstruction for the same reason. Editor Soulé (1995, pp. 158-159), for example, maintains that "[i]f policy makers were to accept these postmodern myths they might become even more accommodating to invasive or destructive practices, believing that 'nature isn't natural anyway'". This position is reiterated more forcefully in the special issue of *Wild Earth*, which is devoted to 'Opposing Wilderness Deconstruction' (Winter 1996/97).

This line of argument is odd at the very least due to its appeal to pragmatism. These opponents of environment as text support the notion of objective facts whose truth content may be grounded in either the correspondence or coherence theories of truth. These opponents then support the notion that when faced with the truths/facts, informed and responsible decision-making can occur. Yet neither the correspondence nor the coherence theories of truth, within which these 'truthful facts' reside, entails that truth is good, or proper, or responsible; neither theory charts (the) moral high ground. The 'authentic' authorial leverage over the good, the proper, and the responsible that these opponents presume exists in the light of the truth/facts is self-appointed. In other words, responsible environmental decision-making is not a function of the truth content of the facts. Instead, the crux of this decision-making process is the self-appointed authorial leverage that these opponents wish to deny to those whose philosophical perspectives differ from their own. These opponents undermine their own argument the moment that they advance it. This line of opposition fails from the start.

The above discussion demonstrates that any attempt to repudiate poststructuralist narrative knowledges on the basis that they fail to uphold classical theories of truth misses the mark. Poststructuralisms openly reject the classical theories of truth, but they cannot and do not disavow notions of truth *per se*. Whilst they utterly reject notions that truth is eternal, universal and immutable, they posit truth as historical, situated and fluid. When this discussion is viewed alongside Gough's rebuttal of repudiations that appeal to the fact/fiction

dichotomy, the criticism of poststructuralist narrative theory as per Phillips is dispensed. Yet it is unlikely that these arguments alone would result in widespread endorsements of poststructuralist narrative theory in environmental education. It is more likely that as these issues recede others would take their place. Two such issues might include the perceived inability of poststructuralisms to contribute to projects that are committed to notions of betterment and the misreading of Derrida which claims that deconstruction denies the existence of (the) material environment. The following two sections address these issues.

NARRATIVE UTOPIANISM AND ENVIRONMENTAL EDUCATION

Narrative approaches have much to offer environmental education due to their utopianism. The loaded word 'utopianism' is being used here both purposely and provocatively. The term 'utopianism' invokes suspicion and disparagement from both analytical and poststructuralist perspectives, although the reasons differ. Utopianism is received sceptically within analytical spheres due to a multitude of pejorative connotations such as delusion, escapism, and denial; whereas in poststructuralist spheres, scepticism and distrust arise in response to the resonances between utopianism and notions such as progress, liberation and emancipation (MacLure, 1994).

The etymology of 'Utopia' suggests, however, that these aversions to utopianism need not be warranted. 'Utopia' was coined by Thomas More in 1516 as a neologism from the Greek terms eutopia (happy place) and outopia (no place). Utopia is the imaginary place of consummate perfection. If the pathway to Utopia could be imagined, it would avoid other pathways of improvement that offer less than perfection. Utopianism, on the other hand, focuses on the pursuit of improvement rather than the perfect destination. As McCracken (1998, p. 104) notes, utopianism "offers no place in particular. Instead, it defines a sense of lack that stimulates a 'desire for a better way of being'".

Poststructuralist thought highlights further the aspect of 'no place' in utopianism. The rejection of identitarian thinking, as per Adorno (1966/1973),

Derrida (1972/1982) and Levinas (1961/1991, 1974/1991, 1982/1985) disavows the capturing of perfection in a concept since this would mire perfection through its subordination to the concept. Thus, perfection overflows any concept of it. The term 'utopianism' is being deployed here in a manner that dissociates it from any conceptualisation of Utopia in favour of an insatiable desire for a better way of being.

The desire that utopianism embodies is constitutive of environmental education, yet utopianism is ardently renounced by O'Sullivan (1999). O'Sullivan's objection to utopianism is twofold: firstly, he endorses the wariness from the analytical arena by construing utopianism as naïveté; and secondly, he views utopianism as being solely in the service of the dominant ideology as a hegemonic (de)vice. Engaging utopianism through poststructuralist narrative theory, however, avoids both of these aspects that O'Sullivan strenuously distances himself from.

Naïveté is neither the basis nor outcome of narrative theory. As Haraway (1989, p. 8) notes, "story telling" or narrative "is a serious concept, but one happily without the power to claim unique or closed readings". Therefore, story telling or narrative provides a medium through which to resist the annulment of utopianism by utopian/totalising meta-narratives. Thus, Gough's (1994b, p. 196) conviction that narrative furnishes a medium through which "we can ask if some intertextual "readings" of the world are better or worse than others in predisposing us to act in ecopolitical ways" may be read as an appeal to utopianism. Gough's statement also implicitly draws into relief a distinction between what may be coined naïve and critical utopianism. Naïve utopianism is shallow: it fails to acknowledge the possibility of adverse consequences accompanying transformative intentions. At best, naïve utopianism could be considered to be unbridled optimism; whereas, pessimistic readings lead to charges of escapism and denial. Critical utopianism, however, acknowledges and takes seriously the prospect that transformative intentions can create and unleash dystopian outcomes. Critical utopianism is, therefore, a deliberative endeavour. In

light of this distinction, naïveté and utopianism do not inevitably coincide as O'Sullivan and others from analytical spheres suggest. However, the earlier statement that 'the desire that utopianism embodies is constitutive of environmental education' needs revision to 'the desire that critical utopianism embodies is constitutive of environmental education'

Similarly, O'Sullivans' (1999) claim that utopianism operates exclusively as a hegemonic device in the service of the dominant ideology can be contested from poststructuralist perspectives. O'Sullivan's account of utopianism's capacity to perform this function by being unwittingly propelled toward to the dominant ideology's projection of Utopia is not disputed, but the denial that utopianism can act in other ways is disputed. The limitation that O'Sullivan's account places on the reach of utopianism turns on a perceived inseparability of utopianism and Utopia. Thus linked, utopianism grasps for Utopia as an idea(l), an idea(l) that O'Sullivan maintains is hegemonically pre-determined. However, utopianism and Utopia were dissociated here from the outset; furthermore, utopianism was cast in a manner that emphasised outopia (no place). This dissociation and the subsequent emphasis cast utopianism as embodying an insatiable yearning between desire and fulfillment. Therefore, utopianism is not exclusively bound into the service of the dominant ideology. Whilst it is inescapably contingent upon its situated narrative present, struggles over meanings enable possibilities of 'transgression'. This does not imply that utopianism is intrinsically transgressive; the possibilities of 'transgression' arise from the relationships between utopianism and the social context within which it emerges. When these relationships invoke 'transgression', that is struggles over meanings, uncertainty supplants certainty as per Vance (1917). Critical narrative utopianism embraces and fosters uncertainty when operating beyond the restricted domain depicted by O'Sullivan.

Countering O'Sullivan's second objection to utopianism partially defuses the scepticism and distrust from poststructuralist spheres, although again for different reasons. Poststructuralist rejections of the notion of utopianism stem from the resonances it has with progress, liberation and emancipation. These redemptive

meta-narratives appeal to prediscursivity, to sanctuary beyond the reach of the linguistic turn, to a "state of linguistic grace, where language might be purified of ideology, plural meanings and ironic relations with reality" (MacLure, 1994, p. 287). However, utopianism does not necessitate a commitment to prediscursivity. This will be discussed further in the section on 'decentred uncertainty', but another aspect of the distrust of the notions of progress, liberation and emancipation, namely 'betterment', will be addressed here.

Critics of poststructuralisms often promulgate the misconception that privileging difference creates rampant and crippling relativism by requiring commitment to the notion of 'anything goes' (Boghossian, 1996). This misconception is based on the belief that normative elements do not exist in poststructuralist theorising and has resulted in an acute wariness of 'betterment' in poststructuralist perspectives in education theorising (MacLure, 1994; Stronach & MacLure, 1996). But normative elements do exist in poststructuralist thought. This was noted in the previous section on truth and will be elaborated here.

The misconception that poststructuralist theorising is devoid of normative dimensions in not surprising; as Nuyen (1998, p. 61) notes: poststructuralist theorists "rarely explicitly draw out the normative implications of their metaphysical positions". Derrida and Lyotard, however, are amongst the exceptions. Derrida (1967/1978, p. 130), maintains that "the least violence, [is] the only way to repress the worst violence" of totalising discourses. Similarly, Lyotard's (1984, p. 82) proclamation - "Let us wage war on totality." - justifies the exclusion of terrorist/totalitarian activities since "they preclude others, their victims, from playing their own games" (Nuyen, 1998, p. 72). Critical utopianism, then, which deliberatively strives for betterment, is not antithetical to poststructuralist theorising since notions of betterment can be upheld as per Derrida, Lyotard and others (such as Levinas (1961/1991, 1974/1991, 1982/1985)).

This seemingly provocative claim requires closer examination. For the sake of brevity, however, this closer examination will be confined to a reading of Derrida. According to Derrida, one must deploy a lesser violence in order to repress greater violence. This is clearly an ethical imperative. The lesser violence to which Derrida refers is the violence inflicted upon identity by *différance*, (the) supplement, (the) trace. This violence perpetually interrupts the process of totalisation which would otherwise proclaim that identity is displayed in its full glory. Derrida casts totalisation as the worst violence as its *modus operandi* is the annihilation of difference[4]. The ethical imperative, then, is to choose the interruption of identity over the annihilation of difference. When this line of thought is applied to the notion of Utopia, it becomes clear how poststructuralism, as per Derrida, not only embraces the notion of betterment, but also demands it.

Applying the lesser violence proscribes capturing Utopia in a concept. Thus the thought of Utopia can never be immediately and directly present to consciousness. This does not imply that there is no meaning or that meaning is impossible. Rather, it renders meaning provisional and necessitates a commitment to unending interpretation. Caputo is helpful in understanding how this unending process of interpretation supports the notion of betterment via utopianism: this endless process of interpretation does "not leave us in despair and distress at the prospect of never getting where we want to go, but precisely the opposite, to make sure that we are never complacent with where we are, that we are always astir with a desire to go where we cannot go, that we never mistake the present state of things with what is to come" (2000, para. 39). In the case of utopianism, or betterment, this means that we must never confuse the present utopianism with that which is yet to come. There is no end to utopianism. The signifier 'utopianism', or 'betterment', becomes a signifier for a process that is intensely contested, in a continuous state of negotiation, and ever elusive. Betterment is

[4]Similarly, Levinas (1961/1991; 1974/1991) and Lyotard (1984; 1985) insist that totalisation ought to be resisted as an ethical imperative. Their justifications also turn on the conviction that totalisation arises from the annihilation of difference. Beyond this, the details of their projects differ, but arguments can be constructed that demonstrate their support the notion of betterment as it is formulated here.

insatiable. It is a signifier that cannot be brought to rest by any signified(s). This is not the same as a meaning changing over time. Changing meaning over time involves a progression in which relations are broken and new relations form, thus creating episodic rests. As betterment can never rest, its destination is the outopia of utopianism.

Thus it possible for postmodernist/poststructuralist discourses to embrace betterment. Critics who oppose this stance typically deploy a two-pronged challenge to it. Firstly, they maintain that notions of betterment gymnastically manoeuvre postmodernist/poststructuralist projects back into critical/ emancipatory projects, which aspire to prediscursivity, but the commitment to unending interpretation proscribes any notion of prediscursivity. Secondly, they deny the normative dimensions of postmodernist/poststructuralist projects. According to MacLure's (1994, p. 297) reading, such nimble turns/rescues are impelled by "poststructuralism's denial of its covert value position ... [thus] value always reinserts itself behind the back of the antifoundationalist rhetoric". But the embrace of postmodernist/poststructuralist betterment foregrounds value. This is essential for the possibility of postmodernist/poststructuralist ethics and, hence, the possibility of postmodernist/poststructuralist environmental education.

DERRIDA AND (THE) WOR(L)D

Poststructuralist thought and deconstruction in particular have been widely read as anti-environmentalist discourses that "can be just as destructive to nature as bulldozers and chainsaws" (Soulé & Lease, 1995a, p. xvi). The charge of anti-environmentalism is largely based on the misreading of Derrida's famous statement that "*there is nothing outside of the text*" (1967/1976, p. 158, Derrida's emphasis), which has been widely misread as a denial of embodied existence within (the) material world. As a result, poststructuralist thought and deconstruction have been subjected to recriminations from environmentalists who strive to redress the perceived postmodernist/poststructuralist attacks upon Nature (Sessions, 1996/97; Shephard, 1995; Snyder, 1996/97; Soulé, 1995; Soulé & Lease, 1995b). Postmodernist/poststructuralist discourses, however, receive a

less hostile reception in environmental education. Indeed, there is considerable support for their inclusion, yet some advocates single out deconstruction and brand it as inappropriate (Littledyke, 1996; Orr, 1992; Sauvé, 1999). This denunciation of deconstruction, then, compels a close reading of environment through Derrida's work in order to ascertain whether the denunciation of deconstruction in environmental education is warranted.

The misreading of Derrida's famous statement has circulated without contestation for so long among those committed to realist environmentalism that it has become orthodoxy within that arena. Beyond that arena, however, the claim has been seldom acknowledged. This silence from those committed to deconstruction could be misread as a tacit acknowledgment of the 'truth' of the claim that deconstruction denies the existence of (the) material world beyond the text. Derrida, however, insists that we should not rest in silence on this matter. Specifically, he asserts that:

> we must avoid having the indispensable critique of a certain naïve relationship of the signified or the referent, to sense or meaning, remain fixed in suspension, that is, a pure and simple suppression, of meaning or reference. (Derrida, 1972/1981, p. 66)

Notwithstanding this assertion that the relationship concerning signifieds/ referents and sense/meaning ought not to be fixed in suspension, Derrida has been quite reticent in addressing this relationship when 'matter' is concerned. He acknowledges this reticence openly and accounts for it on the basis that 'matter' has been so heavily invested with logocentric values (1972/1981). Thus, this reading of (the) environment through Derrida asks the question "Is it possible to support the existence of (the) material environment without resorting to logocentrism?"

Caputo (2000) is one of the few who has not been silent on this question. However, Caputo addresses this question through a cross-reading of Derrida and Levinas. Caputo develops an innovative argument for the existence of (the)

material world both within and beyond the text through this cross-reading, but the Levinasian aspect of Caputo's reading introduces a tone of deep reverence in relation to (the) material world. This dimension may be of particular interest to those wishing to pursue postmodernist/poststructuralist ecospirituality in environmental education. However, given that this reverence that does not emerge when Derrida's works are read without Levinas, this discussion can address environmental education more broadly by focusing mainly on Derrida's works, although the less Levinasian aspects of Caputo's reading are applicable as well.

Derrida has insisted repeatedly that the statement that there is nothing beyond the text does not deny the existence of (the) world (Derrida, 1999; Derrida in Kearney, 1984). This denial may appear to be an irreconcilable contradiction, but with Derrida things are seldom as simple as they may first appear. For this denial to be an utter contradiction two presuppositions are required: the separation of (the) world and the text, which is reducible to the opposition of materiality/ideality or sensibility/intelligibility, and a simple opposition between interiority and exteriority. Given that Derrida has unceasingly problematised these presuppositions, they cannot and should not be uncritically invoked in order to advance a claim of contradiction. In regard to the first, Derrida insists "on the fact that "writing" or the "text" are not reducible *either* to the sensible or visible presence of the graphic or the "literal"" (Derrida, 1972/1981, p. 65). Thus, (the) world and the text cannot and should not be placed in simple opposition when reading deconstruction. Secondly, Derrida's work on the limit problematises any simple opposition of inside/outside. Indeed, Derrida maintains that he is "not even sure that there can be a 'concept' of an absolute exterior" (Derrida, 1972/1981, p. 64). Thus, any reading of (the) environment through Derrida must accept that there is nothing beyond the text *and* that this does not deny the existence of (the) world. To do otherwise would be to disengage Derrida from the outset.

The contention that there is nothing beyond the text *and* that this does not deny the existence of (the) material world becomes problematic in the light of the opposition of the intelligible and the sensible. And it is precisely this opposition that leads to misreadings of Derrida's statement by environmentalists and others, who claim that the statement that there is nothing outside the text *must* result in a denial of concrete existence. This misreading rests upon two previous assumptions that are seldom acknowledged: firstly, that sensibility and intelligibility are opposed; and secondly, that Derrida supports this opposition and then renounces sensibility, which leaves only intelligibility or the text. These assumptions are not simply mistaken; they are the antithesis of Derrida's work; they articulate what Derrida is working *against*.

Derrida's projects consistently expose the untenability of opposing intelligibility and sensibility, ideality and materiality. These oppositions are the mainstays of logocentrism, which Derrida unceasingly seeks to overturn. One way that Derrida demonstrates this untenability is through spacing. Derrida's provocative use of spacing – writing in columns, quotations in boxes, pages bottom heavy with footnotes – makes "explicit the role of the materiality of space within the act of understanding ...[and thereby] demonstrate[s] the untenability of the logocentric distinction between the sensible and the intelligible" (Johnson, 1981, p. xxviii-xxix).

Critics could argue, however, that the written marks on the page and their spacing constitute such a special niche in materiality that, whilst the argument might obtain in this instance, it should not be brought to bear in the case of (the) environment without additional support. Derrida's deconstruction of Saussure can provide a more generalised argument. The paradox of the Proper name provides an expedient entry into Derrida's deconstruction of Saussure. The Proper name is a name for one particular thing as distinct from every other. The Proper name is unique to each thing; nothing else can claim it. Thus the Proper name can purportedly forge a direct and immediate link to *the* material world as Bennington notes: "the proper name ought to insure a certain passage between language and

the world, in that it ought to individuate a concrete individual, without ambiguity, without having to pass through the circuits of meaning" (Bennington & Derrida, 1993, p. 104). Yet the Proper name can refer to the thing in its absence, even after its death or destruction. Thus the Proper name does not refer to the thing. Instead, it signifies the concept of the thing. The Proper name is not proper; there is no Proper name; language does not commune with *the* world.

The dissolution of Proper names announces the entrance of Saussure's notion of the linguistic sign, which "unites, not a thing and a name, but a concept and a sound-image" (Saussure, 1959, p. 66). Derrida's entrance closely follows Saussure's and Derrida's work is intimately linked to it. Derrida recognises and acclaims the "absolutely decisive critical role" (1972/1981, p. 18) of Saussure's work against the grain of Western metaphysics. Yet Derrida's deconstruction of Saussure's formulation of the sign demonstrates that Saussure's formulation both works against and confirms Western metaphysics (1967/1976, 1972/1981).

Derrida's deconstruction of Saussure's structuralism is multifaceted and will not be addressed here in full. The aspect that is most pertinent to the question posed at the beginning of this section is Derrida's deconstruction of the link that Saussure posits between the signifier and the signified. According to Saussure, the signifier and signified are discrete, but indissociable from each other, a double-sided unity. This indissociability is, according to Derrida, one of the most decisive and critical manoeuvres that Saussure executes against the grain of Western metaphysics, but it is a double bind. Derrida demonstrates that "Saussure could not not confirm this tradition" through this aspect of his semiology (1972/1981, p. 18).

Derrida continues to demonstrate that despite Saussure's insistence on the indissociability of the signifier and the signified, his structuralism supports the possibility of signifieds without signifiers. Derrida states that "the maintenance of the rigorous distinction [between signifiers and signifieds] ... inherently leaves open the possibility of thinking of a *concept signified in and of itself*" (1972/1981, p.

19, Derrida's emphasis). The 'concept of a signified in and of itself' is what Derrida refers to as a 'transcendental signified'. It is a pocket of meaning that exists independently of the play of the text; is pure meaning; it is outside the text. Thus, Saussure "must renounce drawing all the conclusions from the critical work he has undertaken" (1972/1981, p. 19).

In Derrida's reconstruction of Saussure's structuralism, he replaces the signifier/signified binarism with signifier/signifier. This prevents the possibility of transcendental signifieds, toward which logocentrism grasps. Derrida also posits a relationship of difference between signifiers, but it is a relationship of a different order than that of Saussure's. Instead of being a difference based on absence, it is *différance*[5]. *Différance*, meaning both 'to differ' and 'defer', makes Derrida's poststructuralism both temporal and dynamic, whereas Saussure's structuralism is static. These temporal and dynamic qualities make it impossible to arrive at final meanings. This is not the same as saying that there is no meaning or that meaning is impossible. Instead, it renders meaning provisional. This perpetually disrupts any notion of a smooth and simple flow from signifier, to concept, to reference. Detours and delays are introduced; the flow, however, is not dam(m/n)ed. In an interview with Richard Kearney, Derrida remarked:

> It is totally false to suggest that deconstruction is a suspension of reference. ... deconstruction tries to show that the question of reference is much more complex and problematic than traditional theories suppose. (Kearney, 1984, p. 123).

This comment can serve as a cue to return to the question with this section began: "Is it possible to support the existence of (the) material environment without resorting to logocentrism?" Clearly, the statement that there is nothing beyond the text cannot be taken to claim that there is no reference. As Caputo

[5] Whilst Derrida uses the term 'trace' in this context, I take my cue to use the more familiar term '*différance*' from the Translator's Preface to *Of Grammatology* in which Spivak writes: "For "trace" one can substitute "arche-writing" ("archi-écriture") or "differance", or in fact quite a few other words that Derrida uses in the same way" (Spivak, 1996, p. xv). I acknowledge that Derrida insists that these terms are 'nonsynonymic' and that in more detailed analyses this substitution may be detrimental.

comments: "reference is a much more slippery affair, caught up in the slippage of signifiers that continually slip into each other, producing effects within preconstituted chains of differential spacing, *which makes reference possible*" (2000, para. 28, emphasis added). Instead, the statement that there is nothing outside the text is a denial of meaning outside the text. It is not a denial of (the) material world, but it is a denial that there is transcendent meaning in (the) world that guarantees "the movement of the text in general from the outside" (Derrida, 1972/1981, p. 65). There is no recourse to an acontextual world.

The upshot of Derrida's deconstruction of Saussure for environmental education is that meaning is not located in the environment in and of itself. If the play of signification were to collapse in a heap, there would be no meaning in (the) environment standing tall against the ruins. This argument cannot be refuted by appeals to perception. The loss of transcendental signifieds does not deny that external stimuli trigger perceptions, but it does deny that perceptions in and of themselves are meaningful. For perceptions to be meaningful, they must receive signification otherwise they are consigned to unintelligibility and *cannot* be noticed. There cannot be any acontextual identification of perception. There are neither precepts nor percepts that are 'anterior' to the text; *the* environment does not control the movement of environmental discourse. Rather, environmental discourse is governed by the differential play of chains of signification.

Rather than dispossessing environmental education of its reason for existence, deconstruction affirms and furthers the role and importance of both environmental education and education in general. Deconstruction of the environment "does not rob it of reality; it merely robs what presently lays claim to reality to any claim of finality" (Caputo, 2000, para. 40). Given the absence of finality there can be no end to inquiry. The role of environmental education, then, is to motivate and support students in intertextual interpretations of environmental issues. This engagement must be reflexive as well. Just as students cannot rest in complacent certitude, neither can the field of environmental education.

Deconstruction is not an anti-environmental discourse as Soulé (1995), Soulé and Lease (1995a, 1995b) and others (Sessions, 1996/1997; Shephard, 1995; Snyder, 1996/1997) claim. Rather than denying the existence of (the) material environment, deconstruction exhorts us to push our understanding further in order to "know as much as possible in order to ground our decision[s]" (Derrida, 1999, p. 73), whilst "offering a salutary and cautionary bit of advice about not exaggerating our success or inflating our results" (Caputo, 2000, para. 13).

NARRATIVE UNCERTAINTIES

The preceding sections have demonstrated that both the present and envisaged declamations of poststructuralist narrative theory are highly contestable, even difficult to sustain. When these arguments are added to those addressed by Gough (1994b, 1998c, 1998d) and Stables (1996, 1997), they strengthen the platform from which to advocate the use of narrative theory in environmental education. This strengthened platform provides a justification for exploring narrative uncertainties and their possible role in environmental education.

This section formulates four forms of narrative uncertainty: subjunctive uncertainty, decentred uncertainty, allegorical uncertainty and poietic uncertainty. The first of these forms of uncertainty can arise in either structuralist or poststructuralist narratives, whereas the remaining formulations attend poststructuralist narratives only. A tracing of the play of these uncertainties in current environmental education theory and practice follows in the final section of this chapter.

SUBJUNCTIVE UNCERTAINTY

According to the Oxford English Dictionary, the subjunctive "denotes an action or a state as conceived (and not as fact) and therefore used to express a wish, command, exhortation, or a contingent, hypothetical, or prospective event". The subjunctive, then, expresses that which is uncertain, or possible, or desired, and bears a deep relation to the thinker. Thus, uncertainty and embodied utopianism concur in the subjunctive. Considerations of the subjunctive, then, are

germane to discussions of uncertainty in environmental education, but the subjunctive is alleged to be moribund.

The subjunctive realm is vanishing due to a pronounced linguistic bias toward the indicative, which expresses matters of (disembodied) fact. In 1913, Urquhart, noted that:

> Very few forms of the subjunctive mood are left to us and little use is made of those forms that do remain: it is becoming more and more common to use indicative forms of the verb where the subjunctive ones really should be used. ... The indicative is thus encroaching on the domain of the subjunctive... (Urquhart, 1913, p. 64)

The continued encroachment of the indicative was noted in 1931 by Fowler and Fowler (1973, p. 166) who commented that "an experienced word actuary [Dr Henry Bradley] puts their expectation of life at one generation". Today, the use of subjunctives as syntactical devices conveying uncertainty, possibility, or desire is almost completely obsolete. Any occasional usage seems odd and triggers word processors to signal a grammatical error.

The loss of the subjunctive to which Urquhart and Fowler and Fowler refer attends the micro- or syntactical- level, that is the verb level. At the micro-level uncertainty, possibility, and desire are being rewritten in terms of certainty, probability and 'realistic' expectation. But the medium of narrative enables the subjunctive mood to survive at the macro-level, as Le Guin notes:

> The indicative points its bony finger at primary experiences, at the Things; but it is the subjunctive that joins them, with the bonds of analogy, possibility, probability, contingency, memory, desire, fear and hope: the narrative connection. (Le Guin, 1989, p. 44)

Advocating the subjunctive uncertainty of narrative in environmental education is not a matter of trying to rescue the subjunctive from the invasion of the indicative. The importance attached to the subjunctive, via narrative, lacks such sentimentality. Instead, the advocacy of subjunctive uncertainty is grounded in environmental education curriculum documents.

Uncertainty has been designated as a key concept in education *for* sustainability, and generic learning outcomes within the key concept of uncertainty have been drafted by the Panel for Education *for* Sustainable Development in the Schools Sector (1998). These include:

- understand[ing] that people have different views on sustainability issues, and that these may often be in conflict;
- listen[ing] to, critically evaluat[ing], and learn[ing] from different voices and opinions on sustainable development issues; and
- understand[ing] the concept of cultural change in the shift from the certainties of the modern age to the uncertainties of the postmodern age, and what opportunities these may afford for realising a more sustainable society. (Panel for Education *for* Sustainable Development, 1998, pp. 7, 8, 11)

The conjunction of multivocality and critical utopianism that these objectives convey under the aegis of uncertainty makes consideration of subjunctive uncertainty wholly relevant to discussions of uncertainty in environmental education. Subjunctive uncertainty arises, in part, from narrative's denial of indubitability and exhaustiveness. Thus, subjunctive uncertainty welcomes different voices without reducing difference, thereby maintaining the possibility of uncertainty. Closure is supplanted by perpetual openness. This openness is also wholly consistent with utopianism as it has been cast here; openness concords

with the irremedial inadequacy of the conceptualisation of perfection, even as an idea(l).

However, narrative theory can be recruited into the service of the regular emancipatory pedagogy of education *for* the environment and education *for* sustainability which, by logocentrically appealing to the reality 'out there', cast subjunctive uncertainty in a totally different light. Such logocentric rescues of Vance's (1917) rendition of certainty render the subjunctive as a transitional stage in a progression towards indicative closure. Narratives that blend and clash are not regarded as contested knowledges, but as nascent knowledge. Narratives are reduced to competing stories about *the* world.

Depicting narratives in this manner enables their status and function(s) to be cast variously. Within the environmental education arena, Huckle (1993, p. 45), for instance, regards "incorrect reading[s] of reality" as manifestations of false consciousness; for Munson (1994), they are tenacious, but innocent, misconceptions. Both of these viewpoints render multivocality instrumentally as a productive/liberal/emancipatory means of disclosing the true story through processes of elimination and refinement. Thus construed, univocality subjugates multivocality, rendering subjunctive uncertainty as a provisional problem rather than an enduring and constitutive aspect of knowledge. Furthermore, it reverses "the shift from the certainties of the modern age to the uncertainties of the postmodern age" advanced by the Panel for Education *for* Sustainable Development. Clearly, such manoeuvres diametrically oppose the objectives proposed by the Panel for Education *for* Sustainable Development.

These manoeuvres are not confined to environmental education. According to MacLure (1994, p. 289), the "tendency for poststructuralisms to be recruited into emancipatory/critical projects, or rescued by them, is a characteristic 'turn' in recent education theorizing". The jargon of environmental education, however, does promote the ease with which such logocentric rescues may occur. For instance, expressions such as education *about* the environment, education *in* the

environment, and education *for* the environment, insinuate a tangible, concrete, pre-given environment. This view that the environment undergirds our percepts and concepts dominates environmental education and is vicariously ratified by the privilege afforded to scientific discourse. However, both historical antecedents and contemporary theorising within the scientific arena challenge the notion of environment in a manner that disavows logocentric appeals to the 'reality out there'. This is discussed in the following section and it has the potential to prevent the forced curtailment of subjunctive uncertainty.

DECENTRED UNCERTAINTY

The notion of a pregiven environment relies upon three assumptions: we inhabit a world with particular properties; we recover these properties through representation; and a separate 'we' does these things. But these assumptions and the notion of the pregiven environment that they enable have been subjected to intense philosophical debate since the Enlightenment revival of empiricism. Ardent empiricist Locke, for example, denies the surety of such an epistemology through his conviction that "men [sic] would not be thought to talk barely of their imaginations, but of things as they really are, therefore they often *suppose* their words to stand for the reality of things" (Locke, 1690/1998, p. 258, emphasis added). In the contemporary debate, Varela, Thompson and Rosch (1993) reject the third assumption. Following Lewontin (1983), they uphold the view that "our central nervous systems are not fitted with some absolute laws of nature, but to laws of nature operating within a framework created by our own sensuous activity" (quoted in Varela et al., 1993, p. 202). By deploying this circularity their argument then diverges from Lewontin's defense of critical realism (Levins & Lewontin, 1985) by demonstrating the untenability of the other two assumptions. Thus, they utterly reject the positions of realism and objectivism, even in their filtered, critical formulations. In their place they propose and defend 'the enactive approach of embodied action', which takes a middle path between idealism and realism. According to the enactive approach, "cognition is not the representation of a pregiven world by a pregiven mind but rather is the enactment of a world by a

mind on the basis of a history of the variety of actions that a being in the world performs" (Varela et al., 1993, p.9).

The enactive approach denies the separability of the thinker and the world. Environmental education theorising also emphasises inseparability by promoting "a holistic view of the environment as a totality of the interdependent relationships between natural and social systems" (Fien, 1993, p. 55). But this is an inseparability of a different order from that proposed by Varela, Thompson and Rosch. It maintains the separability of the thinker and the world through the notion of 'interdependence' which has purchase only in the light of separability. Thus, it is possible to appeal to the other. This admits the logocentric rescues discussed in the previous section. It still admits the conviction that "the structures and processes that govern the natural world are given and unchanging" (Huckle, 1993, p. 44).

The inseparability that Varela, Thompson and Rosch propose, however, does not admit the dichotomy that environmental education still sanctions. Instead, they claim "that organism and environment are mutually enfolded" (Varela et al., 1993, p. 202). This precludes the notion of interdependence because organism and environment are one. It is impossible to appeal to the other, which renders logocentric rescues both impossible and unthinkable. In Varela, Thompson and Rosch's words (1993, p. 11) "we cannot avoid as a matter of consistency the logical implication that by this same view any such scientific description, either of biological or mental phenomena, must itself be product of the structure of our own cognitive system". Thus, Varela, Thompson and Rosch's enactive approach is a discursive genre: the "'pre-given' is not the object's or subject's existence or sensation of it, but the way in which the workings of language make us think that there subjects, objects, and sensations at all" (Baker, 1999, p. 376).

This inability to locate authority, validation or truth from 'outside' disallows logocentric curtailment of subjunctive uncertainty. Multivocality and openness prevail over univocality and closure. Furthermore, openness is expanded. The

inability to ground (the) authority, validation or truth of our environmental knowledge from (the) 'outside' environment dislodges the environment as the centre of our environmental knowledge, as per Derrida's reading of centre:

> it has always been thought that the center, which is by definition unique, constituted that very thing within a structure which while governing the structure, escapes structurality. This is why classical thought concerning structure could say that the center is, paradoxically, within the structure and outside it. The center is at the center of totality, and yet, since the center does not belong to the totality (is not part of the totality), the totality has its center elsewhere. The center is not the center. (Derrida, 1967/1978, p. 279)

Thus decentred, environmental knowledge loses "a fundamental immobility and a reassuring certitude" (Derrida, 1967/1978, p. 279). But decentring does not stop following the installation of a different centre; decentring does not rest. Thus, reassuring certitude is not restored. Decentred uncertainty, then, is the uncertainty that arises from successive determinations of centres. This results in a proliferation of the narratives that can emerge as centres shift. This proliferation is not infinite, however, as centres control play by limiting the field. As centres change, so too do the playing field and the 'rules'. It is important to stress at this stage that this is not an example of the cynical maxim: if you can't win, shift the goal posts. The successive determination of centres is not a matter of competition; it is not about winning. Furthermore, the transgressions that dislocating centres effect defy the determinism of this cynicism. Subjunctive uncertainty is amplified by decentred uncertainty.

ALLEGORICAL UNCERTAINTIES

At the broadest level, allegory says one thing and means another; beyond agreement at this level, disparities proliferate (Van Dyke, 1985). The notions of allegorical uncertainties are formulated and presented within this broad layer of

agreement. Two forms of allegorical uncertainty are formulated: the first is somewhat conservative, the second, more radical.

A rather conservative form of allegorical uncertainty may be drawn from the annulment of authority, validation and truth that decentring effects. The denial of *the* outside as being the ultimate court of appeal beyond language rescinds the notion that words refer, "that words make present to the reader or hearer ascertainable, decipherable meanings, that is, they contain 'presence' or presences from outside or beyond themselves" (Cunnigham, 1993, p.584). This disruption of the normative assumption that words refer cascades into further disruptions and disarrangements, which include smearing the already blurry distinction between denotation and connotation. Thus the distinction that allegory says one thing and means another loses efficacy. This is the source of a conservative form of allegorical uncertainty.

Typically, denotation refers to fundamental meanings, meanings that are free of ideological influences, to objectivity; whereas connotation refers to the imposition of secondary meanings over fundamental meanings through ideological investments (Barthes, 1961/1977). Thus, denotation requires an underlying reality that is represented by words, and the distinction between denotation and connotation requires the natural/social dichotomy in which the privileging of the natural invests denotation with corrective power through its perceived lack of ambiguity. Within this frame, the mismatch between denotative and connotative meanings is irony as per La Bossière (1993, p. 572): "Irony ... is inherently corrective and unambiguous, normative and referential: spoken statements are dominated by intended meanings, falsehoods by truths, surface appearances by underlying realities". Thus understood, irony serves a stabilising function; it forecloses multivocality by procuring the closure of text through foundationalism. Uncertainty is repressed/suppressed by the reduction/degradation of the ambiguous to irony.

Whilst denotation is assumed to refer beyond text, to referents, it could be argued that the focus can be shifted such that denotation refers to fairly uncontentious *shared constructions* since there must be a minimum level of agreement for discourse to occur. Shared understanding is essential to create the conditions for expectation and uncertainty. This shift disavows the ideologically free character of denotation, blurring the seemingly clear distinction between denotation and connotation. Denying the polarity that logocentrism countenances robs irony of its mode of, and reason for, existence, and installs a conservative mode of allegorical uncertainty in its place. This form of allegorical uncertainty differs from irony insomuch as it is non-corrective; it welcomes rather than forecloses multivocality; it supports openness rather than procures closure. These features, which distinguish this mode of allegorical uncertainty from irony, resonate with critical utopianism.

A more radical form of allegorical uncertainty may be formulated from the rejection of identitarian thinking as per Adorno (1966/1973) and Derrida (1967/1976, 1967/1978, 1972/1981, 1972/1981, 1972/1982). These rejections denounce the notion that "the 'presence of the word' is equivalent to its meaning" (Hartman, 1977, p. viii) by arguing that meaning overflows the word (Adorno, 1966/1973) or by arguing that meaning is perpetually disseminated through chains of substitutions (Derrida, 1967/1976, 1967/1978, 1972/1981, 1972/1981, 1972/1982). Thus, the word bears within it an irreducible absence or indeterminacy that creates an irreversible asymmetry between signifier and signified. Thus, each text means more than it says. This non-coincidence of the signifier and (the) meaning is allegory.

Allegorical uncertainty arising within the intertextual space between meaning and word differs from the other mode of allegorical uncertainty in at least two fundamental and crucial ways. Firstly, this form of allegorical uncertainty arises *in* the 'event' rather than *after* the 'event'. This shift in temporality concomitantly introduces an ethical dimension by shifting responsibility for meaning. This is an important consideration for environmental education in relation to the

pedagogical approaches used to promote its ethico-political objectives and closely aligns this formulation of radical allegorical uncertainty with the following formulation of *poietic* uncertainty. Secondly, the intertextual space transforms the plurality of narrative. Whilst the more conservative form of allegorical uncertainty yields multiple narratives, they are discrete and controlled as per Fish's (1980) communicative communities. This form of plurality is reducible to a collection of co-existing singular narratives. However, the more radical form of allegorical uncertainty, which arises from the irreducible excess of the meaning, traverses the sayable and the unsayable, thus weaving a continuous space that defies reducibility and in which cross-overs (chiasms) may occur spontaneously, rather than at nodes in a network. Thus, radical allegorical uncertainty is constitutive of 'Text' as per Barthes (1971/1977).

POIETIC UNCERTAINTY

Poietic uncertainty (Gr. *Poiesis* = creative production) emerges in a similar manner to allegorical uncertainty. Just as allegorical uncertainty arises from problematising meaning by renouncing either the primary meaning of denotation or the symmetrical coincidence of word and meaning, *poietic* uncertainty arises from problematising meaning by renouncing the belief that texts convey intended meanings that can be attributed to the author(s). Thus, *poietic* uncertainty emerges from the motif of the Death of the Author as per Barthes (1968/1977), Derrida (1972/1981) and Foucault (1969/1988).

Belief in the decipherment and recuperation of an author's intended meaning posits reading texts as a passive process insofar as it does not engage the reader in the construction of meaning. Meaning is cast as a pre-given, stable and self-sufficient 'thing' that is intrinsically contained in language, and the reader is cast as a disposable recipient who acquires meaning vicariously through texts. The reader is the target rather than the site of meaning. The motif of the Death of the Author, however, disrupts this notion by rescheduling both the temporality and locus of meaning. The temporality is shifted from the past to the present: "there

is no time than that of enunciation and every text is eternally rewritten *here and now*" (Barthes, 1968/1977, p. 145, Barthes' emphasis). This shift predicates meaning as a perpetual process of construction, *poiesis*, rather than the decipherment and recuperation of a past construction. This temporal rescheduling of meaning concomitantly shifts the locus of meaning from the author to the coupling of the reader and the work into "a single signifying practice" (Barthes, 1971/1977, p. 162).

The temporal rescheduling of meaning has a profound impact on Vance's (1917) rendition of certainty as a quality of propositions because it denies that propositions convey intrinsic meaning. Instead, meaning resides in the reception of a proposition. When meaning is located in a perpetual process of creation or becoming, certainty cannot be ascertained because meaning must be established logically prior to the attribution of (un)certainty. In other words, when the construction of meaning is perpetually located in the present, the attribution of certainty would require one to both literally get ahead of oneself whilst remaining steadfastly grounded in the present. This is both impossible and utterly absurd.

Thus, the Death of the Author perpetually defers the attribution or denial of certainty. Poietic uncertainty draws this perpetual postponement clearly into relief and this aspect of uncertainty suffuses each of the other formulations of uncertainty as well. Concomitantly, this perpetual postponement disavows surrendering certainty. Therefore, statements that proclaim postmodernism/ poststructuralism as the 'Age of Uncertainty' cannot be read as signalling the 'death of certainty'. Uncertainty presages certainty's possibility, not its epitaph. Thus, uncertainty interrupts the totalitarianism required to oust or crush certainty.

Poietic uncertainty and the shifts from which it arises have enormous implications for the affective agenda of environmental education. These will be explored the following section after the tracing of the four formulations of uncertainty in the works of Gough (1993, 1994a, 1997, 1998a, 1998c, 1998d) and

Stables (1996, 1997, 2001b; Stables & Bishop, 2001), each of whom advocates and employs the use of textual strategies in environmental education.

NARRATIVE UNCERTAINTIES AND ENVIRONMENTAL EDUCATION

As noted earlier, narrative theory has occupied a niche in environmental education for close to a decade. This niche has been carved out, promoted and sustained predominately by the work of Gough (1993, 1994a, 1997, 1998a, 1998c, 1998d) and Stables (1996, 1997, 2001b; Stables & Bishop, 2001). Whilst neither of these theorists addresses narrative uncertainties *per se*, this section will probe their arguments for any stances adopted implicitly in relation to the four formulations of narrative uncertainties developed here. This section, then, traces the paths that have been laid out in the field and lays the tracing over the maps to discern what effects the maps can induce in the tracing. This enacts the third phase of Deleuze and Guattari's (1980/1987) cartography, namely decalcomania. However, the third phase is enacted more comprehensively in Chapter Seven.

Stables (1996, 1997, 2001b; Stables & Bishop, 2001) has been an ardent proponent of textual approaches in environmental education. The main thrust of Stables' argument in his earlier work draws on the motif of the Death of the Author as per Barthes (1968/1977), Derrida (1972/1981) and Foucault (1969/1988). Following consideration of the problems of the author in relation to landscapes, Stables argues that environmental education should go beyond superficial "texts *about* the environment and should embrace the notion of landscapes *as* texts" (1997, p. 111, Stables' emphasis). This approach posits the environment as mediated by complex circuits of meanings; our knowledge of (the) environment is constructed by language and even our perceptions are meaningless unless they gain expression through language. Thus, we never encounter the environment-in-itself; that is, we never encounter an acontextual environment.

Treating (the) environment as text admits the play of all four forms of narrative uncertainties. However, Stables (1996, p. 193) forecloses the play of narrative uncertainties through the disclaimer that treating environment as text

"does not indicate that a disciplinary approach to environmental studies which does not regard environment as text is invalid". Thus, for Stables it is valid for (the) environment to both be and not be text. This alleged freedom to step in and out of text creates a loophole through which to effect logocentric rescues by giving primacy to narratives that do not regard (the) environment as text. Furthermore, Stables uses this logocentric loophole to 'ground' his later work (2001b) on textuality in environmental education and he disparages 'ungrounded' textual approaches as 'thoroughgoing relativism'. Thus, Stables creates the conditions for engaging the play of narrative uncertainties in his earlier works, but he arrests this play in his later work by supporting the objective/subjective dichotomy. As a result of this logocentric turn, the remainder of this section will focus on Gough's work only.

Gough's work may be read as an active promotion of subjunctive uncertainty, which arises from the plurality and openness of narrative. This claim is based on Gough's consistent emphasis of the importance of the plurality of discrete narratives. A key feature in the promotion of the plurality of discourses in environmental education is the displacement of the scientific narrative that dominates the field. This is not at all a rejection of scientific discourse, nor is it a devaluation of the knowledge that scientific discourse generates. Rather, it is repudiation that scientific discourse can claim the authority to arrest the play of other discourses.

Gough does more than simply proclaim the merit of proliferating narratives; he has deployed a variety of unconventional genres, such as science fiction (1993, 1995, 1998b, 1998c) and autobiography (N. Gough, 1999b), to frame conventional environmental education issues. Through these genres, Gough has rewritten conventional environmental education issues, such as the problematic relationship between environmental education and technology (Gough, 1995, 1997), in a manner that multiplies meanings and opens up new interpretive possibilities. This enables Gough to argue that narrative theory "is 'useful to us' as a means of posing options and alternatives for connecting 'present realities' with past and/or

future possibilities in curriculum inquiries" (Gough, 1998c, p. 93). This proliferation of meanings and possibilities supports the coupling of subjunctive uncertainty and utopianism that was advanced earlier.

However, it was noted earlier that the play of subjunctive uncertainty can be constrained by logocentric rescues. This can occur in several ways, the first of which is to refer to the reality 'out there' as the yardstick against which to test the veracity of our narratives. Gough has successfully blocked this logocentric turn by his deconstruction of the fact/fiction dichotomy in which he demonstrated that both facts and fictions are textual constructions. This deconstruction, then, precludes any notion of transcendental meaning that governs the movement of the text from the outside.

Another logocentric manoeuvre can occur if narratives are recruited into the service of critical emancipatory projects. Gough's contention that: "Narrative inquiry is intended to be emancipatory" (1998a, p. 121) suggests that such a logocentric manoeuvre may be afoot. Emancipation is typically understood to denote a lifting of false consciousness to reveal a prediscursive reality. However, Gough avoids this logocentric turn through his problematisation of the self as per Davies and Banks (1992): "subjectivity is formulated through discourses, given substance and pattern through storyline and is deployed in social interaction" (quoted in N. Gough, 1999a, p. 46). This notion of the self as a textual being precludes the possibility of coupling emancipation to prediscursivity.

Finally, Gough's contention that that narrative theory can be 'useful to us' could be read as an overture to logocentrism. The determination of whether something may or may not be 'useful to us' may be read as an endorsement of a detached vantage point In this context, a detached vantage point would lie beyond the text, which establishes the condition for logocentrism. However, the problematisation of the self as a textual being utterly precludes any overture to a detached vantage point. Thus, for Gough, judging narrative theory as being 'useful to us' is a choice, but not a detached choice that can resort to logocentrism.

Gough's work on narrative also connects with the notion of *poietic* uncertainty formulated here. Gough consistently refers to the intercontextual construction of meaning, where he takes intercontextuality to refer to the way in which meaning is constructed through the interweaving of texts. Following the poststructuralist notion of the Death of the Author, the meaning of one narrative alone – if such an experience were possible – depends upon the meaning generated by the reader, not that intended by an author. Thus, the meaning is uncertain until the time of reception. This uncertainty proliferates when intertextuality is brought into play. This has implications for educators, for as Gough notes: "We need to remember that, as adults, our fractured postmodernist identities are not constituted from the same stories of those young people we teach" (1994b, p.207). By constructing meanings within different intercontextual fields, *poietic* uncertainty is amplified further.

This proliferation of *poietic* uncertainty has educational significance for environmental education's commitment to developing eco-ethico political agency. As Gough notes, one of the educational possibilities resulting from the construction of intertextual meanings "is to support learners as they 'play out' the meanings and implications of their transactions ... so that they can rehearse the consequences of living in these stories, and of living with others' stories, in sustainable (or at least noncatastrophic) ways" (1994b, p. 210). This educational possibility clearly connects *poietic* uncertainty, subjunctive uncertainty and critical utopianism to the affective agenda of environmental education, which seeks to promote eco-political agency. This ethical aspect could simultaneously include addressing "ethical questions about what it means to generate and transmit narratives, and to implicate, transform, or force persons who participate in them" (Newton, 1995, p. 7). Gough does not specifically address this reflexive mode of ethical questioning, but it is a wholly consistent extension of his work.

In summary, the play of narrative uncertainties, as they have been formulated here, can be identified as processes operating in the textual approaches advocated and employed by Stables and Gough. However, the roles of these uncertainties

are not brought into clear relief, which is not surprising given that their projects do not address uncertainty *per se.* Nevertheless, there is sufficient relief for this tracing to suggest that each theorist responds to narrative uncertainties in very different ways. Stables strives to arrest the play of narrative uncertainties through logocentric manoeuvres, especially in his later works. Gough's work, on the other hand, can be read as adopting a positive stance toward uncertainty insomuch as uncertainty provides the condition for the fluidity of intertextual readings from which the possibility of ethical engagements emerge. Given that Gough's project does not specifically address uncertainty, however, the educational implications are underdeveloped. Further educational implications will be mapped in Chapter Six.

THOUGHTS WITHOUT CLOSURE

According to Cooke (1995, p. 523, quoting Smith, 1968), "closure is produced by a text when it creates a sense of "appropriate cessation" for it's reader, when it "announces and justifies the absence of further development"". This notion of closure clearly undermines the themes that have been juxtaposed here under the aegis of narrative uncertainties. Closure seeks to curtail the openness of subjunctive uncertainty, casts the reader as a disposable recipient of pregiven meaning rather than the site of meaning, and simultaneously announces the end of interpretation and the arrival of certainty. Offering thoughts without closure, however, is "a deference to uncertainty. It is a sideways step that is crucial ... to the open-ness, the free play, the opportunities for further conversation" (Baker, Ng, & Tucker, 1998, p. 173). Furthermore, offering thoughts without closure upholds the conviction that underscored *poietic* uncertainty, namely that the locus of meaning resides with the reader rather than the author. Thus, I choose to trace the themes that have been juxtaposed here, whilst ardently denying finality.

The cue to juxtapose narrative theory and uncertainty arose as a result of Vance's (1917) contention that certainty is a quality of propositions. However, the line of inquiry that has been pursued in this chapter is undoubtedly *pace* Vance, rather than *as per* Vance. Vance undoubtedly would not agree with the

poststructuralist themes that have been invoked. For instance, Vance definitely would not agree with the poststructuralist critiques of metaphysical presence, given his assertion that:

> Just as you cannot doubt that you are doubting, while you are doubting; so also you cannot doubt that if things are, they are what they are. ... Granted for the moment that things distinctly *are* not what we *think* them to be, they *are* at least what they are. (Vance, 1917, p. 89, Vance's emphasis)

A belief in essences clearly underscores this rendition of identity and notions of essences are ardently rejected in postmodernist/ poststructuralist perspectives. Yet Vance provides the means to reject the belief in essences by positing certainty as a quality of propositions as opposed to a quality of 'things as they are'. Thus, Vance's formulation of critical realism bears within it a contention that not only dismantles its ontological assumption, but also provides a defensible passage to postmodernist/poststructuralist theorising in general and to postmodernist/ poststructuralist narrative theory in particular. This is significant for environmental education, given that many of the orientations that comprise this contested field embrace and fiercely defend critical realism.

Whilst it is wholly defensible to argue that Vance's formulation of critical realism logically directs a shift to poststructuralist narrative approaches, the hostile reception that narrative theory has received from some theorists in the wider education arena has the potential to adversely affect engagements with narrative theory in environmental education. The disparagement of narrative theory within the wider education arena is two-pronged. Specifically, narrative theory is disparaged on the grounds that it putatively: requires an ambivalence toward, or rejection of, truth (Phillips, 1994, 1997, 1999); and leads to crippling relativism as a result of the absence of normative elements to guide interpretive possibilities. Neither of these objections can be upheld with respect to postmodernist/ poststructuralist narrative theory. Many postmodernist/poststructuralist theorists

both exhort the necessity of truth (Derrida, 1972/1981, 1999; Foucault, 1980, 1985) and embed normative elements within their theorisations (Derrida, 1967/1976, 1999; Levinas, 1961/1991, 1974/1991; Lyotard, 1984, 1985). Thus, the disparagements of narrative theory in the wider education arena do not withstand scrutiny and ought not to impede an engagement of uncertainty through postmodernist/poststructuralist narrative theory in environmental education.

As these disparagements recede, however, it is possible that other objections might be raised in their stead. Two such objections may be based on the misconceptions that postmodernist/poststructuralist perspectives cannot accommodate notions of 'betterment' (MacLure, 1994; Stronach & MacLure, 1996) and that, following Derrida (1967/1976), postmodernist/ poststructuralist perspectives deny the materiality of (the) environment. Neither of these objections withstands scrutiny either. It has been argued that Derrida (1967/1976, 1999) supports the notion of 'betterment' through his ethical imperative to undertake unending interpretation in order to avoid the annihilation of difference through totalisation. Similar arguments can be constructed from the works of Levinas (1961/1991, 1974/1991) and Lyotard (1984, 1985). With respect to the second misconception, it has been argued that Derrida's famous remark that "*there is nothing outside of the text*" (1967/1976, p. 158, Derrida's emphasis) does not constitute a denial of embodied existence within (the) material environment. Thus, it is argued that there is no reason not to theorise uncertainty through narrative theory in environmental education.

Four forms of narrative uncertainty were formulated from key motifs in structuralist and poststructuralist literary theory and philosophy, and each was shown to be germane to contemporary curricular and pedagogical issues in environmental education. The first form of narrative uncertainty is subjunctive uncertainty, which attends the openness of narratives. Subjunctive uncertainty has the capacity to promote the utopianism of environmental education's commitment to environmental/sustainable transformation. The second form of

narrative uncertainty is decentred uncertainty, which arises from the loss of transcendental signifiers. This form of uncertainty confronts the widely accepted logocentric perspectives in environmental education theorising, which treat (the) environment as a prediscursive given. The third form of narrative uncertainty, allegorical uncertainty, can occur in conservative and radical forms. The conservative form arises from the rejection of the denotation/connotation binarism, which serves a 'corrective' function by upholding the notion of Truth, which can then be used hegemonically to support privileged social constructions of (the) environment. In contrast, the radical form of allegorical uncertainty draws on the deconstructive notions that multiple meanings are inscribed in texts and that the meanings of texts are instantiated differentially through relations with other texts. Finally, the fourth form of narrative uncertainty, which is related to the third, is *poietic* uncertainty. This uncertainty arises from the motif of the Death of the Author as per Derrida (1967/1978), Barthes (1968/1977) and Foucault (1969/1988). As such, this form of narrative uncertainty obtains from the rejection of the notion that texts convey pre-given meanings. The construction of meaning is cast as an active process that involves the reader/writer. This has important implications for environmental values education and eco-political agency because it accentuates the ethico-political aspects of reading/writing (the) environment. The links to environmental values education and eco-political agency are developed further in Chapters Six and Seven.

The formulation of each of these forms of uncertainty demonstrates that uncertainty is *constitutive* of narrative theory, rather than being a consequence of narrative theory. In other words, narrative theory does not *create* uncertainty. This is significant; if it were otherwise, that is if narrative theory were to *create* uncertainties, then narrative theory would be logically prior to and therefore free from uncertainty. These formulations, in contrast, posit uncertainty as a constitutive aspect of what we call 'reality', rather than an aberration that arises from a particular manner of 'documenting' Reality. Thus, narrative theory embeds uncertainty as a constitutive aspect of experience rather than positing uncertainty

as an inevitable aspect that subordinates lived experience in relation to ideal experience. These formulations of narrative uncertainties provide an explanatory frame through which to engage uncertainty in environmental education in a manner that neither glorifies nor subordinates uncertainty.

Whilst narrative theory has been advocated and engaged by Gough (1993, 1994a, 1997, 1998a, 1998c, 1998d) and Stables (1996, 1997, 2001b, Stables & Bishop, 2001), neither has addressed narrative uncertainties *per se*. An examination of their projects, however, demonstrated that each responds tacitly to the narrative uncertainties that operate within his work. Furthermore, Gough and Stables respond in opposite ways. Whereas, Stables seeks to stabilise his work, especially his later work, by invoking logocentric manoeuvres to dampen the impact of narrative uncertainties, Gough develops strategies that conform to the fluidity that arises from the play of uncertainties. However, given that the play of narrative uncertainties is not brought into clear relief in Gough's work, the potential to engage uncertainty through narrative theory is underdeveloped. The role(s) of narrative uncertainties can be developed further. This further development will be undertaken in the next chapter, which includes discussions of: the potential of subjunctive uncertainty to disrupt patriarchal discourse and the strategic value that this may have for feminist orientations in environmental education and engaging indigenous voices; the constitutive role of uncertainty in deconstructive environmental literacy; and the implications of the temporal shift that *poietic* uncertainty effects for environmental values education.

INTRODUCTION

The preceding two chapters were lines of flight as per Deleuze and Guattari (1980/1987). Each chapter used an aspect of theorising uncertainty as a launching point from which to take the argument into unfamiliar terrain, where there were resonances with environmental education, but the resonances had an unfamiliar inflection. The first line of flight blazed a trail from the rendition of 'postmodern uncertainties' advanced by the Panel for Education *for* Sustainable Development's (1998) to Levinas' postmodernist/poststructuralist ethics of responsibility for the Other (Levinas, 1961/1991, 1974/1991), whereas the second line of flight blazed a trail from Vance's (1917) rendition of certainty within critical realism to narrative uncertainties. Thus, these two lines of flight were seemingly discrete, despite the common interest in uncertainty. However, secondary lines of flight can be proliferated from these trajectories and it is possible that resonances may form between them and between environmental education.

This chapter is principally concerned with secondary lines of flight that connect with environmental education. Some environmental education implications were noted whilst the trajectories of these lines of flight were being mapped. However, the in-depth development of these implications together with an examination of the relations between them was postponed until this chapter. This postponement was chosen to prevent any impediment to the lines of flight by digressions along the way. The development of these implications and their interrelations is a continuation of the mapping process that the lines of flight initiated. This mapping forges links between uncertainty and feminist theory, critical literacy and postmodernist/poststructuralist ethics.

FURTHER MAPPING

SUBJUNCTIVE UNCERTAINTY AND FEMINISMS

The play of narrative uncertainties is not explicitly acknowledged by those in environmental education who advocate narrative theory. I will argue, therefore, that narrative uncertainties are underdeveloped and underused conceptual and explanatory resources. Moreover, I will argue that narrative uncertainties, as they have been formulated here, both affirm and promote major themes in environmental education, some of which explicitly articulate engagements with uncertainty and others that do not. The arguments presented here do not confine narrative to the narrow sense of story telling, rather the arguments are underpinned by the broader sense of reading and writing as per Derrida (1972/1981) which posits reading and writing as engagement within systems of signification. Thus narrative theory is understood here as lived experience within discourses. Narrative theory is not simply viewed as telling, listening to, reading or composing stories; it is all of these things and living within them. Text is action.

Perhaps the most immediate link to be forged between narrative uncertainties and other areas of inquiry is between subjunctive uncertainty and feminisms. As noted in Chapter Five, the subjunctive creates the narrative "bonds of analogy, possibility, probability, contingency, memory, desire, fear and hope" (Le Guin, 1989, p. 44). The most conspicuous link to feminism lies in the fact that these 'narrative bonds' are the subordinate poles of binarisms that are stereotypically assigned to (the) feminine: correspondence/analogy, actuality/possibility, certainty/probability, surety/contingency, satisfaction/desire, courage/fear, will/hope. In short, these attributes of narrative can be read as the metaphysical essentialisms that undergird the stereotypical gender construction of feminine (absence) as opposed to masculine (presence). Furthermore, the subjunctive/indicative binarism highlights that these narrative bonds are consigned to the subordinate poles by patriarchal discourse.

The patriarchal role can be drawn into relief by examining the role of the indicative mood, which states "a relation of an objective fact between the subject and the predicate (as opposed to a relation *merely* conceived, thought of, or wished, by the speaker)" (Oxford English Dictionary, emphasis added). Thus, the indicative attends the production of fixed and final meaning, Truth. The link between patriarchy and the production of fixed and final meaning has been demonstrated repeatedly through diverse feminist projects such as Irigaray's theorisation of a 'female imaginary' (1977/1980), Kristeva's theorisation of 'abjection' (1980/1982) and Derrida's theorisation of 'phallogocentrism' (1975). It is beyond the scope of this section to review the complex intricacies of these arguments and their interrelations. Instead, it will simply be noted that these critically acclaimed theorisations support the link advanced here between the indicative and patriarchal discourse. In short, the privilege that patriarchal discourse affords to the indicative consigns the subjunctive bonds of narrative to the subordinate poles of binarisms: "the incongruous, jarring, asymmetrical, arbitrary and unfinished become terms of criticism, not praise" (Mansfield, 2000, p. 70).

Thus, engaging subjunctive uncertainty through narrative theory offers a means to disrupt patriarchal discourse. This does not mean that either narrative theory or subjunctive uncertainty is inherently 'transgressive'. Indeed this would be an utterly patriarchal inference because the very notion of 'transgression' presupposes the existence of a fixed and stable field. Rather, engaging subjunctive uncertainty through narrative theory can disrupt patriarchal discourse by highlighting that subjunctive narrative bonds have been rendered subordinate rather than being naturally, logically or inevitably positioned in this manner.

It is uncontentious to assert that disrupting patriarchal discourse is a central concern for feminisms. More particularly, it is uncontentious to assert that the subordinate poles of narrative binarisms are a concern for feminisms, given the complicity of these binarisms in shaping society and its institutions and practices in a manner that does not afford women equality of opportunity and participation.

However, the contention that links may be forged between subjunctive uncertainty and feminisms is problematic and the assertion requires elaboration the moment that it is advanced. This elaboration is imperative given that there is not a monolithic area of inquiry that can claim the singular title of feminism. Feminisms vary in their philosophical underpinnings, their aims and their strategies; thus, whilst some feminisms would affirm and support subjunctive uncertainty as it has been formulated here, others would not.

Given that subjunctive uncertainty has been designated as the uncertainty that arises as a result of the plurality and openness of narratives, it cannot be associated with essentialist and/or deterministic/teleological feminisms. Associations with essentialising feminisms are precluded on the basis that they restrain the play of subjunctive uncertainty by generalising the experience of women. Thus, essentialising feminisms curtail the difference that gives rise to subjunctive uncertainty by failing to be attentive to differences such as class, race and culture. Deterministic and teleological feminisms also curtail subjunctive uncertainty, but the mechanism differs. In this case, subjunctive uncertainty is suppressed by a commitment to finality, either as an achievable goal or as an ideal. Thus, the link proposed between subjunctive uncertainty and feminisms needs to be narrowed to strands such as poststructuralist, postcolonial and multicultural feminism, which resist the closure that results from essentialism and/or commitments to finality. Thus, subjunctive uncertainty can be linked to third wave feminisms rather than first or second wave feminisms, which perpetuate certain essentialist and deterministic/teleological aspects of patriarchal discourse.

The narrowing of the field of feminisms to these third wave perspectives still yields an enormous field of inquiry within which there are many contested views, especially on the issue of difference, which is of central importance to the argument being presented here. It is, however, beyond the scope of this section to review the variety of theorisations of difference and assess the respective support for, or hostility toward, the notion of subjunctive uncertainty. Instead, I will present a postmodernist/poststructuralist reading of Lynda Stone's (1995)

theorisation of *as if friends*, as a framework within which to engage subjunctive uncertainty in environmental education.

AS IF FRIENDS

Stone refers to her formulation of *as if friends* as an 'attitude' and it is an attitude that has powerful ontological, epistemological and pedagogical implications. There are multiple points of agreement, or at least overlap, between Stone's formulation of *as if friends* and the formulation of subjunctive uncertainty that is presented here. The first point of overlap lies in the fact that both subjunctive uncertainty and the attitude of *as if friends* arise in relation to narrative theory. Subjunctive uncertainty is presented as a constitutive element of narrative constructions of reality and the attitude of *as if friends* is both an affirmation and example of the use of narrative in philosophy of education research. Clearly these two projects occupy the same domain, but need not agree. However, given that the phrase '*as if friends*' is a subjunctive expression it is not unreasonable to anticipate resonances between this formulation and subjunctive uncertainty. Looking at both projects in more detail yields considerable agreement, but there are tensions as well. This section will examine both the resonances and tensions.

Firstly, as noted above, subjunctive uncertainty is cast as the uncertainty that arises from the plurality and openness of narrative constructions of reality. Thus, the play of subjunctive uncertainty rides upon difference. Similarly the attitude of *as if friends* rides upon difference. This is demonstrated most clearly in Stone's composition of the attitude of *as if friends* in a fictional letter to the late Senegalese feminist Mariama Bâ:

> Dear Ms Bâ   December 1992; January 1994
>
> As you began a fictional letter, I now begin one to you. "I take a deep breath" because I too am speculating. I take a chance with this letter to seek reception as if we might have been friends, with no assurances of either reception or friendship. My letter is in the tradition of western feminisms; it is as personal and political as it is

> academic and educational. It has politics just as your work. In my understanding I have you as fellow author, and your fictional friends, Ramatoulaye and Aissatou, as models. I take heart and continue.
>
> I begin by positioning us – may I call you Mariama? – as authors. You are identified as a "pioneer of women's rights" committed to the eradication of inequalities between women and men in Africa. I am a white, North American academic and educator. I as you, have taught school; we are both middleclass in our respective societies. We are in times of change but ones with important distinction: African nations continue to throw off the residues of an external colonialism, and to move for better or worse from traditional into modern/postmodern times. North American nations, it might be said, retain some internal colonialism against minorities as times become postmodern. In spite of some similarities, we are to my mind, significantly different. This is the difference that I want to retain yet communicate across. (Stone, 1995, p. 175)

Whilst Stone acknowledges both similarities and differences, she accentuates the differences. She envisages a relationship that does not admit the violent form of tolerance that reverses this priority and privileges the similarities over differences. Thus, essentialism is eschewed in the attitude *as if friends*. As a result, indubitability and exhaustiveness are denied; different voices engage in a community that does not reduce difference, thereby maintaining the possibility of uncertainty.

This resistance to the attenuation of subjunctive uncertainty through the reduction of difference also precludes the other mode of foreclosing subjunctive uncertainty, namely seeking closure through a commitment to finality. These two means of closure are closely interlinked. The commitment to closure simply

postpones the reduction of difference to some future time, although the mechanism differs. Rather than a reduction of difference in the present, which homogenises through the dual process of accentuating similarities and overlooking differences, closure through the commitment to finality renders difference as a provisional aberration that attenuates as narratives are refined and converge toward univocal Truth. Accentuating difference, however, supports perpetual openness by sustaining and encouraging multivocality. Rather than leading to convergence, *as if friends*, like subjunctive uncertainty, at a minimum preserves plurality and may lead to dispersion.

It is important to emphasise at this stage that the perpetual openness promoted by the attitude *as if friends* does not mean that if a task is undertaken, it cannot be completed. If this were the case, the attitude of *as if friends* would be deemed to have little or no relevance to the realm of practical affairs, such as the practice of environmental education Rather the perpetual openness of *as if friends* attends the condition under which a task is undertaken rather than the task itself. It is the distance between the participants that resists closure, not the tasks undertaken. This is one of the great strengths of Stone's formulation; it enables purposeful activity within a non-foundationalist frame.

The other point of overlap between Stone's attitude of *as if friends* and this project is that Stone's formulation expressly addresses uncertainty; Stone addresses the uncertainty that she maintains attends women's lives. She argues that the "uncertainty of women's action in the world devolves from two realms, one of experience and one of explanation" (Stone, 1995, p. 179). Given that subjunctive uncertainty was formulated within the broad sense of narrative as the participation in discourses rather than the narrow sense of story telling, the realms of experience and explanation are taken to be mutually inscribing rather than discrete. Therefore, it can be advanced that the play of subjunctive uncertainty traverses each domain. However, this view cannot automatically be transferred to Stone's formulation of *as if friends*. Instead, it is necessary to discern whether these two domains are discrete, as the above quotation suggests.

Clearly the action in the world that devolves from explanation is textual, although action in the world that devolves from the realm of experience need not be designated as textual. Stone does not take a clear stance in relation to the textuality of experience, although in her introduction to the composition of *as if friends* she does acknowledge such a poststructuralist perspective by quoting, Heilbrun (1988):

> We can retell and live by the stories we have read and heard. . . . [They are] like the murmurings of our mothers, telling us what conventions demand . . . [and] they are what we must use to make new fictions, new narratives . . . [and new lives]. (quoted in Stone, 1995, p. 186)

Given that Stone augments Heilbrun's quote to the effect that new narratives construct new lives, it seems reasonable to assert that Stone is not opposed to poststructuralist perspectives that cast lived experiences as textual experiences. Thus, resonances can be claimed between the uncertainty that underpins the attitude of *as if friends* and subjunctive uncertainty. Stone's contention that "uncertainty means accepting as natural the tentativeness, ambiguity, fluidity of all life and particularly of the beliefs and desires, knowledges, and actions of persons" (1995, p. 184) can be read as the uncertainty that constitutes embodied, narrative existence.

Despite this broad agreement between subjunctive uncertainty and *as if friends* in terms of lived experience as a narrative enterprise, a deep tension arises in relation to essentialism. This is problematic because essentialism textually erases difference by accentuating sameness. Whilst Stone's insistence on foregrounding the differences between women is a sincere rejection if essentialism, she reverts to essentialism at times:

> A founding irony: That uncertainty names the present era of postmodernism may mean that females – as they are used to

> uncertainty, tentativeness and ambiguity – may be able to live psychologically better today than some (most?) of their male counterparts. If the norm of certainty is replaced with a norm of uncertainty, the question of who best fits the time takes on new meaning. (Stone, 1995, p. 176)

Three problems emerge as a result of this view. By essentialising women's experiences as being characterised uncertainty, Stone undermines her otherwise proclaimed accent on differences such as class, race and culture. This effectively masks the complicity that these factors may have in imposing adverse uncertainties in women's lives. This is a reversion to the oppressive state of affairs that Stone hopes to work against through the attitude *as if friends*. Secondly, by essentialising the experiences of men as being characterised by certainty, she silences the voices of those men affected by uncertainty by rendering those men as Other. This process of exclusion is itself oppressive and it is doubly oppressive if those men are adversely affected by uncertainty. Thirdly, given that Stone strives to resist essentialising women, with exception of the example just mentioned, and given that she does not resist essentialising men, it would appear that the attitude of *as if friends* exclusively attends the realm of women's sociality.

It is important at this point to compare whether subjunctive uncertainty similarly leads to such essentialisms and their attendant problems. This requires a brief review of the conjunction advanced between feminisms and subjunctive uncertainty. This conjunction was advanced on the basis that the narrative bonds of possibility, probability, contingency, memory, desire, fear and hope are stereotypically assigned to (the) feminine. Furthermore, it was noted that these narrative bonds are consigned to the subordinate poles of binarisms that are complicit in shaping society and its institutions and practices in a manner that does not afford women equality of opportunity and participation. Thus, engaging subjunctive uncertainty through the use of narrative theory provides a means to disrupt patriarchal discourses. In contrast to Stone, subjunctive uncertainty does not invoke essentialism. Instead of essentialising women's and men's experiences

as being characterised by uncertainty and certainty, respectively, subjunctive uncertainty casts patriarchal discourses as being characterised by certainty and counter-patriarchal discourses as being characterised by uncertainty.

The essentialising aspects of Stone's argument and their attendant problems offer sufficient reason to veer away from the formulation of *as if friends* as a means to engage subjunctive uncertainty in environmental education. Given that subjunctive uncertainty avoids such problems, it seems intellectually reckless to create the possibility for the introduction of these problems. However, given that the above quotation is so conspicuously at odds with the convictions that shaped *as if friends*, this feminist attitude should not be discarded hastily. The essentialisms mentioned above undoubtedly constitute a retrograde move in Stone's formulation and presentation of *as if friends* and they ought to be acknowledged as such rather than perceived as a constitutive weakness that causes the formulation to collapse. The former stance can be justified on the grounds that: Stone rejects essentialism at the outset in order to develop the attitude of *as if friends*; the formulation is first and foremost an ethical stance that seeks to overcome the oppressions of essentialism rather than perpetuate them; and, given that feminisms are concerned with how gendered roles shape society and its institutions, feminist projects concern both men and women. Thus, the feminist attitude *as if friends* can be advocated as a means to engage subjunctive uncertainty in environmental education, provided that the attitude *as if friends* is read as an attitude that does not exclusively attend the realm of women's sociality and that it does not require the essentialising of women's or men's experiences.

In summary, the narrative bonds of possibility, probability, contingency, memory, desire, fear and hope link subjunctive uncertainty to stereotypical constructions of (the) feminine. Furthermore, these bonds are consigned to the subordinate poles of binarisms that are complicit in shaping society and its institutions and practices in a manner that does not afford women equality of opportunity and participation. Thus, attentiveness to subjunctive uncertainty simultaneously results in attentiveness to feminist concerns. However, given that

subjunctive uncertainty obtains in the openness and plurality of narratives, links can be forged to only those forms of feminism that resist closure through essentialism and/or commitments to finality. This postmodernist/ poststructuralist reading of Stone's formulation of *as if friends* presents such a feminist project. Whilst the attitude of *as if friends* is a rejection of essentialism, Stone does revert to an essentialising mode in the *presentation* of it. This reversion, however, is not a constitutive aspect of the formulation. Thus, it would be possible to engage subjunctive uncertainty through the attitude of *as if friends* without entering into these essentialising reversions and their attendant problems. The following section demonstrates that there is an acknowledged need in environmental education that *as if friends* can satisfy and then explores how environmental education could engage subjunctive uncertainty through this attitude.

WORKING WITH UNCERTAINTY IN ENVIRONMENTAL EDUCATION THROUGH *AS IF FRIENDS*

Recent environmental education theorising and curriculum documents emphasise the need to adopt inclusive approaches in order to adequately address environmental challenges, where 'inclusive approaches' designates, among other things, the representation of different voices[6]. Many reasons can be used to justify inclusive approaches. Most commonly, it is argued that inclusive approaches are necessary because environmental issues are a complex mix of social, scientific, economic, political and cultural factors. In this line of argument, an 'inclusive approach' designates interdisciplinary approaches that draw on the knowledge and expertise of different fields. The driving force for the establishment of such interdisciplinary task forces is a commitment to piece together the 'big picture' in order to (allegedly) ensure that all the stakeholders receive fair and accurate representation.

[6] The representation of different voices that environmental education is striving to develop indicates a commitment to social justice through inclusiveness. It does not indicate phonocentrism (Derrida, 1967/1976), which privileges speech over writing on the basis that the spatial and temporal immediacy of speech purportedly provides direct access to authoritative meaning.

This 'big picture' approach exemplifies a commitment to grand narratives. The inclusion of different voices is an attempt to present comprehensive accounts in which different voices come together to create collage-like, theoretical descriptions in which, ideally, there are no gaps. The different voices that are being used to fill the gaps, however, are voices from within the dominant discourses: scientists, economists, lawyers, politicians and colonial landholders. Environmental education affirms and promotes such integrated specialist approaches. The most recent national environmental education statement in Australia, for example, contends that it is necessary "to establish better communication between those people working on, or learning about, similar or related environmental issues, but who come from different professional or disciplinary backgrounds" (Environment Australia, 2000, p. 4). Yet environmental education also contends that "specialist discipline-based knowledge, while contributing critically, is no longer adequate by itself" (Environment Australia, 2000, p. 4). Thus, whilst environmental education values specialist discipline-based knowledge, it denies it the status of a redemptive meta-narrative

Two reasons are usually invoked to support the limit that environmental education assigns to the reach of specialist discipline-based knowledges and these reasons reflect the ambiguity of the term 'discipline'. Firstly, environmental education recognises that these specialist voices are products of, and governed/disciplined by, the social, economic, political and cultural milieu that has precipitated 'the environmental crisis'. Thus many advocate the inclusion of other narratives on the basis that "by [solely] reproducing modern industrialised societies' high status forms of knowledge (such as science, technology and economics) in environmental education curricula, we are exacerbating many of the problems that we are attempting to resolve" (Gough, 1991, p. 3). Secondly, environmental education highlights that disciplinary knowledge is created by virtue of exclusionary practices that excommunicate other discourses. Both environmental education theorising and curriculum documents draw attention to the erasure of marginalised groups in the big pictures constructed by experts and

emphasise that the marginalised are invariably those who suffer the most as the result of environmental exploitation and degradation. Thus, both epistemological and ethical imperatives underpin environmental education's advocacy of inclusionary approaches. This has led to a widespread, but not universal, commitment to deprivileging totalising specialist discourses. This does not constitute a rejection of the specialist knowledges, but a rejection of their self-professed author-ity to excommunicate other discourses. This deprivileging of specialist discourses situates specialist knowledges as one form of knowledge among others that have been typically silenced.

The need to include the voices of women and indigenous peoples is prominent in the calls to engage alternative discourses in environmental education. Fien, for example, states that:

> Reorienting education towards sustainability requires a new view of science. ... Women's needs have often been overlooked by science. ... and the knowledge that women traditionally hold has been under-valued. ... Aboriginal views and uses of science have also been neglected. ... These old views of science have contributed to environmental exploitation and have marginalised many people. (Fien, 2001, p. 18)

This and other calls are well grounded in epistemological and ethical arguments drawn variously from critical theory and feminist and postcolonial theorising, which demonstrate the interrelatedness of the silencing of women and indigenous peoples. Little has been done, however, to relate these perspectives to environmental education curricula or pedagogies. The limited engagements that have occurred to date focus mainly on the inclusion of women's voices by re-writing environmental education theory and practice through critical feminism (Di Chiro, 1987a, 1987b), poststructuralist feminism (A. Gough, 1997, 1999) and ecofeminism (Fawcett, 2000; Fry, 2000). Engagements that explicitly link the inclusion of indigenous voices to environmental education curricula and

pedagogies are yet to be undertaken. According to Annette Gough (1997, p. 152), "meeting this challenge is definitely a task for the future in environmental education, particularly with respect to providing more opportunities for Aboriginal perspectives to be heard". Furthermore, she acknowledges the potential role that feminisms can have in this regard. Following this lead, I will use the feminist attitude of *as if friends* as a means to explore how the voices of indigenous persons can be engaged in environmental education and how this embodies a specific example of engaging subjunctive uncertainty. The development of this case study for subjunctive uncertainty will also respond to the challenges that the more general calls for the inclusion of indigenous voices have identified. Accordingly, I will also address the thorny issues concerning the naïve appropriation of indigenous knowledges and the 'romantic turn' that some environmental education theorists invoke. Furthermore, I will argue that both of these invocations may be read as colonial attempts to procure certainty in environmental education.

The preservation of difference, which is the crux of *as if friends*, provides the means to resist naïve appropriations of indigenous knowledges, the invocation of 'romantic turns' and the certainty that each strives to secure. Several objections can be levelled at the desire to appropriate indigenous knowledges. The first objection attends the naïve lack of efficacy associated with such an intention/hope (Bonnett, 1999; Gough, 1991; Stables & Scott, 2001). This objection based on a lack of efficacy is not related to the attitude of *as if friends*, but it is such an elementary objection that it warrants inclusion here. Key national and international environmental education documents (Environment Australia, 1999, 2000; UNCED, 1992) advocate the inclusion of indigenous knowledges in the hope that such information could be usefully integrated into the existing body of scientific knowledge in order to enhance both the formulation of environmentally sustainable policies and practices, and to shed new light on the resolution of existing environmental problems. Whilst it is patently obvious that indigenous peoples, who have managed to preserve traditional existences, must be employing

environmentally sustainable practices, there is no defensible reason to suppose that indigenous ecologies, cosmologies and mythologies can be integrated into the policies and practices of modernist, Western cultures or assist in the resolution of environmental problems that have arisen as a result of modernist, Western practices.

The second objection to the appropriation of indigenous knowledges is directly related to the preservation of difference through the attitude of *as if friends*. The attitude of *as if friends* is founded upon: a non-foundationalist epistemology which holds that knowledges are produced within fragmented discourses/ narratives that do not combine to form a totality; and poststructuralist theories that posit subjectivity as a discursive formation. The former proscribes the appropriation of indigenous knowledges on epistemological grounds and the latter, as an ethical imperative. In other words, the attitude of *as if friends* opposes the appropriation of indigenous knowledges because the formulation explicitly rejects both the epistemological legitimacy of meta-narratives and the violence that the construction of meta-narratives inflicts upon the Other. With respect to the latter, entering into a relationship of *as if friends* involves a commitment to refrain from dispossessing others of their difference. Clear resonances occur here between Levinas' (1961/1991, 1974/1991, 1982/1985) ethical formulation of the face to face relationship in which the Other beseeches/commands us not to commit murder by dispossessing the Other of his/her otherness, and hooks' (1990) postcolonial plea to stop colonialist practices in which the coloniser silences the colonised:

> "No need to hear your voice when I can talk about you better than you can speak yourself. No need to hear your voice. Only tell me about your pain. I want to know your story. I will tell it back to you in a new way. Tell it back to you in such a way that it has become mine, my own. Rewriting you I write myself anew. I am still author, authority. I am still the colonizer, the speaking subject, and

> you are now at the center of my talk." Stop! (hooks, 1990, p. 151-152)

The driving force for the appropriation of indigenous knowledges is grounded in the patriarchal commitment to meta-narratives, which is indissociable from colonialism. The appropriation of indigenous knowledges, then, is driven by the impulse to create a broader panorama of knowledge, which, according to *Agenda 21* (UNCED, 1992) and Diduck (1999, 1997b), serves in a corrective capacity to reduce uncertainty. Furthermore, the construction of this 'multicultural' panorama surreptitiously deepens colonialism's disciplinary power by integrating/subsuming indigenous knowledge into a framework where the concepts and structures that sustain the legitimacy of meta-narratives are assumed to be universal and remain unchallenged (Suchet, 2002). The attitude of *as if friends* utterly opposes and offers a means of resistance to the erasure of difference that the construction of meta-narratives entails and the claim to certainty that meta-narratives profess. Furthermore, the attitude of *as if friends* provides a strategic means to resist the violence inflicted by the 'fantasy of White Multiculturalism', which Hage (1998, p. 99) describes, in part, as a paradoxical exclusionary/inclusionary "discourse embodying a fantasy of neatly positioned otherness" that is subsumed by and bolsters the status quo.

The commitment to non-foundationalism also leads to a rejection of the 'romantic turn' that some environmental education theorists invoke in their advocacy of the inclusion of indigenous voices (Bowers, 1993a). The expression 'romantic turn' is taken here to signify a revival of the major theme of nineteenth century romantic literature, which sought to subvert scientific rationalism by positing God/Truth in Nature. Thus, romantic turns uphold the binarisms of Eurocentric discourse, but reverse the power relations by valorising subordinate poles (Suchet, 2002). This reversal of poles in environmental education's romantic turns results in a valorisation and glamorisation of indigenous ecologies, cosmologies and mythologies. This valorisation and glamorisation are premised on the argument that: as indigenous peoples are 'closer to' and more 'attuned to'

Nature, they are, therefore, 'closer to' and more 'attuned to' God/Truth. A logocentric manoeuvre is at play here. Grounding the Word of God/Truth in Nature is an explicit appeal to a meta-narrative that grounds the play of discourses and provides a benchmark against which the certainty of propositions can be ascertained. Fragmented discourses and the uncertainties that they yield, then, are cast as provisional and illusionary. This appeal to a meta-narrative that will ultimately dissolve difference is antithetical to the attitude of *as if friends*. Thus, engaging *as if friends* in environmental education curricula and pedagogies requires an utter rejection of romantic turns.

Both the appropriation of indigenous knowledges and romantic turns perpetuate meta-narratives, although each approach nuances meta-narratives differently. The impulse to appropriate indigenous knowledges seeks Truths that transcend fragmented discourses, whereas romantic turns seek primordial Truths. In both cases, the Truths are sought to unite fragmented discourses into a meta-narrative that serves a corrective function to reduce the uncertainty that attends multivocality.

Appropriating indigenous knowledges and resorting to romantic turns both require some sort of straightforward encounter. The encounter that is *as if friends*, however, is far from straightforward. As a relation that preserves difference, it involves proximity across irreducible distance. Therefore, *as if friends* occurs in a paradoxical space where separation and proximity coincide, without the proximity destroying the separation and without the separation destroying the relation[7]. This is, to borrow an expression from Cronon (1995), 'uncommon ground'. This 'uncommon ground' is an intersubjective and intertextual space. Furthermore, an 'uncommon struggle' occurs on this 'uncommon ground', where the 'uncommon

[7] There is a striking resonance here between *as if friends* and Levinas' formulation of the transcendence of the face to face: "Transcendence designates a relation with reality that is infinitely distant from my own reality, yet without this distance destroying this reality and without this relation destroying the distance" (Levinas, 1961/1991, p. 41). I will refrain from a close cross-reading of Stone and Levinas, however, on the basis that a major intention of this section is to demonstrate a link between subjunctive uncertainty and third wave feminist theories. For a feminist reading of Levinas see Irigaray (1991, 1994/2000) and for cross-readings of feminism and Levinas see Howitt (2001, 2002) and Howitt and Suchet-Pearson (2003).

struggle' signifies the problematisation of community through the accent on difference. This uncommon struggle on uncommon ground is rich with significance for both the inclusion of indigenous knowledge in environmental education curricula and pedagogies, and engagements with uncertainty.

The uncommon ground of intertextuality and intersubjectivity is a site where the subject, signification and socio-historical cultural practices intersect, but not in terms of a simple coincidence. Rather, each mutually inscribes the other. As a result, it is not possible to think of stable, unitary, autonomous subjects as logically preceding or dissociable from 'their' stories. This uncommon ground is inhabited by 'discursive selves' and haunted by the Death of the Author. The term 'haunted' is not being used here merely as a rhetorical flourish. Rather, it is being used as per Derrida (1993/1994) to signify that the author is between presence and non-presence. This spectral quality of the author has twofold significance for environmental education's hope to welcome indigenous voices. It both refutes and upholds the notion that alternative narratives can be engaged in environmental education without resorting to the totalising Hegelian dialectic in which contradictions/antinomies are resolved/sublated in a higher unity/*Aufhebung*.

The spectral quality of the author, as per Derrida, makes it possible to continue to think of storytelling in the familiar sense, whilst acknowledging that the familiar sense is neither sufficient, straightforward nor innocent. The very notion of welcoming indigenous voices in environmental education requires that it be possible to engage this familiar sense of storytelling in which the subjects and stories of indigenous persons be individuated on the stage of socio-historical cultural practices. In other words, it is vital to entertain the notions of authors and portable stories. This familiar sense enables the possibility of entertaining the co-existence of multiple stories, from which subjunctive uncertainty obtains. Furthermore, it enables the development of pedagogical principles that can guide implementation of *as if friends* as a means to engage alternative discourses in

environmental education. These pedagogical implications draw out the psychological and sociological dimensions of *as if friends*.

Following Stone, the attitude of *as if friends* requires openness and humility, each of which is multidimensional. Openness requires the dimensions of receptivity, listening, tolerance and suspension of judgement. In environmental education, receptivity involves opening oneself up to unfamiliar discursive constructions of (the) environment, resources and sustainable futures through discourses of other generations, races, classes, genders and cultures. Active listening must follow receptivity if alternative discourses are to be *engaged*. The listening needs to be active in two senses. Firstly, active listening dissociates the mode of listening required from passivity and ambivalence. Secondly, the descriptor 'active' signifies the ongoing commitment and energy that must be expended in order to maintain both the proximity and the separation that coincide in the attitude *as if friends*, each of which threatens to destroy the other. This involves adopting a vigilant stance against the seductiveness of totalisation which can either assimilate the difference of other discourses into the dominant discourse or excommunicate the discourse of the other and mask the violence that this involves by appealing to the tenets of the dominant discourse. Thirdly, non-violent tolerance is required. This is related to active listening in that it requires a tolerance of difference rather than an accentuation of sameness so that the unfamiliarity of other discourses is not lost. Embracing these differences within a mode of non-violent tolerance admits and permits the engagement of contradictory views on environmental issues that may be antithetical to one's own, without the disabling effects of a sense of betrayal. Finally, a suspension of judgement is necessary. This is not an assertion that judgements or resolutions cannot or should not be sought when alternative discourses are engaged in relation to environmental issues. Rather, it is a call to suspend judgements that would foreclose the engagement of alternative discourses. A suspension of judgment supports the possibility of adopting the attitude *as if friends* as a means to pursue particular tasks through to their (provisional) closure. Furthermore, the

'closure' of these tasks may result in the deployment of unexpected and innovative judgements as a result of being open to, listening to, receptive and tolerant of unfamiliar discourses.

The other quality required to support the attitude of *as if friends* when storytelling is understood in the familiar, unproblematised sense is humility. Humility is also a multidimensional quality. Expressing humility toward one's own views involves scepticism, ego-distancing and playfulness. Each of these dimensions of humility has pedagogical implications for engaging alternative discourses in environmental education. To genuinely engage other discourses involves adopting an attitude of scepticism toward one's own discourse. This is not a renunciation of that discourse. Instead, it is the recognition that one's own discourse is shaped and limited by the particular ontological and epistemological assumptions upon which it is founded. Thus, scepticism involves the understanding that stories within one's own discourse may not be capable of representation in different discourses and vice versa, or that one's own stories may be rewritten in an entirely different form in other discourses. An acceptance of the fluidity of representation requires ego-distancing, that is, it requires us to separate the storyline of our narratives from our emotional investment in them. This ego-distancing provides the condition for the third dimension of humility, playfulness. This involves exploring the power that different stories have in the creation of knowledges, subjectivities and societies. This dimension of playfulness resonates with Annette Gough's (1997, p. 171) conviction that: "All learners should be encouraged to tell stories from the perspectives of others, and reinvent themselves as others, of other races, classes, genders, cultures and species". Thus, playfulness provides a powerful means to envision alternative pathways to sustainable futures, where the notion of a 'sustainable future' is problematised.

These pedagogical implications emerge clearly when the notion of storytelling is understood in the familiar, reductionist sense, that is, when authors and stories are individuated unproblematically. Postmodernist/poststructuralist theorising, however, problematises authors, stories and the socio-historical, cultural practices

upon which they purportedly stand in this unproblematised view. From postmodernist/poststructuralist perspectives each of these three domains, authors, stories and their backdrops, mutually inscribe each other. This does not invalidate the pedagogical implications advanced above, but it does mean that they are not as straightforward as the above account suggests. Greater rigour needs to be brought to bear on these pedagogical implications and this results in more complex pedagogical experiences.

The postmodernist/poststructuralist motif of the Death of the Author relocates the construction of meaning both temporarily and spatially. Following the Death of the Author, meaning can no longer be attributed to authors and stories can no longer be understood as simply the medium of that meaning. Instead, the site of meaning is shifted to the reader and the time of the construction of meaning is shifted to the present. Thus, engaging with stories from alternative discourses does not involve a recuperation of an author's meaning, which is embedded within the text. Rather, the reader is cast as an active participant in the construction of meaning in the present. This construction of meaning is an intertextual process, it occurs by reading texts within and against other texts. This creates hybrid instead of pure meaning and it problematises the notion of listening to the stories of others.

What, then, can it mean to listen to indigenous stories? What are the implications of the Death of the Author for indigenous voices? It is helpful to recollect that these questions are posed on uncommon ground that is haunted by the Death of the Author. The spectre of the author is between presence and absence, both present and absent, neither present nor absent. As the author is beyond/between binary oppositions, the author is other. Therefore, encounters with the author are ethical through and through. On the uncommon ground of intersubjectivity and intertextuality, the author can be neither forsaken nor wrenched into full presence. In concrete terms, this means that the author's meaning is never fully or directly present. Rather, the meaning of stories is caught up in elusive chains of signification. Respecting and listening to indigenous

voices, then, carries the responsibility of refusing to accept the meanings of indigenous stories as fixed and final in the relationship of *as if friends*. This also can be seen as part of the uncommon struggle on uncommon ground.

The pedagogical implications outlined above provide clear guidelines for adopting the attitude of *as if friends* as a means to engage alternative discourses in environmental education in a manner that enables purposeful activity in a milieu of uncertainty and concomitantly avoids the problems of appropriation of other discourses and romantic returns. Other issues emerge, however, as the issues of appropriation and romanticism recede. Perhaps the most difficult issue to tackle arises from the rejection of essentialism. The implications of this rejection are wide reaching, but for the purpose of this argument, environmental educators need to recognise that it is crucial to avoid essentialising indigenous peoples/persons. Even if engaging with the stories of a small 'well defined' indigenous group, *as if friends* requires that essentialism be denied. Attention needs to be given to differences such as age, gender and social standing (Howitt, 2001). Curriculum documents need to highlight the importance of avoiding tokenism, which simply and surreptitiously inserts micro-essentialism. It is not possible to specify the range and number of voices that should be included to prevent tokenism from occurring. Ideally, the challenge would involve engaging a diverse range of indigenous voices without swamping the learners. The more likely scenario, however, would probably involve the inclusion of a severely limited range of voices due to time and financial constraints, whilst recognising that this limited range flirts with tokenism. In either case, the *recognition* of the risk of tokenism is the issue and it is an issue that educators can respond to positively.

Educators can respond to a limited range of voices by encouraging students to be attentive to the silences and encouraging them to construct stories from silenced perspectives. Educators can also reduce the risk of tokenism by deploying a variety of media through which learners engage with different voices. Howitt's (2001) experiences of including indigenous voices in tertiary geography classes is instructive here. Howitt contends that "using texts [in the narrowly

defined sense] alone is too restricting, but having a guest speaker or two give a lecture in a lecture series just will not do either" (Howitt, 2001, p. 155). In response to this problem, Howitt and his colleagues developed a programme for visiting Indigenous Teaching Fellows in which indigenous scholars presented lectures, undertook their own projects, and worked with other researchers and students. Like Howitt, I contend that a 'balance' needs to be found between the vicariousness of texts (in the narrow sense) and the sociality of personal interactions, although the delimitation of texts should not simply be grounded in vicariousness. Texts (and lectures) are invariably configured by the dominant discourse, thus they serve as colonialising forces. This is not to suggest that they be abandoned when engaging indigenous voices, but that they should be disrupted by other media such as traditional and contemporary song, dance, poetry, and storytelling. Further, engaging learners with voices that explicitly disrupt essentialism provides a powerful means of confronting tokenism. An exemplar of a disruptive text is Leah Purcell and Sean Mee's dramatisation of *Black Chicks Taking* (2002) in which four very different indigenous women, who come from different mobs and different places, as far flung as the sophistication of Sydney to the tribal community of Buccaneer Archipelago in Western Australia, weave a complex picture of their lives through theatre, storytelling with traditional indigenous and contemporary dance. Their stories blend and clash in this meeting, disrupting essentialism. Thus, whilst practical considerations may increase the potential for tokenism and essentialism by limiting the range of indigenous voices that can be engaged, powerful measures to counter tokenism and essentialism can be taken at the pedagogical level. These measures are, however, seriously compromised by the present necessity to construct meaning within the play of the dominant language. This is an intractable problem, although high profile education policy documents suggest otherwise by valorising the diversity of languages without any mention of the pernicious problems that attend translation (MCEETYA, 1999).

In summary, this section has demonstrated that environmental education can explore and engage the "uncertainties of the postmodern age ... [and the] opportunities this may afford for realising a more sustainable society" (Panel for Education *for* Sustainable Development, 1998, p. 11) through postmodernist/ poststructuralist feminisms. Stone's formulation of *as if friends* was used for illustrative purposes, but the sole use of this formulation should not be taken to signify that *as if friends* provides the only means to engage the conjunction of uncertainty and feminist thought in environmental education The link between uncertainty and feminism has not been theorised, hitherto, in environmental education and the theorisation of uncertainty *per se* has received a very low profile in feminisms. Thus, the arguments developed here constitute a significant contribution in both arenas.

The theorisation of subjunctive uncertainty, in particular, enables the link to be forged between poststructuralist feminism and uncertainty. The openness and plurality of narratives, from which subjunctive uncertainty obtains, are central motifs in postmodernist/poststructuralist feminisms, which oppose the subordination of difference to sameness through essentialism. However, the openness and plurality of narratives alone provides only a loose link between subjunctive uncertainty and feminisms. The link is secured, however, because the subjunctive creates the narrative "bonds of possibility, probability, contingency, memory, desire, fear and hope" (Le Guin, 1989, p. 44), which have been designated as the subordinate poles of binarisms that are stereotypically assigned to (the) feminine: correspondence/analogy, actuality/possibility, certainty/ probability, surety/contingency, satisfaction/desire, courage/fear, will/hope. The exploration of *as if friends* drew the play other narrative uncertainties into relief as well. The play of decentred uncertainty emerges from the refusal to admit the legitimacy of meta-narratives in *as if friends.* The commitment to respect and preserve a plurality of voices through the privileging of difference prevents logocentric manoeuvres that centre texts. Furthermore, the focus on the intertextual construction of meaning accentuates the play of *poietic* uncertainty.

Engaging these narrative uncertainties in environmental education through feminist thought provides a strategic means to disrupt patriarchal discourse. The need to disrupt patriarchal thought through environmental education has been long argued by ecofeminists and environmental education theorists on the basis that patriarchal thought is held to be deeply implicated in (the) environmental crisis. Ruether (1975), for instance, argues that:

> … the roots of the language of domination of nature [are] in social domination … the 'master of nature' is imaged as a patriarchal despot whose subjugation of nature is expressed in the language of domination over slaves …
>
> The language is both that of despotism and that of sexual aggression. Nature is pictured as a fecund female slave whose 'children' are to be used by rulers by reducing her to a condition of total submission … the ecological crisis and the collapse of faith in scientific technology in the twentieth century … [are] the results of this relationship of 'use' of nature to social domination … The productivity that resulted from the application of instrumental science to nature was fed into a magnification of the structures of social domination, rather than providing the basis for a postscarcity, egalitarian society. (quoted in Di Chiro, 1987b, p. 30)

Disrupting patriarchal discourses opens up spaces for voices that have been silenced, such as the voices of women and indigenous persons/peoples. The need to create the conditions for such silenced voices to be heard has been recognised and advocated not only by feminist theorists in environmental education (Di Chiro, 1987a, 1987b; A. Gough, 1997), but by government policy (Environment Australia, 1999, 2000) and curriculum documents (MCEETYA, 1999 ; Panel for Education *for* Sustainable Development, 1998), both in Australia and overseas. Furthermore, the need to create spaces to engage the voices of women and indigenous voices in conjunction has been advanced by Fien (2001) and Annette

Gough (1997). The argument developed here, however, does not simply reiterate these convictions. Rather, it provides an additional explanatory dimension that demonstrates the constitutive role of uncertainty in the disruption of patriarchy through poststructuralist feminisms and narrative theory.

If patriarchy is to be disrupted by the inclusion of silenced voices, however, it is imperative that these voices are not appropriated into a meta-narrative because meta-narratives are configured and legitimated according to the modernist project, which is enabled by, upholds and perpetuates patriarchy. The creation of meta-narratives strives to procure certainty through the subordination of difference to the dominant discourse. This is violence, but this violence can be averted though fractured relationships, that is relationships that occur across irreducible separation, such as Stone's *as if friends*. This enables environmental education to engage 'postmodern uncertainties' through the inclusion of different voices, as per the objectives formulated by the Panel for Education *for* Sustainable Development (1998).

CRITICAL ENVIRONMENTAL LITERACY

The curricular and pedagogical implications of the postmodernist/ poststructuralist reading of *as if friends* in the previous section engage textuality as per Derrida (1972/1981), that is, they can be read as specific examples concerning how a text constructs and configures meaning rather than what a text means. Thus, these curricular and pedagogical implications connect with the broad corpus of critical literacies. Furthermore, these curricular and pedagogical implications could read as examples for an argument that posits uncertainty as a condition for *deconstructive* critical literacies. The sociological dimensions of openness and scepticism enable this link to deconstructive critical literacies. Opening oneself up to unfamiliar discursive constructions of (the) environment, resources and sustainable futures through the discourses of other generations, genders, classes, races and cultures requires adopting an attitude of scepticism founded on the recognition and acceptance that one's own discourse is shaped and limited by the ontological and epistemological assumptions upon which it is founded and the

constitutive blindnesses that these assumptions impose. Thus, the dimensions of openness and scepticism compel the renunciation of logocentric manoeuvres to ground environmental discourses in *the* environment. The attitude of *as if friends* is not staged on *the* environment. Rather, the textuality of lived experience extends beyond the realm of human sociality to (the) environment. It is necessary to posit (the) environment as text when engaging the attitude of *as if friends* and this forges the link to deconstructive critical literacies. This section will draw on Derridean themes to demonstrate that uncertainty provides the condition for a conception of deconstructive critical environmental literacy.

The irreducibility of critical literacies to a fixed and singular notion of critical literacy (Green, 2003; Kamler & Comber, 1996; Knobel & Healy, 1998) means that this discussion is entering into contested ground. Given that environmental education is also characterised more by contestation than consensus, it would be possible to construct and defend multiple competing formulations of critical environmental literacy. This would seem to suggest multiple starting points for any discussions that conjoin critical literacies and environmental education. However, there is one shared feature of critical literacies and environmental education that provides not only an expedient entry point but also a logical starting point from which constructions of critical environmental literacy, whether actual or possible, then diverge. This starting point is the notion that critical literacies are critical social practices. When isolated from the numerous philosophical contexts in which this statement has been made, the statement is almost meaningless, yet it still conveys a crucial dimension of critical literacies, namely action. Furthermore, this action is more than the 'arm chair' or sedentary action that is typically associated with narrow conceptions of literacy, which limit texts to linguistic unities such as written texts. The phrase 'critical social practices' aligns texts and literacy and with discourses and ways of being in (the) wor(l)d, respectively.

The conjunction of literacy and ways of being in (the) wor(l)d certainly resonate with the aims and objectives in environmental education. The issue of illiteracy/literacy has been continuously addressed in environmental education,

from the first official formulation of environmental education (UNESCO-UNEP, 1976) to current theorising. Singh (1998, p. 341), for example, maintains that "given that environmental educators regard critical awareness-raising and empowerment as necessary attributes of education *for* environmental sustainability, then critical literacy has an important role to play in such work". Similarly, Stables and Bishop maintain that "the development of a strong conception of environmental literacy ... has the potential to result in a stronger conception of *care* for the world in a way that conventional environmental education alone cannot" (2001, Stables and Bishop's emphasis). However, Singh, and Stables and Bishop theorise critical environmental literacy from critical theory and poststructuralist theory, respectively. As a result, the respective formulations of critical environmental literacy differ significantly.

The differences in present approaches to critical environmental literacy continue a history of competing and conflicting formulations of environmental literacy, spanning the twenty-five year period in which environmental education has been formally recognised as a field of education. Initial attentions to (il)literacy give no indications to suggest that (il)literacy is conceived beyond the narrow view of text as linguistic unities (UNESCO-UNEP, 1976). Whilst these early formulations also advocate action in the form of active participation in the resolution of environmental issues, they cast literacy as vital adjunct to action rather than casting action as literacy. As environmental education theorising of literacy developed, however, literacy was cast as a developmental process that culminated in action. This conjunction first emerged when Roth (1992) advanced the tiered notion of *environmental* literacies. Although, Stables and Bishop note that as Roth's formulation does not connect with broader theoretical or philosophical theorising, "he is unable to be very clear on issues such as whether environmental literacy involves or merely stimulates (or might stimulate) action for the environment" (2001, p. 90-91). Furthermore, Roth's formulation of environmental literacies draws upon the narrow conception of texts. Thus, Roth posits *the* environment as an unproblematised stage upon which environmental

literacies are enacted. Stables and Bishop (2001), however, has re-framed Roth's taxonomy of environmental literacies by drawing upon post-critical literacy theorising and postmodernist/poststructuralist philosophy. Thus, Stables and Bishop posit (the) environment as text and cast environmental literacy as an embodied semiotic engagement with (the) environment.

Stables' theorisation of critical environmental literacy (Stables, 1996, 1997, 1998; Stables & Bishop, 2001) is wholly compatible with the position that is advanced here. However, the position that is presented here is not compatible with the position that Stables presents in *Who Drew the Sky? Conflicting assumptions in environmental education* (2001b). In this article, Stables undermines much of his critical and decisive earlier work by deferring to common misreadings of postmodernist/poststructuralist thought. In particular, Stables defers to the misreadings that postmodernist/poststructuralist thought "renders futile the quest for truth" (2001b, p. 247), that the environment is not 'there', that the world "simply cannot be 'known'" (2001b, p. 250), that Derrida's thought leads to "thoroughgoing relativism" (2001b, p. 248) and that "there is no logic to [poststructuralist thought] at all" (2001b, p. 250)[8]. Following his deferral to these misreadings of postmodernist/poststructuralist thought, Stables aligns himself with 'post-foundational' thought which, he maintains, avoids the pitfalls (misreadings) of postmodernisms/poststructuralisms by "retain[ing] a degree of realism" (2001b, p. 249). The position that is presented here does not support Stables' rendition of post-foundationalism or his acquiescence to the misreadings of postmodernist/poststructuralist thought. Nevertheless, as stated at the outset, the position presented here is wholly compatible with Stables' earlier works. The major point of agreement is that each position supports (the) environment as text, from which other points of agreement follow, such as support for the postmodernist/poststructuralist motif of Death of the Author. Whilst Stables draws on Barthes and this argument draws on Derrida, both Barthes and Derrida uphold the theme of the Death of the Author and their responses to it are similar.

[8] As each of these misreadings and others were rebutted in Chapter Five, the rebuttals will not be reiterated here.

The notable difference between the discussion here and Stables' earlier works on critical environmental literacy is that this discussion draws out the constitutive role of uncertainty.

CRITICAL ENVIRONMENTAL LITERACY, DECONSTRUCTION AND UNCERTAINTY

A firm link exists between critical literacies and Derrida's philosophical/literary projects, especially deconstruction. As noted above, both critical literacies and the objectives of environmental education conjoin literacy and action as the condition for enacting 'critical social practices'. This conjunction and their expression figure prominently in Derrida's works. The conjunction is demonstrated in Derrida's insistence that what he calls "the 'text' is not distinct from action or opposed to action" (Derrida, 1999, p. 65) and the call for their expression is demonstrated by Derrida's advocacy of 'close reading'. Indeed, Derrida's formulation of close reading can be read as a call for the development of critical literacies:

> to read does not mean to spend nights in the library; to read events, to analyse the situation, to criticize the media, to listen to the rhetoric of demagogues, that's close reading, and it is required more today than ever. So I would urge politicians and citizens to practise close reading in this new sense, and not simply to stay in the library. (Derrida, 1999, p. 67)

Whilst this quotation can be read as an affirmation of the importance of critical literacies, it seems to limit the reach of critical literacies to the linguistic realm of human sociality. However, when this quotation is read alongside Derrida's famous remark that there is nothing beyond the text and the discussion in Chapter Five, which argued that this remark does not constitute a denial of the materiality of (the) world, it becomes defensible to assert that Derrida's notion of close reading can inform both broad conceptions of environmental literacy in

which (the) environment is posited as text, as well as narrower conceptions of literacies which solely attend the linguistic realm of human sociality[9].

Linking Derrida's thought to a conception of critical environmental literacies enables the constitutive role of uncertainty to be foregrounded. The notion of critical literacy as a means of probing *how* a text works is directly linked to the notion of deconstruction. This assertion of a 'direct link' is seemingly problematic, however, given that Derrida refuses any claims to fixed and final meanings. This begs the question, how can a link to deconstruction be claimed, when deconstruction, like so many of Derrida's terms, cannot be unproblematically individuated? However, this is not as problematic as it may appear to be. Certainly, deconstruction is not a delimitable entity and Derrida has consistently indicated this by refusing to cast deconstruction as a method, or as a school of thought. But Derrida does signify deconstruction as an endless process. That there is no end to deconstruction irrevocably obstructs any attempt to logocentrically wrest deconstruction into full presence, but the process can be described. One description in particular indicates how deconstruction is directly linked to the notion of critical literacy as a means of probing *how* a text works. In an interview with Mortley (1991), Derrida described deconstruction as:

> a matter of gaining access to the mode in which a system or structure, or ensemble, is constructed or constituted, historically speaking. Not to destroy it, or demolish it, nor to purify it, but in order to accede to its possibilities and its meanings; to its construction and its history. (Mortley, 1991, p.97)

This description of deconstruction could be summarised as probing how a text constructs and configures meaning.

[9] It should be noted here that the term 'narrower' is not being used in a pejorative sense to indicate that those literacies that solely attend the linguistic realm of human sociality are somehow impoverished.

Adopting deconstruction as a basis for critical literacies not only draws the constitutive role of uncertainty in critical literacies into relief, it demonstrates that uncertainty provides the condition for critical literacies and that the engagement of critical literacies is a mode of positively responding to uncertainty. Indeed, if uncertainty were not the crux of the issue, what would we need critical literacies for? Critical theorists might smart at the audacity of this question, but given that all strands of critical theory embrace self-reflexivity, critical theory rides on change which at the very least problematises any appeal to certainty. The relationship of critical theory to (un)certainty is an issue that deserves close critical examination and this is not the place to give that thesis the attention that it requires and deserves. The issue was raised, however, to indicate that the provocative question that 'if uncertainty were not the crux of the issue, what would we need critical literacies for?' cannot be summarily dismissed by appeals, say, to the elimination of false consciousness. The emancipation that critical theorists proclaim follows the elimination of false consciousness cannot be equated with the advance or arrival of certainty.

The four forms of narrative uncertainties, which were formulated in Chapter Five, are foregrounded when deconstruction is adopted as a basis for critical environmental literacy. Deconstruction necessitates a broad view of environmental literacy in which (the) environment be treated as text. This necessity arises from Derrida's repudiation of transcendental signifiers, which disavows that meaning exists outside of chains of signification. In other words, adopting a deconstructive approach concomitantly requires acceding to the view that (the) environment is that which receives signification, not (that) which gives it. Therefore, *the* environment cannot be used to ground (the) authority, validity or truth of environmental knowledge, either literally or figuratively. This inability to ground (the) authority, validity or truth of environmental knowledge from (the) outside dislodges *the* environment as the *centre* of our environmental knowledge. According to Derrida, centres have been invested with the organisational power of structures. Refusing to invest *the* environment with the organisational power to

structure and stabilise our environmental knowledge, then, removes *the* environment as the benchmark against which to assess the certainty of propositions. Thus, the environment is *decentred*, but as Derrida argues, decentring does not rest. The uncertainty that results from the decentring of the environment does not regain equilibrium through the installation of an alternative centre. Deconstruction, then, results in decentred uncertainty that arises from the successive determination of centres. Decentred uncertainty does not attenuate over time.

The implications of decentring *the* environment present numerous challenges and opportunities to environmental education and only a limited number of these can be entered into here. Perhaps the most challenging implication to environmental education in terms of its scope is the repudiation of critical realism. Treating the environment as text does not deny the materiality of (the) environment. Rather, it means that there is no meaning in (the) environment itself, that there is no acontextual knowledge of (the) environment. Given that there is no meaning in (the) environment itself, no discipline can claim to be able to tap *into* environmental meaning. This displaces scientific knowledge from the privileged position afforded to it in much environmental education discourse. The need to displace the centrality of scientific discourse is supported by critical, hermeneutic and postmodernist/poststructuralist perspectives in environmental education. Much of this support finds expression through advocating the need to respect differing social and cultural interpretations of environmental issues. However, reducing environmental issues to *simply* matters of social and cultural interpretation has the capacity to surreptitiously reinsert *the* environment as the centre of environmental knowledge. In addition to recognising differing social and cultural understandings, the textuality of (the) environment and environmental issues needs to be highlighted. This textual manoeuvre is crucial because it prevents social and cultural differences being degraded to equivocation about *the* environment, which would simultaneously reinstall *the* environment as the centre of environmental knowledge and restore the privileged position of scientific

knowledge that was to have been displaced by the acknowledgement of social and cultural differences.

Clearly, politics is at stake here. The surreptitious restoration of scientific knowledge demonstrated in the previous example highlights disciplinary power and the politics of representation. Developing a critical environmental literacy that engages (the) environment as text enables the surreptitious to be rendered explicit. Rendering disciplinary power and the politics of representation visible is clearly of strategic value when unravelling environmental problems and issues. The political agenda in environmental education has a high, but contested, profile for this reason. The political dimension of environmental education, however, is typically expressed in terms of battles between binary poles: Left/Right, Green/Red. Irrespective of how these binaries are orchestrated, the orchestration presumes a fixed and stable bottom line. Engaging the politics of representation, however, deconstructs the bottom line. Johnson's description of deconstruction is helpful here: "What deconstruction does is teach you to ask: What does the construction of the bottom line leave out? What does it suppress? What does it disregard? What does it consider unimportant? What does it leave in the margins?" (quoted in Green, 1997, p. 238). This interrogation of the bottom line expands the scope of political literacy in environmental education and enables the recognition and acknowledgement of the irreducible uncertainty that attends the politics of representation. The scope of political literacy is expanded, because in addition to evaluating the agendas promoted by the competing poles in the Left/Right and Red/Green binaries, deconstruction demonstrates that these binaries are not self-evident by directing attention to constitutive blindnesses that enabled the construction of the (apparent) bottom line positions. Drawing attention to constitutive blindness also highlights the irreducible uncertainty that attends the politics of representation. As a matter of consistency, one must recognise and acknowledge that the 'insights' gained through deconstruction are systematically related to what is not seen. Thus, there is no 'revelation' in the sense that revelations disclose that which is irrefutably certain. The 'insights' of the

politics of representation, of deconstruction, ride on uncertainty, which prevents deconstruction from coming to rest.

Thus far, it has been posited that decentring *the* environment reveals that a ubiquitous uncertainty attends all environmental knowledge. The ubiquity of this decentred uncertainty arises from the repudiation of the logocentric rationalism that posits *the* environment anterior to the text, controlling the movement of the text from the outside. From this, it follows that no discipline can claim to reach beyond the text, to *the* environment. This renders scientific knowledge as one fiction among others that write (the) environment, each of which can and does have effects on (the) environment. Reading (the) environment as text and acceding to the multiplicity of readings that the text may signify with varying degrees of explicitness provides an opportunity to examine the nature of environmental issues that are being foregrounded as opposed to those that are being marginalised, and to ask: what justification is being used to partition and position those issues? under what authority is this partitioning and positioning being conducted? and whose interest does it serve? Thus, in addition to highlighting the ubiquitous and constitutive uncertainty of environmental knowledge *per se*, decentring *the* environment directs attention to issues of disciplinary power and the politics of representation, which discursively instantiate differing environmental issues. Probing the instantiating capacity of disciplinary power and the politics of representation draws essential blind spots into relief and, as a matter of consistency, inquirers must acknowledge that the instantiation of their 'insights' is also systematically related to blind spots. Thus, decentred uncertainty is both ubiquitous and endless. This endlessness results from the impossibility of closure, which coincides with one of the dimensions of subjunctive uncertainty, namely openness, which reinforces that the narrative uncertainties that were formulated earlier are not mutually exclusive.

It is necessary, however, to disrupt this rather triumphant tone. The movement from deprivileging scientific knowledge to inquiries into disciplinary power and the politics of representation is not assured. Decentring (the) environment in

environmental education also signals the loss of reassuring certitude that logocentric discourses promote. Losing a reassuring certitude places persons in a position of vulnerability, possibly despair. Clearly, there are ethical implications here. A crucial role of critical environmental literacy, then, is to equip participants in environmental education with means to respond positively to this loss. Given that decentring does not rest, it would be entirely unethical to ease the loss of reassuring certitude with yet another centre, which would, in turn, be dislodged. Another response altogether is needed. Perhaps surprisingly, one way of pedagogically responding to this ethical responsibility is to pursue the other form of uncertainty that arises from the challenge to logocentrism through the motif of the Death of the Author, namely *poietic* uncertainty.

The formulation of *poietic* uncertainty, in the Chapter Five, was derived from the motif of the Death of the Author, as per Barthes (1968/1977) Derrida (1972/1981) and Foucault (1969/1988). To recapitulate briefly, *poietic* uncertainty arises from the repudiation of the logocentric position that texts convey intended meanings that can be attributed to the author(s). This logocentric position posits reading as a passive process insofar as it does not involve the reader in the construction of meaning. The reader is, thus, a disposable recipient of vicarious meaning. The motif of the Death of the Author, however, disrupts this notion by rescheduling the site and temporality of meaning. Following the Death of the Author, the site of the construction of meaning is shifted from the author to the reader and the timing of the construction of meaning is shifted from the past to the present.

Accentuating the motif of the Death of the Author in critical environmental literacy can have both a motivational and empowering effect. The motivational effect can be derived from the formulation of *poietic* uncertainty. The temporal shift of meaning that the Death of the Author necessitates problematises certainty in a manner that ensures its possibility. When the construction of meaning is posited as an ever-present process, the attribution or denial of certainty is perpetually frustrated because meaning must be established logically prior to the

attribution of certainty. Thus, as argued earlier, the attribution of certainty requires one to literally get ahead of oneself whilst remaining steadfastly grounded in the present, which is both impossible and utterly absurd. Thus, whilst the Death of the Author immerses the reader in uncertainty, it concomitantly disavows surrendering certainty. The Death of the Author then exhorts us not to complacently accept our present readings of the wor(l)d and not to mistake the present state of affairs with what is yet to come. The empowering effect lies, then, in shifting the focus from a loss to a gain. In other words, accentuating the Death of the Author shifts the attention from a perceived loss of reassuring certitude that relied upon receiving meaning vicariously from texts that claimed author-ity to one's active role in the construction of meaning. Thus, participants in environmental education ought to be encouraged and supported to construct meanings by teasing counter constructions from texts and to read texts with and against one another.

The empowerment that can arise from shifting the construction of meaning from the author to the reader is not unconditional. The locus of responsibility shifts as the construction of meaning moves from the author to the reader. Constructing texts is an ethico-political enterprise, irrespective of who is accredited with their construction. In the interpersonal arena, ethico-political questions attend the inclusion/exclusion and transformation of individuals or groups as narratives are constructed (there are clear links with postcolonial and feminist theory here). Beyond the interpersonal arena, ethico-political questions attend how (the) environment is constructed, and ethico-political questions attend intertextual readings of these two types of narratives. Green's comment made within the broader arena of critical literacies highlights this ethico-political dimension in a manner that resonates with the concerns of environmental education:

> It is not enough, then, to talk about "reading" and "writing" the "word-world", not any more. Rather, we need to draw into our project the notion and necessity of caring for the "word-world", of

> *care*; of attending to, engaging with, intervening on behalf of, and looking after what might now perhaps be better described simply as the Wor(l)d. (Green, 1997, p. 239, Green's emphasis)

In the context of environmental education, Green's statement can be read as an appeal to eco-political agency, where the term 'agency' is taken to be problematic. As mentioned in Chapter Five, Gough also draws eco-political agency into clear relief when he advances that one of the pedagogical implications of using postmodernist/poststructuralist narrative theory in environmental education "is to support learners as they 'play out' the meanings and implications of their transactions with the earth … so that they can rehearse the consequences of living these stories, and living with others' stories, in sustainable (or at least non-catastrophic) ways" (Gough, 1994b, p. 210).

The discussion, thus far, and the two aforementioned quotations nuance the reader and narrative uncertainties unproblematically. Hitherto, the discussion has theorised the play of narrative uncertainties from a seemingly detached perspective, as if the reader/writer were beyond the text and, thus, unaffected by narrative uncertainties. But given that this discussion has embraced Derrida's contention that there is nothing beyond the text, it is necessary, as a matter of logical consistency, to explicitly acknowledge that (the) subject is constituted within the chains of signification that weave the text. Therefore, consideration needs to be given to the constitutive role of narrative uncertainties in the processes of subjectification, the implications that this may hold for environmental education and the possible role of critical environmental literacy in engaging these implications.

The contention that subjectivity arises within the chains of signification that weave the text posits subjectivity as a construction that emerges from the play of differences and deferrals rather than a fixed, stable and unitary entity. Subjectivity, then, gains expression through shifting outward relations rather than the individuation of a unique, inner self that sets one apart from all others. The

notion of a fixed, stable, unitary self has been displaced by notions that (the) self is narrativised, multiple and fluid. The multiplicity and fluidity of narrativised selves resonates with each formulation of narrative uncertainty simultaneously and in a manner that resists discrete resolution. Nevertheless, it is possible to foreground each formulation, whilst recognising that drawing each into relief does not sever the interrelations between the other formulations and recognising that any such attempt can only ever be partial.

The multiplicity and fluidity of narrativised selves corresponds with the plurality and openness of narratives from which subjunctive uncertainty obtains. The notion of multiple selves as opposed to a unified self accedes to the notion that subjectivity is "multiply constructed across different, often intersecting and antagonistic, discourses, practices and positions" (Hall, 1996, p. 4). In short, a plurality of selves is constructed by multiple contexts. This contextualisation of selves prevents the resolution of this multiplicity into a unity because such a resolution must itself take place within a context. Thus, this multiplicity cannot be centred, which draws the play of decentred uncertainty into subjectivities. The contextualisation of the self also draws the second aspect of subjunctive uncertainty into relief, namely openness. If one accepts that subjectivity is constructed by contexts in the Derridean sense, then subjectivities are cast as being open rather than closed because, according to Derrida (1988), contexts are neither absolutely determining nor wholly delimiting. Thus, subjectivity eludes being wrenched into full presence. This is not a postmodern return to an Oedipal terrain of lack, grieving and confusion. On the contrary, the openness that arises from the impossibility of full presence creates opportunity. This openness admits that each text means more than it says, from which allegorical uncertainty obtains. Thus, different subjectivities can be constructed from within any particular text. Constructing different subjectivities from within any particular text or through intertextual readings draws the role of critical literacies into relief and mobilises *poietic* uncertainty. The play of *poietic* uncertainty is vitally important here because it obtains from the motif of the Death of the Author. The importance lies in the

shift in the site of the construction of meaning. The implication for the construction of subjectivities lies in the fact that the construction of meaning resides with the reader rather than the author. Thus, (the) subject exercises a degree of control or influence and, hence, responsibility over the construction of subjectivities rather than being helplessly at the mercy of capricious texts and/or their authors. The uncertainty resulting from the Death of the Author resides in the temporal shift of meaning; if meaning is constructed in the ever present, the attribution of certainty is perpetually postponed. Thus, the reader's construction of subjectivities is a process of becoming rather than attainment because the only vantage point from which one could assess the certainty of the present state of subjectivities lies in the future. Closure is perpetually postponed.

Acceding to and engaging with the multiplicity and fluidity of narrativised selves and the narrative uncertainties that operate within this theorisation of subjectivity, presents an opportunity that holds great promise for environmental education. Like Caputo's (1993, p. 82) description of "thinking the impossible", engaging with the multiplicity and fluidity of narrativised selves "pulls us out of our most sedimented thoughts and opens up new possibilities". The new possibilities for environmental education include exploring how environmentally sensitive and responsive subjectivities are constructed, and whether these constructions are foregrounded or marginalised. More specifically, it involves deploying critical literacies in order to analyse the construction of 'environmental' subjectivities so that critical understandings may be gained of both what we are prepared to accede to as environmental issues and our disposition to environmental action. This analysis involves paying attention not only to how different texts instantiate environmental issues, as mentioned in the earlier discussion, but also how this instantiation simultaneously constructs subjectivities such that we will subscribe to that instantiation. Playing close critical attention to such instantiations requires developing a vigilance that searches for the shadows of the essential blindnesses that are wholly necessary to support such constructions. As noted earlier, probing constitutive blindnesses is a political and

ethical enterprise. It is political because it confronts how disciplinary power and the politics of representation predispose us to construct subjectivities that maintain the constitutive blindnesses and to accept these constructions. The ethical aspect lies in the fact that counter constructions can be made and that we must accept responsibility for these constructions. Thus, participants in environmental education can be encouraged to undertake ethical constructions of subjectivities, by searching for essential blindnesses, making these visible, deploying these to construct counter-subjectivities and assessing whether these counter-subjectivities enable us to live in more or less environmentally sustainable ways.

The ethico-political dimension of critical literacies or close reading has been widely accepted. The discussion here goes beyond the current theorising of both critical literacies in general and Stables' critical environmental literacy, however, by highlighting that uncertainty undergirds critical literacies and by arguing that the deployment of critical literacies is a means of positively responding to ubiquitous and perpetual uncertainty. The term 'positive' is being used here to signify that critical literacies provide a way of conducting purposeful activities in the midst of uncertainty, which contrasts with the negative portrays of postmodernist/ poststructuralist thought that posit accepting a paralysing defeat as the inevitable outcome. This discussion also goes beyond Stables' theorisation of critical environmental literacy by explicitly positioning (the) subject within the text and probing the effects that the text and the embedded narrative uncertainties have on the process of subjectification and by exploring how a reflexive deployment of critical environmental literacy can provide participants in environmental education with understandings of the construction of environmental subjectivities and dispositions to engage in the resolution of environmental issues.

ETHICS AND UNCERTAINTY

The preceding sections illustrated that an attentiveness to uncertainty led into ethical terrain. However, this does not permit any relationship, in the strong sense, to be advanced between uncertainty and ethics. Their conjunction in the

preceding two sections may have resulted from: the deployment of postmodernist/poststructuralist themes; the constitution of *as if friends* and critical literacies, and different aspects of their constitutions may have yielded the conjunction; or the conjunction may simply have been incidental in each case and coincidental that it emerged in both. This section argues that ethics emerges with a strong profile when postmodernist/poststructuralist perspectives are employed, but it also argues that this profile is accentuated in this project because specific relationships obtain between uncertainty and ethics when working within a postmodernist/poststructuralist framework. The implications of these specific relationships for engagements with uncertainty within environmental education are then addressed.

POSTMODERNIST/POSTSTRUCTURALIST PERSPECTIVES AND ETHICS

Despite the difficulties that attend characterising postmodernisms/ poststructuralisms (Stronach & MacLure, 1996), it is uncontentious to assert that postmodernist/poststructuralist perspectives are characterised by a concern for the other. This concern is articulated through a privileging of difference as a means to disrupt totalisation. That there is or must be a totality is a myth and any to effort substantiate this myth results in intractable epistemological difficulties (Van Niekerk, 1995). Yet this myth has become deeply entrenched and has resulted in violence toward the other. May (1997) provides a succinct statement of the violence that totalitarianism inflicts upon the other. Whilst, May refers to 'totalitarianism', he uses this term in its broadest sense, which renders it synonymous with 'totalisation' as it has been used in this project:

> the deep problem with totalitarianism is not merely that it is false; it is also insidious. It is not merely mistaken to be totalitarian in one's conceptual approach to the world; it is also evil. And the reason that it is evil is that it marginalizes or eliminates that which is different. Thinking of community in terms of a common substance that we must all participate in marginalizes those who are different

> from the participants in that common substance; thinking of language in terms of presence masks the difference that subtends it; thinking of ethics in terms of the likeness or analogies of others to oneself refuses the insight that what is ethically relevant is often the difference of others from oneself; thinking of ontology in terms of identity precludes consideration of ontological possibilities that are irreducible to any identity. In all these cases, the different – although in each case it is a different 'different' – is lost, distorted, repressed or reduced. (May, 1997, p. 4)

Postmodernist/poststructuralist perspectives expose the epistemological untenability of totalisation, the violence that totalisation inflicts upon the other, and the capacity that totalisation has to mask this violence. In Continental postmodernist/poststructuralist philosophy, this often finds expression through reminders of the holocaust and a commitment to guard against its return (Adorno, 1966/1973; Derrida, 1967/1978; Lyotard et al., 1992; Lyotard & Thébaud, 1985).

It is unsurprising then that ethics has assumed such a high profile throughout this project. This was inevitable. However, the question remains whether this profile was solely due to the postmodernist/poststructuralist framework adopted within this project or whether the ethical dimension was further amplified because of specific relationships between uncertainty and ethics within this postmodernist/poststructuralist framework. The determination of whether there are specific relationships between uncertainty and ethics in this context is relevant to environmental education due to the prominent profile that uncertainty is gaining in environmental education and environmental education's commitment to environmental values education.

Addressing the question of whether specific relationships exist between uncertainty and ethics in postmodernist/poststructuralist thought is awkward, however, given that uncertainty is variously taken to be a symbol, theme and consequence of postmodernist/poststructuralist thought. Engaging the question

of a specific relationship through the designations of uncertainty as a symbol or consequence could do no more than reiterate the relationship between postmodernist/poststructuralist perspectives and ethics. The question of a specific relationship needs to be approached thematically. The following section draws on the theme of *excess*, as per Derrida and Levinas, in order to argue that specific relationships exist between uncertainty and ethics in postmodernist/ poststructuralist thought.

EXCESS, UNCERTAINTY AND ETHICS

Derrida's deconstruction demonstrates the inexhaustible excess of texts. This excess arises from the overdetermination of texts, which enables the multiplicity of readings that texts signify with varying degrees of explicitness. The inexhaustibility of this excess arises from the refusal to admit fixed and final meanings to any of these readings. According to Derrida, for a *decision* to occur a choice needs to be made between two or more determined readings. Given that logocentrism is denied, one reading cannot be privileged by appeals to knowledge, reason or truth. Thus, an aporia is reached. This aporia is constituted by irreducible uncertainty. This does not mean that decisions are grounded in ignorance. Derrida (1999, p. 66) insists that decisions "must be prepared as far as possible by knowledge, by information, by infinite analysis", but that the decision itself is heterogeneous to knowledge. Derrida argues that if a response were formulated otherwise, it could not be afforded the status of a decision; instead it would simply be the application of a program that is itself wholly determined. Thus, decisions require being confronted with an aporia of irreducible uncertainty. This aporetic uncertainty is a necessary condition for ethico-political responsibility: "There can be no moral or political responsibility without this trial and this passage by way of the undecidable" (Derrida, 1988, 116). Following Derrida, then, excess leads to irreducible uncertainty, which creates the possibility for ethics and politics.

Excess and uncertainty are central motifs in Levinas' ethics of responsibility as well. In Levinas' formulation of the face to face encounter, the I is summoned to enter into an ethical relationship with the Other who "exceeds *the idea of the other in me*" (Levinas, 1961/1991, p. 50, Levinas' emphasis). In order to enter into this ethical relationship with the Other it is necessary to refrain from conceptualisation and thematisation, which strip the Other of his or her utter excessiveness in order to capture the Other in concepts and language, respectively. Thus, the face to face relationship places the I in a position of ethical responsibility for the Other and this responsibility can only be fulfilled by suspending conceptualisation and thematisation, which would destroy the Other by rendering him or her simply as other. Yet, the face to face is not simply a relationship between two unmediated singulars. The third party, who is there "from the first" (Levinas, 1974/1991, p. 157), looks at the I through the eyes of the Other. This compels the I to compare incomparables. The I is assailed by questions such as: "What are the other and the third for one another? What have they done to one another? Which passes before the other?" (Levinas, 1974/1991, p. 157) and "Who passes before the other in my responsibility?" (Levinas, 1984/1996, p. 168). An aporia of irreducible uncertainty invokes conceptualisation, which shatters the transcendence of the face to face relationship. The *responsibility* of the face to face is abruptly transformed to *response ability* in (the) world. Thus excess and uncertainty coincide in Levinas' formulation and dissolution of the face to face relationship, which leads to ethical and political response ability in (the) world.

Examining Derrida's and Levinas' work through the theme of 'excess' demonstrates that there are relationships, in the strong sense, between uncertainty and ethics as well as the more general relationships between postmodernist/ poststructuralist thought and ethics that arise from the concern for the other. Clearly, the relationship between uncertainty and ethics is not the same in each case. This is not surprising given that the motif of excess defies resolution into a stable theme, and Derrida's project concerns the other of language and Levinas' project concerns the otherness of subjectivity. Nevertheless, the relationships are

similar insofar that in each case uncertainty catapults one into ethical terrain. Engaging ethics in response to uncertainty is not an *option*; it is inescapable.

Neither Derrida nor Levinas furnishes an ethical program beyond giving ethical primacy to the difference of the other. This is the *essential poverty* (Derrida, 1999) of their work and in each case it arises from the recognition that the construction of such an ethical program or process is itself a violent act. No ethical program can be constructed to be adequate to the singularity of each Other's excess. Nevertheless, the irremedial inadequacy of any program or process does not mean that programs or processes should be abandoned or excluded. On the contrary, it is absolutely necessary to enter into process in order to enact one's responsibility. This is a double-bind. Ethics requires that which is injurious to it. This does not lead this line of argument to collapse in a heap. Instead, it means that programs and processes can and should be unrelentingly deconstructed, transformed and reformed in the pursuit of an impossible perfectibility that would do justice to the singularity of each Other's excess.

UNCERTAINTY, ETHICS AND ENVIRONMENTAL EDUCATION

Two aspects of the preceding argument hold special significance for environmental education. The first is that uncertainty propels one into ethical terrain. This is a key finding for those in environmental education who wish to engage 'postmodern uncertainties' (Panel for Education *for* Sustainable Development, 1998) because the environmental education theorising of uncertainty to date treats ethical responses to uncertainty simply as an option, albeit a highly recommended option (Ashley, 2000; Diduck, 1997; Panel for Education *for* Sustainable Development, 1998; Rosenbaum, 2000; Scott, 2001). This difference between immediate responsibility and subsequent option arises from different designations of ethics. In environmental education, ethics seems to be equated with distinguishing between good and bad. Whereas, ethics precedes this determination for Derrida and Levinas, that is, ethics originates the moment that uncertainty is recognised.

The second aspect of the preceding argument that holds significance for environmental education is the need to unrelentingly deconstruct, transform and reform ethical programs on the basis that no program can be adequate to the singularity of the Other. There is already great debate over what should constitute environmental values in environmental values education. This debate, however, is of the order of a difference of opinion concerning, in part, what *the* environmental values should be (Fien, 1993, Sterling, 1993). This debate does not admit the possibility that any code of environmental values is necessarily and irremediably inadequate to the singularity of the Other. This possibility is not included because the debate is underpinned by realist perspectives, which cannot be attentive to the vulnerability of the Other, where the 'Other' designates the radical Other rather than the marginalised 'other', given that realist perspectives do not admit the alterity of the Other. However, if environmental education is to respond to the increasing number of calls for the introduction of postmodernist/ poststructuralist perspectives, it will need to admit and respond to the irremedial inadequacy of ethical programs based on the possible threat that they pose to the Other.

Both deconstructive critical environmental literacy and the previous postmodernist/poststructuralist reading of the attitude of *as if friends* enable and compel the inclusion of this ethical dilemma in the environmental values education debate. Both *as if friends* and deconstructive critical environmental literacy are sufficient to respond to the necessary and irremedial inadequacy of ethical programs and process. In deconstructive critical environmental literacy, the repudiation of meaning beyond the text denies transcendental status to ethical programs and processes. Thus, ethical programs and processes are cast as texts; their instantiation is utterly dependent upon constitutive blindnesses. In other words, any ethical program or process 'exists' by virtue of what it leaves out. Thus, any ethical program or process 'exists' by virtue of its irremedial inadequacy. In *as if friends*, the preservation of difference, which is the crux of the relationship, demands that the utmost vigilance is exercised in order to preserve the proximity and the separation that coincide in this relationship, each of which threatens to

subsume the other. This vigilance requires a commitment to deconstruct, transform and reform any cognitive, ethical or political process or program invoked within the relationship in order to prevent such processes or programs destroying the constitutive tension that enables the relationship. Thus, *as if friends* requires that close attention be paid to the irremedial inadequacy of ethical programs and processes because of the risk of the dissolution of the relationship. Thus, each is sufficient, but each has different strengths from which the other can benefit. *As if friends* explicitly articulates key sociological dimensions necessary to sustain a deconstructive attitude, namely openness, receptivity, active listening, tolerance, suspension of judgement, humility, scepticism, ego-distancing and playfulness. Critical environmental literacy, on the other hand, explicitly articulates analytical strategies for deconstruction, such as decentring and disrupting binaries. Thus, embedding deconstructive critical environmental literacy within the attitude of *as if friends* can provide environmental education with a potent strategy through which to engage and respond to the irremedial inadequacy of ethical programs and processes.

CONCLUSION

The purpose of this chapter has been to construct secondary lines of flight from the Levinasian and Derridean trajectories forged in Chapters Four and Five. Numerous lines of flight would have been possible. However, for the purpose of this project, only those lines of flight that connected with uncertainty and environmental education were mapped. These secondary lines of flight were rhizomatic in two ways. First, they constructed assemblages between seemingly disparate elements and second, resonances were discerned between the three rhizomatic assemblages.

The first line of flight forged a link between narrative uncertainties and third wave feminisms. This connection was possible because the narrative bonds of possibility, probability, contingency, memory, desire, fear and hope are consigned to the subordinate bonds of patriarchal binarisms. As such, these bonds are complicit in the discursive construction of practices, policies and institutions that

do not afford women equality of opportunity and participation. Having established this connection, a poststructuralist reading of Stone's attitude of *as if friends* was explored as a means to disrupt patriarchal discourse in environmental education. The need to disrupt patriarchal discourse has been identified as a priority in environmental education because patriarchal discourse is held to be deeply implicated in (the) environmental crisis. This implication is twofold. First, patriarchal discourse is held to be complicit in establishing the social, cultural, economic and political factors that enabled (the) environmental crisis to occur. Second, patriarchal discourse exercises disciplinary power to identify and legitimate what purportedly constitutes *the* environmental crisis.

Engaging the attitude of *as if friends* provides a strategic means to respond purposively to and maintain uncertainty in a manner that challenges the hegemony of patriarchal discourse by respecting and preserving (the) difference that patriarchal discourse erases. As a result, engaging *as if friends* in environmental education enables community with Others, such as women and indigenous persons and groups, without dispossessing Others of their otherness. The need to include the voices of women and indigenous persons and groups has been identified as a priority in environmental education, both nationally and internationally. However, this need is typically driven by the desire to procure certainty through the construction of meta-narratives that neatly position other voices without challenging the concepts and structures that sustain the legitimacy of meta-narratives. The argument presented here, however, has argued for the proliferation of fragmented discourses on epistemological grounds and as an ethical imperative. *As if friends* enables community within a non-foundationalist frame that is powered by uncertainty.

The second line of flight into critical environmental literacy can be read as a tangential extension of *as if friends*. Both lines of flight traverse the theoretical landscape of narrative theory and both employ the narrative uncertainties formulated in Chapter Five. The second line of flight, in part, examines the constitutive role of uncertainty in the instantiation of environmental knowledge

and the construction of environmental subjectivities. The constitutive role of uncertainty in the instantiation of environmental knowledge arises from the rejection of logocentrism that posits the environment as the centre of environmental discourse. This decentring of the environment reveals that a ubiquitous uncertainty attends all environmental knowledge. This denial of logocentrism and the play of narrative uncertainties that ensue, however, can not be entertained from a detached perspective. As a matter of logical consistency, it is necessary to view subjectivities as textual constructions. Following the poststructuralist motif of the Death of the Author, subjectivity must be read as an active process for which we must accept responsibility. The responsibility for the construction of environmental subjectivity cannot be abrogated; it cannot be read as being at the mercy of capricious texts. This is perhaps the most important aspect of this line of flight for environmental education. There have been calls in environmental education for more careful and considered attention to the construction of environmental agency (Fien, 1993). This discussion responds to this call and demonstrates the constitutive role of uncertainty.

Finally, the third line of flight establishes a link, in the strong sense, between uncertainty and ethics. More specifically, this argument contends, as per Derrida and Levinas, that uncertainty provides the condition for ethics and that all ethical decisions must pass through the ordeal of undecidability. It follows that ethics cannot and should not be reduced to a code of ethics. Such a programmatic approach eliminates the ordeal of undecidability, which is not to underestimate the difficulties that can attend the application of programmatic ethics. The impossibility of reducing ethics to a code of ethics results from the irremedial inadequacy of a code of ethics to be attentive to the singularity of each Other. Yet, it is imperative to enter into process to enact one's responsibility. Therefore, environmental education must strive to identify environmental values and commit to an ongoing process of deconstructing these values in response to their inevitable inadequacy. This commitment to ongoing deconstruction rides upon

uncertainty of a different order from undecidability. Thus, ethics is imbued with uncertainty through and through.

Each of these lines of flights and the rhizomatic assemblages that were constructed connected with influential themes in environmental education. However, the arguments presented induce unfamiliar resonances from these themes. The end of this chapter, with its unfamiliar resonances, marks the suspension of the mapping process. The tracing constructed in Chapter Three will now be laid over the maps constructed in Chapters Four, Five and Six in order to explore how the maps can desediment the already-said in environmental education. This process of desedimentation constitutes the final stage of rhizomatics, namely decalcomania. This task is to be undertaken in the next chapter.

CHAPTER SEVEN - DECALCOMANIA

INTRODUCTION

Three stages are involved in Deleuze and Guattari's (1980/1987) cartography: tracing, mapping and decalcomania. Tracing involves following the denouement of the theoretical terrain that has been configured within the field, whether actual or possible. In other words, tracing involves reiterating the already-said and extending this terrain in accordance with what the already-said preconfigures. Tracings, then, are discursive. Most of the tracing undertaken in this project occurred in Chapter Three, which presented readings of current engagements with uncertainty in environmental education. This tracing covered: scientific uncertainty and allied concepts, such as ignorance and risk; engaging scientific uncertainty and the precautionary principle in environmental education; engagements with chaos theory in environmental education; and poststructuralist philosophical/literary engagements. Other, less pronounced tracings are interspersed throughout each of the arguments in other chapters in order to signal the argument's relevance to environmental education.

Like tracings, mappings also forge connections and draw theoretical terrains into relief. Unlike tracings, however, mappings are non-discursive. Instead of surveying the boundaries and spaces enclosed within existing territories, mappings follow lines of flight that rupture boundaries to reveal new vistas. The most comprehensive mapping sections undertaken in this project involved the exploration of poststructuralist narrative uncertainties *pace* Vance's (1917) formulation of certainty, and the exploration of Levinas' ethics of responsibility *pace* the Panel for Education *for* Sustainable Development's (1998) formulation of objectives for 'postmodern uncertainties'. Secondary lines of flight, generated from narrative uncertainties and Levinas' ethics, mapped links between uncertainty and (a) postmodernist/poststructuralist feminisms and indigenous knowledges, through Stone's (1995) formulation of *as if friends*, (b) deconstructive

critical environmental literacies in the construction of environmental knowledge, environmental issues, environmental subjectivities and environmental agency, and (c) specific relationships to ethics through the postmodernist/poststructuralist theme of excess. Each of these lines of flight took environmental education theorising of uncertainty into new terrain where there were some resonances with contemporary environmental education theorising, but the resonances had unfamiliar inflections.

The third aspect of Deleuze and Guattari's cartography is decalcomania, which in its literal sense means "a process or art of transferring pictures from a specially prepared paper to surfaces of glass, porcelain, etc." (Oxford English Dictionary). Deleuze and Guattari critically appropriate the literal sense of the term as well as the meaning that can be derived from the Greek roots. They critically appropriate the literal sense of the term in their contention that "*the tracing should always be put back on the map*" (Deleuze & Guattari, 1980/1987, p. 13, Deleuze and Guattari's emphasis), but the purpose that they assign to this process accords more with the etymological meaning of the term, namely to break through strata that sediment/fix theoretical terrains. Deleuze and Guattari's proposal of putting the tracing back onto the map involves bringing the map and the tracing into contact in order to see what effects the map can induce in the tracing; to see how the map can de-sediment what has already been laid down in the field. This purpose, however, does not totally override the appropriated sense of decalcomania, which involves the comparison of maps and tracings. Deleuze and Guattari's cartography pays attention to the non-correspondence of maps and tracings, not in order to bring one into conformity with the other, but to draw gaps, blockages and disparities into relief. This attention to the non-correspondence of the tracing to the map offers a means to probe the discursive forces that configure what has already been laid down. Thus, decalcomania has a decidedly deconstructive aspect.

The operation of placing the tracing over the map is performed in the two sections that follow. The first section places the tracing of uncertainty in

environmental education over the maps constructed here, with the main emphasis being on the capacity of the maps to de-sediment and transform existing engagements with uncertainty. The second section places a broader tracing of environmental education over the map and identifies the role of uncertainty in environmental education issues that have not hitherto been linked to the issue of uncertainty. Thus, both aspects of decalcomania are enacted in this chapter under the headings of Decalcomania I and II, respectively.

DECALCOMANIA I

THE PRECAUTIONARY PRINCIPLE, SCIENTIFIC UNCERTAINTY AND ENVIRONMENTAL EDUCATION

A significant proportion of environmental education engagements with uncertainty refer to scientific uncertainty (Ashley, 2000; Diduck, 1999; Diduck & Sinclair, 1997a; Hardy, 1999a; Panel for Education *for* Sustainable Development, 1998; Rosenbaum & Bressers, 2000). To recapitulate briefly, scientific uncertainty is frequently defined as "a condition under which there is confidence in the completeness of the defined set of outcomes, but where there is acknowledged to exist no theoretical or empirical basis for assigning probabilities to these outcomes" (Stirling, 1999, para. 51). Thus, scientific uncertainty arises when a totality and an irreducible deficit, from different domains, coincide. Whilst different renditions of scientific uncertainty and allied terms, such as risk and ignorance, occur in alternative taxonomies, the unlikely partnership of totality and lack is central to each (Smithson, 1989). This results in a range of taxonomies in which terms are arranged differently, rather than fundamentally different taxonomies.

In contrast to the assumptions that discursively enable the construction of scientific uncertainty, the theorisation of uncertainty in this project has denied totalitarian thought by drawing on the critiques of the metaphysics of presence as per Deleuze and Guattari (1980/1987), Derrida (1972/1982) and Levinas (1961/1991, 1974/1991). This led to the claim that uncertainty arises from excess rather that deficit. As a result, it may seem that this project is incommensurable

with environmental education engagements with scientific uncertainty. If this were so, it would eliminate the possibility of carrying out the third stage of Deleuze and Guattari's rhizoanalysis in relation to environmental education's engagements with scientific uncertainty. In other words, it would not be possible to de-sediment the existing theoretical terrain by plugging the map into the tracing. Indeed, if this were the case the implication would be far more wide reaching: it would mean that this project constitutes a whole-scale rejection of scientific discourse. The mapping produced here, however, is in no way a rejection of scientific uncertainty or of scientific discourse. The latter is a charge that has been levelled at Derrida and his rebuttal of this charge is helpful here:

> What is called "objectivity," scientific for instance (in which I firmly believe, in a given situation), imposes itself only within a context which is extremely vast, old, powerfully established, stabilized or rooted in a network of conventions (for instance, those of language) and yet which still remains a context. And the emergence of the value of objectivity (and hence of so many others) also belongs to a context. We can call "context" the entire "real-history-of-the-world," if you like, in which this value of objectivity and, even more broadly, that of truth (etc.) have taken on meaning and imposed themselves. That does not in the slightest discredit them. In the name of what, of which other "truth," moreover, would it? One of the definitions of deconstruction would be to take this limitless context into account, to pay the sharpest and broadest attention possible to context, and thus to an incessant movement of recontextualization. (Derrida, 1988, p. 136)

Theorising uncertainty through a rejection of totalising thought does not constitute a denial of scientific uncertainty even though scientific uncertainty depends upon the belief in totality for its existence. Thus, it is wholly defensible to apply this theorisation to engaging scientific uncertainty in environmental education. Working within the neighbourhood of uncertainty, however, requires

that the 'sharpest and broadest attention' be paid to the *context* of scientific uncertainty on the basis that the context of scientific uncertainty is the very condition for its possibility. Thus, working within the neighbourhood of uncertainty requires the practice of deconstructive environmental literacy when engaging scientific uncertainty in environmental education. Paying attention to the context of scientific uncertainty draws the issues of disciplinary power and the politics of representation into relief. Thus, participants in environmental education can discern which environmental issues are being designated as uncertain, which issues are being silenced and probe whose interests are being served by these designations.

I do not wish to suggest that contexts are easily delimitable. Indeed, the sheer immensity of Derrida's provocative designation of 'the entire real-history-of the-world' as a context presents obvious difficulties for the delimitation of that context, given that that delimitation itself must be made within a context. Derrida's provocation, however, compels attention to be paid to the context from which such determinations are made. It compels us to renounce the fantasy of a metacontextual space (Briggs, 2001). Thus, engagements with scientific uncertainty within environmental education must make self-reflexivity prominent and include deconstructive readings of the contexts of others, for example governments and institutions, when engaging environmental issues concerning scientific uncertainty.

This promotion of deconstructive critical environmental literacy seems to flow smoothly into the discussions in environmental education that articulate scientific uncertainty and the precautionary principle, which has been paraphrased into environmental education simply as "thoughtful action in advance of scientific proof" (quoted in Ashley, 2000, p. 272). The precautionary principle is widely applauded in environmental education, education *for* sustainable development and education *for* sustainability as a stance that promotes ethical action in the face of scientific uncertainty (Ashley, 2000; Fien, 2001; Panel for Education *for* Sustainable Development, 1998; UNESCO, 2000). Paying attention to the context

in which scientific uncertainty and the precautionary principle are discursively constructed, however, demonstrates that the ethical dimension of the precautionary principle is both secondary and optional. Given that scientific uncertainty arises from the unlikely conjunction of totality and lack, an aporia is created. The precautionary principle provides an escape route from what would otherwise be an epistemological bind. The precautionary principle is first and foremost an epistemological manoeuvre that promotes and justifies a course of action beyond the impasse created when a totality and a deficit coincide without losing their integrity.

The claim that ethics is secondary and optional goes against the grain of many renditions of the precautionary principle. There are numerous accounts of the precautionary principle that accentuate the ethical dimension and this accentuation suggests the ethical dimension is constitutive. The precautionary principle, however, simply sanctions action in the face of scientific uncertainty. The action need not necessarily favour decisions that work toward the reduction or avoidance of activities that may result in environmental harm. Numerous examples can be cited as evidence for the dissociability of action and ethics in the application of the precautionary principle. For example, the dispensability of the ethical dimension of the precautionary principle is evident in the dilution of the precautionary aspect of the principle in the U.S. under the Reagan administration (Raffensperger & Tickner, 1999). But perhaps the most explicit example of the dispensability of the ethical compulsion to err on the side of precaution was expressed by the U.K. government in 1990.

> Where there are *significant* risks of damage to the environment, [we] will be prepared to take precautionary action to limit the use of potentially dangerous materials or the spread of potentially dangerous pollutants, even where scientific knowledge is not conclusive, *if the balance of likely costs and benefits justifies it.* The precautionary principle applies particularly where there are *good grounds* for judging either that action taken promptly at *comparatively*

> *low cost* may avoid more costly damage later, or that irreversible effects may follow if action is delayed. (quoted in Jordan & O'Riordan, 1999, p. 30, Jordan and O'Riordan's emphasis)

An interlocutor could object at this point to argue that the moves by the U.S. and the U.K. ought to read as acting realistically (whatever this means) within economic constraints. That argument, however interesting it may prove to be, misses the mark. The point being made here is that the precautionary principle is not fundamentally an ethical premise; the conjunction of action and ethics that many renditions of the precautionary principle accentuate is dissociable. This is not to say that the precautionary principle cannot or should not be embraced as an ethical platform in environmental education. However, it should be recognised as a precarious platform. At present the precautionary principle has been welcomed enthusiastically as an important element of 'responsible environmental citizenry' (Ashley, 2000; Fien, 2001; Panel for Education *for* Sustainable Development, 1998; UNESCO, 2000). Responsible environmental citizenry would be better served by deconstructive readings of the applications of the precautionary principle.

The result of plugging the map forged within this project into environmental education engagements with scientific uncertainty is that whilst this project has rejected totalisation through the adoption of postmodernist/ poststructuralist perspectives, this project is not antithetical to engagements with scientific uncertainty, which entail wittingly, or unwittingly, support for totalisation. Rather, this project recognises and affirms those engagements, but at the same time it emphasises the need to pay close attention to the contexts that provide the condition of possibility for scientific uncertainty and engagements with it. Paying close attention to these contexts, which is by no means a simple undertaking, requires developing a vigilance that searches for the constitutive blindnesses that are wholly necessary to support the discursive constructions of these contexts. Thus engagements, with scientific uncertainty, and other engagements with uncertainty in different contexts, require the adoption of deconstructive environmental literacy. This is also imperative for engagements with the

precautionary principle in environmental education. Thus far, the precautionary principle has been uncritically welcomed into environmental education discourse. This warm welcome has been extended in the belief that the precautionary principle provides a sound ethical platform for the development of responsible environmental citizenry. This belief, however, is mistaken. The precautionary principle is first and foremost an epistemological manoeuvre that provides an escape route from a modernist epistemological bind. The ethical dimension is an optional extra that can be jettisoned easily. Environmental education ought to encourage learners to adopt a deconstructive vigilance toward the precautionary principle in relation to environmental issues.

ENGAGEMENTS WITH UNCERTAINTY THROUGH CHAOS AND COMPLEXITY THEORIES

Engagements with uncertainty in education through chaos and complexity theories have resulted in implications being proposed for learning processes (Hardy, 1999a; Sawada & Caley, 1985; Tillmann et al., 2000) and the dynamics of education settings (MacPherson, 1995; Sungaila, 1990). These proposals are highly contested with some education theorists claiming direct links between chaos and complexity theories and education (Hardy, 1999a; Sawada & Caley, 1985; Sungaila, 1990; Tillmann et al., 2000), whereas others claim that engagements with these theories operate at a metaphorical level (Gough, 1998d; MacPherson, 1995). Both types of engagement have been advanced in environmental education. Gough, whilst not a proponent of exploring chaos and complexity theories *per se* in environmental education, has commented that if such engagements were to be undertaken, then they should be approached as heuristic metaphors: "I want to strenuously *resist* the impulse to see chaos and complexity theories as new paradigms for curriculum work, although I am more than happy to continue exploring the generative possibilities of the new metaphors they provide" (Gough, 1998d, p. 59, Gough's emphasis).

On the other hand, I have previously argued for a direct application of the implications of chaos and complexity theories to curriculum and pedagogy in

environmental education. This previous argument draws on research findings from applied mathematics and the natural sciences. Specifically, the argument draws on the finding that qualitatively different forms of organisation can occur spontaneously when non-linear dynamical systems are forced to far-from-equilibrium conditions (Davies, 1995; Prigogine, 1989; Prigogine & Stengers, 1984; Stewart, 1990; Vivaldi, 1991). The spontaneous emergence of qualitatively different forms of organisation, known as 'self-organisation', is acutely sensitive to initial conditions, which cannot be known with absolute precision. As a result, the timing and nature of the transformations cannot be predicted, which results in a link to scientific uncertainty.

The link to education arises from the contention that learning can be categorised as a self-organising system. This link was advanced and defended by drawing on findings in neural physiology and behavioural biology. Analyses of EEG data have demonstrated that neural activity associated with cognition is chaotic and that the level of chaotic activity increases during the performance of mental tasks (Allman, 1993). At the macro level, behavioural studies have demonstrated that learning follows self-organising processes (Tillmann et al., 2000). Therefore, the argument assumed a correspondence between chaos and complexity theories, and learning. At the same time, however, the argument acknowledged that the studies in neural and behavioural biology did not provide explicit information to guide curriculum and pedagogy. In response, the argument turned to Doll's (1993) transformative curriculum vision. This manoeuvre seemingly prevented the argument from stalling. However, Doll's curriculum vision draws on chaos and complexity theories for the metaphors that they provide for re-thinking curriculum and pedagogy. Thus, the argument uncritically transgressed the divide between correspondence and metaphorical engagement. This shift resulted in two separate arguments being advanced, although they were presented under the guise of one seamless argument.

In the previous project, Doll's transformative curriculum vision was read from the perspective of critical realism. This reading discursively masked the shift from

a correspondence approach to metaphorical approach by privileging the mathematical and scientific discourses of chaos and complexity theories. It presumed that the lack of explicit findings to guide curriculum and pedagogy was provisional and that the move to invoke Doll's transformative curriculum vision was justified as empirical confirmation would follow in due course. Therefore, the argument uncritically created and supported the creation of a 'black box' as a direct result of the privilege extended to mathematical and scientific discourse.

The argument advanced that uncertainty attends the construction of knowledge: the implications of chaos and complexity theories "posit learners in a creative process in which the evolution of knowledge and learners impact on each other in a manner that remains ambiguous until the challenge has been taken" (Hardy, 1999a, p. 131). This seemingly pedagogical statement simply shrouds the construction of knowledge in mystery. It mystifies learning and seemingly absolves educators and learners from responsibility for the construction of knowledge. Further, the argument advanced that educators should create conditions that maintain a delicate balance of uncertainty in order to promote learning: "in order to promote a self-organising process of learning, it is necessary to perturbate the system sufficiently to ensure that regression back to the attractor does not occur and also ensure that the system does not erupt into chaos" (Hardy, 1999a, p. 130). I will argue here that the uncertainty that attends the construction of knowledge is better understood when Doll's curriculum vision is read as an approach for deconstructive literacy and that the narrative uncertainties formulated in Chapter Five enable educators to understand and maintain the conditions of uncertainty from which new knowledge may be constructed. Thus, this argument re-reads environmental education's engagement with chaos and complexity theories through Doll's transformative curriculum; it desediments and reconstructs the existing terrain.

Re-reading Doll's transformative curriculum vision

Dolls' transformative curriculum vision considers the metaphors from chaos and complexity theories in light of the process philosophies of Dewey and Whitehead. There are only two references to Derrida and these are confined to footnotes. Nevertheless, there are strong resonances between Doll's curriculum vision and Derridean themes. These resonances flow on to the narrative uncertainties and theorisation of deconstructive environmental literacy that were constructed using Derridean themes. In order to demonstrate these resonances, it is necessary to re-read how Doll's transformative curriculum was paraphrased into environmental education.

Doll's curriculum vision comprises four criteria: richness, recursion, relations and rigor. These four criteria, the 'four Rs', are not mutually exclusive, they are mutually inscribing. Nevertheless, they can be described broadly, in open terms, to demonstrate their interrelations. I (1999a) have paraphrased the four Rs into environmental education as follows:

> *Richness*
>
> Doll's first criterion of richness translates the neo-deterministic evolution of dissipative structures into curriculum terms. ... For learning to follow an evolutionary pathway of self-organisation the curriculum must be rich with perturbative problems, provocations and paradoxes ... in order to drive the inner equilibrium of the learner to a highly sensitive state. In the absence of an algorithm, such as the logistic mapping, the curriculum needs to be rich with multiple layers of meaning through which the learners negotiate passages in order to provide alternative evolutionary pathways.
>
> *Recursion*
>
> The second criterion of recursion is drawn from and transcends the iterative process of dynamical systems. ... Iteration in the

mathematical sense, is simply repetition that can, under some circumstances, result in the exquisite structures that have become the icons of chaos theory. However, when Doll transposes the mathematician's technique of iteration into the field of curriculum, it becomes more than simple repetition: it is a process of 'reflective reorganization, reconstruction, and transformation of experience' (Soltis, 1993, p. xi). Hence, in education terms, recursion has a deliberative quality that contrasts with the 'automaticity' of its mathematical counterpart.

For learners, either individually or as a group, recursion constitutes introspective analysis, thought coinciding with itself, enabling clarification, critique and regeneration. For the curriculum, recursion portrays each end as a reflective beginning. Reflection upon what has gone before embeds interpretations in the depth of the present. …

Relations

The third criterion of relations refers to connections: the connections within the curriculum (pedagogical relations) and the relations between the curriculum and the culture in which it is embedded (cultural relations). The pedagogical relations, developed through recursion, give rise to the richness and the depth of the curriculum, enabling multiple passages of negotiation for the learners which are enhanced and enriched by the recognition of cultural relations. This alliance between cultural and pedagogical relations accentuates the contextual nature of the curriculum by explicitly valuing persons, places and times. According to Doll:

> The challenge of such recognition is twofold: on the one hand, to honor the localness of our perceptions and, on the other hand, to realise that our local perspectives integrate

> into a larger, cultural, ecological, cosmic matrix. (Doll, 1993, p. 181)
>
> The relations that Doll refers to, both pedagogical and cultural, are not preordained or static; both the inner and the outer relations of the curriculum form a dynamic lattice that shapes and is shaped by the participants.
>
> *Rigor*
>
> Finally, the fourth criterion is, according to Doll (1993, p. 181), the most important, as it keeps the curriculum 'from falling into either "rampant relativism" or sentimental solipsism'. Rigour involves striving to refine the quality of interpretation and transformation. Hence, rigour involves actively searching for and actively developing alternative relations, consciously endeavouring to explicate the assumptions within the alternative relations, and reflectively negotiating passages between these relations and their assumptions in order to achieve coherence. Rigour may be regarded as the ultimate example of critical thinking. For Doll (1993, p. 29), rigour 'makes the richness rich'. (Hardy, 1999a, pp. 132-133)

This re-reading of Doll's curriculum vision will identify resonances with Derridean themes, identify the play of narrative uncertainties and make links to deconstructive environmental literacy. The following discussion necessarily traverses all of these domains freely given the interrelatedness of both Doll's four Rs and narrative uncertainties.

Any link to Derridean themes must, at the very least, demonstrate a rejection of logocentrism, which denotes the belief that words, writing, ideas, systems of thought are validated by a centre that is external to them and whose truth they convey. Thus, the text must be decentred. Doll's contention that the curriculum

needs to be rich with multiple layers of meaning through which learners negotiate passages in order to construct alternative meanings can be read as a rejection of logocentrism. If the meanings constructed are truly held to be *alternative* meanings, then the text cannot be centred because it is impossible to ascribe "unequivocal domination of one mode of signification over another" (Johnson, 1981, p. xiv). Thus, decentred and allegorical uncertainty are drawn into relief, where decentred uncertainty refers to the uncertainty that attends the loss of reassuring centres that would procure certainty by grounding the text and where allegorical uncertainty refers to the uncertainty that arises from multiplicity of meanings inscribed in a text so that each text means more than it (apparently) says.

This does not mean, however, that anything goes. Doll's use of the term 'negotiate' is helpful here. Various meanings must be negotiated according to the structural elements used in the construction of meaning; assumptions and blindspots must be explicated in the pursuit of coherence and the constructions must adhere to the logic that these assumptions and blindspots dictate, wherein lies the possibility for the evaluation and critique. We are not duty bound to gullibly accept any construction that is advanced, which forges a link to critical literacy. Moreover, this link can be refined to deconstructive literacy through Doll's criteria of rigor and recursion. According to Doll, rigor involves actively searching for and developing alternative relations. This can be read as a commitment to deconstruction, to construct alternative engagements with (the) environment to imagine and evaluate more 'sustainable' futures where the concept of 'sustainability' must be made problematic as a matter of logical consistency in keeping with the notion decentred texts. The call to make the curriculum rich with perturbative problems, provocations and paradoxes gains greater substance when read as an appeal to deconstructive practices such as dislocating centres, challenging taken-for-granted binarisms, searching for constitutive blindnesses and probing the margins of texts. Furthermore, Doll's criterion of recursion can be read as the need to commit to ongoing deconstruction; there is no end to deconstruction. Deconstruction carries an ethical imperative to read, re-read and

cross-read in order to refine the quality of our interpretation, to minimise the violence inflicted upon the other and to be as informed as possible in our decision making.

Doll's transformative curriculum vision can be further read as an approach to deconstructive literacy through his criterion of relations, which refers to the pedagogical relations and cultural relations. The recognition of these two types of relations and the generative relations between the two domains highlight that the structural components of texts/discourses are not confined to the linguistic realm, but are co-inscribed by the interactions, policies and practices that explicitly recognise and value persons, institutions, places and times. Thus, Doll's criterion of relations pays sharp attention to context. As such, learners can explore the both the reach and the limitations of the situatedness of their learning. This exploration has the potential to advance political literacy. However, Doll's four Rs do not accentuate the ethico-political aspect of deconstructive literacy that arises from Derrida's contention that writing is not opposed to action. But, Doll does implicitly endorse this view elsewhere in his thesis and he does so in a manner that resonates with the aims of environmental education.

> There is risk involved in this process view – as there is in all transformation – for it means that we are willing to base our future on a present grounded on nothing but itself, its historical past, and our querulous faith in ourselves. The risk is intensified by the horrendous social, political, and human failures for which our century may come to be known: war, genocide, famine, poverty, enslavement, ecological devastation – all done under the aegis of rational thought and procedures, in many cases with 'good' intentions. ... Developing the right amount of 'essential tension' is the art that I believe that all curricularists, teachers and learners need to develop – not to mention that special class: world and community leaders ... if we are to make our future better, not poorer, than the one in which we now live. (Doll, 1993, p. 156)

As a result of placing the tracing over the map, I advance that environmental education's engagements with uncertainty through chaos and complexity theories are better served by embracing Doll's metaphorical approach than retaining hope for a correspondence between chaos and complexity theories and education. The latter approach requires the installation of a 'black box' based on nothing but the faith attached to scientific and mathematical discourses to recommend it. Adopting Doll's metaphorical approach, on the other hand, enables a defensible account of uncertainty's capacity to affect learning through the notion of deconstructive literacy. Furthermore, as argued in Chapter Five, this approach can be recommended in environmental education because deconstructive environmental literacy provides a means to interrogate both the construction of environmental knowledge and the instantiation of environmental issues, as well as a means for understanding the notions of subjectivity and agency.

The metaphors that chaos and complexity theories provide can be effective in this process. The notion of an attractor, for example, provides a useful metaphor for the "relative stability of the dominant interpretation" (Derrida, 1988, p. 143) and this offers more meaningful curriculum and pedagogical implications than a neural network that has not been sufficiently perturbated to reach a far-from-equilibrium state. Similarly, the notion of self-organisation is better understood as a metaphor for a reconstruction of knowledge by decentring the text and drawing blindspots into relief. Thus, through this re-reading of environmental education's engagements with uncertainty through Doll's transformative curriculum vision, I align myself with Gough's conviction that chaos and complexity theories should be approached as heuristic metaphors for education.

POSTSTRUCTURALIST PHILOSOPHICAL/LITERARY ENGAGEMENTS WITH UNCERTAINTY

When tracing environmental education's engagements with uncertainty in Chapter Three, only two poststructuralist engagements were located: one that I wrote (Hardy, 1999b) and the other by Gough and Scott (2001). The former, *Fractal Alterity*, is a poststructuralist reading of chaos theory, thus it falls under the

analysis presented in the previous section. As a result, I will focus on Gough and Scott's engagement with uncertainty in this section.

When the maps generated in this project are plugged into Gough and Scott's engagement with uncertainty, no structural changes occur. This is because their poststructuralist engagement draws upon the same repertoire of themes that were used to construct the maps, such as the critique of the metaphysics of presence, ambidextrous inscriptions and decentring the subject. As a result, this section does not de-sediment Gough and Scott's project, it adds further layers. Thus, this section presents another tracing of Gough and Scott's work by extending the paths that the existing engagement pre-configures. However, this argument does not advocate that these paths should be extended simply because they have been pre-configured. Instead, it critically surveys these paths and argues that one of them should be re-directed because it leads to an undesirable destination.

To recapitulate briefly, Gough and Scott propose a model for curriculum development that "is compatible and probably synergistic with a professional concern with sustainable development" (2001, p. 146). Using this model, they strive to work productively with, rather than against, the complexity of social existence. In order to facilitate the analysis of this complexity, they propose and employ four categories that are both analytical and explanatory: organisational institutions, cultural institutions, practices and literacies. These categories are fully interrelated; each affects, and is affected by, all of the others, as Figure One demonstrates.

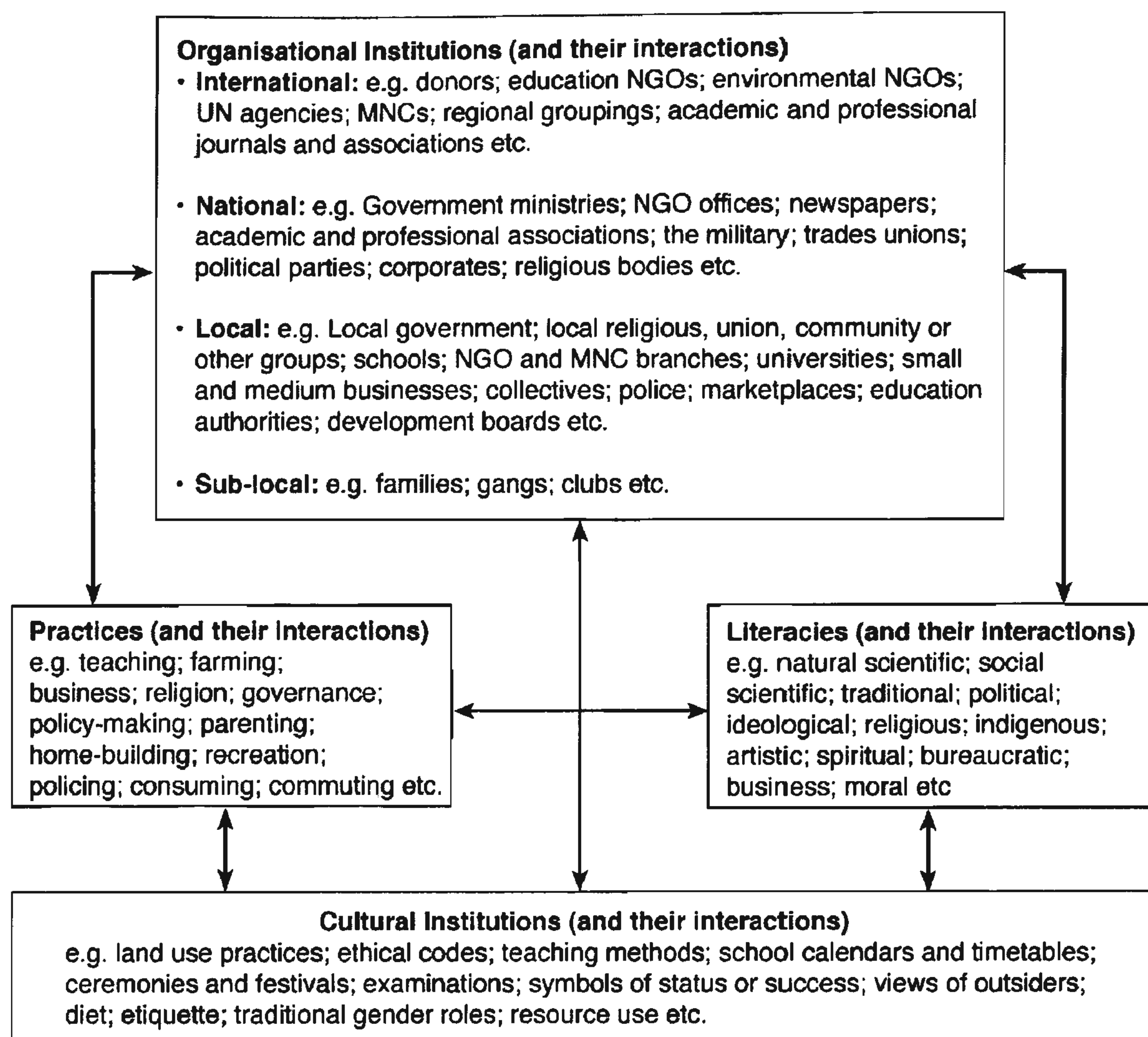

Figure 1: Preliminary analysis of categories.

Source: Gough, S. & Scott, W. (2001). Curriculum development and sustainable development: Practices, institutions and literacies. *Educational Philosophy and Theory*, 33(2), p. 149.

Numerous links can be forged between the narrative uncertainties formulated in Chapter Five and the theoretical positions that Gough and Scott used to develop their curriculum model. The most immediate link with uncertainty arises from Gough and Scott's treatment of (the) environment as text. Thus, they reject the logocentric notion that (the) environment can act as *the* ground for the authority or truth of our readings of (the) environment. This decentring of (the) environment mobilises decentred uncertainty. In addition, Gough and Scott uphold the poststructuralist notion that the text is rewritten with every reading. Accordingly, they maintain that each time that (the) environment is read, the less it

actually is (the) environment that we began reading. This introduces one aspect of subjunctive uncertainty, namely openness. The other aspect of subjunctive uncertainty, plurality, is invoked as well through their refusal to subordinate the plurality of narratives to a meta-narrative. The play of these narrative uncertainties is made more complex through Gough and Scott's decentring of (the) subject. Rather than upholding the humanist conception of a stable, unitary and self-sufficient subject, they uphold two key poststructuralist themes: firstly, that subjectivity is discursively constructed and, given that we each operate in multiple discourses, subjectivity is discontinuous and multiple; and secondly, ambidextrous inscription of subjectivity, in which the rewriting of the text simultaneously rewrites the self. Both of these themes inscribe narrative uncertainties into the ongoing biography of the self: "Life as process and work in progress!" (Conley, 2000, p. 21).

Being able to identity and characterise the forms of narrative uncertainty that are at play in Gough and Scott's theoretical background to their curriculum model adds a further analytical and explanatory layer to their work. It is necessary to go beyond this, however. In order to do this it is necessary to draw on the formulations that narrative uncertainties were applied to in this project. The feminist attitude of *as if friends* and deconstruction can be of strategic value in the application of Gough and Scott's model of curriculum development.

As Figure One demonstrates, Gough and Scott's model of curriculum development emphasises the need for the inclusion and preservation of multiple literacies/discourses. Their refusal to subordinate multiple literacies/discourses to a meta-narrative requires a commitment to the preservation of difference. This enables a link to be advanced between Gough and Scott's model of curriculum development and Stone's (1995) feminist formulation of the attitude *as if friends*, which enables different voices to engage in a community that does not inflict violence upon Others by dispossessing them of their otherness.

The attitude of *as if friends* is first and foremost an ethical relationship. Whilst Gough and Scott problematise the fact/value dichotomy, they do not exhibit demonstrable ethical motivation for the inclusion of multiple literacies:

> A curriculum focused on any one of [the] literacies would *not* be useless. It would merely be incomplete in two ways: first, because it ignored the other literacies; secondly, because it failed to engage with the influence of institutions. By itself, it would be a poor guide to learners formulating future practices. (2001, p. 141-142, Gough and Scott's emphasis)

It is possible to tease an ethical position from this statement, but it is a weak position. This is surely a retrograde move in Gough and Scott's presentation of their curriculum model. A curriculum that focused on any one of the literacies certainly would *not* be useless; it would provide vested interests with a strategic means to strengthen their position through the erasure of antagonistic literacies. Notwithstanding the contested nature of sustainable development, this is antithetical to all formulations and, given Gough and Scott's otherwise proclaimed accent on the plurality of literacies, I read this as being contrary to their intentions.

Drawing upon *as if friends* can redirect this aspect of their argument by inserting an ethical imperative for the inclusion of multiple literacies and it adds another layer to their curriculum model by identifying sociological considerations to facilitate implementation. As outlined in Chapter Six, *as if friends* requires openness and humility, both of which are multi-dimensional. Openness includes the dimensions of receptivity, active listening, tolerance and suspension of judgement, and humility includes the dimensions of scepticism, ego-distancing and playfulness. For the ease of discussion, I will focus this intertextual reading of *as if friends* and Gough and Scott's curriculum model on the dimension of multiple literacies, mindful that this dimension affects and is affected by each of the other dimensions.

In the implementation of Gough and Scott's curriculum model, receptivity involves opening oneself up to different, often antagonistic, problem definitions and expected solutions that are discursively constructed by different organisational and cultural institutions. Active listening is indispensable to receptivity. The listening must be active in two senses. Firstly, listening needs to be active to guard against passivity and ambivalence. Secondly, active listening refers to the energy that must be expended to ensure that there is neither a power takeover by the dominant literacy nor a collapse into fragmentation. Non-violent tolerance is also required. Non-violent tolerance does not accentuate sameness over difference. This does not mean that similarities should not be sought or that they should be disregarded; it means that we should not allow these similarities to blind us to the differences that create plurality. In the case of the multiple literacies that Gough and Scott promote in their curriculum model, the subordination or erasure of difference would make the participants "play roles in which they no longer recognise themselves" (Levinas, 1961/1991, p. 21). Freire's thoughts on tolerance also provide some insight into the implementation of Gough and Scott's model. Freire (1993/1998, p. 42) points out that "being tolerant does not mean acquiescing to the intolerable" (1993/1998, p. 42). Many fruitful analyses may be drawn from this simple statement, but I which to make only one point here. The need or desire to acquiesce to the intolerable occurs in undemocratic conditions. Therefore, when implementing Gough and Scott's model, the intolerable should be actively sought, exposed and interrogated to determine the repressive forces at work. Lastly, the dimension of openness requires a suspension of judgement. This is not an assertion that resolutions cannot or should not be sought when engaging multiple literacies/discourse in curriculum development. Rather, it is a call to suspend judgments that would foreclose the engagement of multiple literacies, thereby enabling curriculum *innovation* as a result of being receptive to, listening to and tolerant of multiple literacies/discourses.

The enactment of the dimensions of openness requires humility, which "helps me avoid being entrenched in the circuit of my own truth" (Freire, 1993/1998, p.

40). Like openness, humility is multi-dimensional. Expressing humility to one's own view involves scepticism, ego-distancing and playfulness. In the implementation of Gough and Scott's curriculum model, engaging multiple literacies requires accepting scepticism towards one's own literacies/discourses. This is not a renunciation of those literacies/discourses to which we subscribe. Rather, it is recognition that those literacies/discourses are mediated by the organisational and cultural organisations to which we accede, which, in turn are mediated by broader ontological and epistemological assumptions. As a result, scepticism requires acknowledging and accepting that our views on curriculum development, sustainability, the curricular task to be undertaken and the possible approaches are wholly dependent upon the grammar that configures our literacies/discourses and that our understandings may be rewritten differently, or incapable of representation, using other literacies/discourses. This acceptance of the fluidity of representation requires ego-distancing, that is, it requires us to separate the storyline of our literacies/discourse from our emotional investment in them. This provides the condition for the third dimension of humility, namely playfulness. Playfulness in curriculum development is a serious business. It involves reconstructing ourselves and our projects using different literacies/ discourses, and using these constructions as a means to envision alternative pathways for curriculum development, sustainability and the particular task in progress.

As if friends provides important sociological guides to facilitate the implementation of Gough and Scott's curriculum model, but it is not enough. Whilst it acknowledges the issue of disciplinary power and its destructive capacity, it does not incorporate strategies to analyse and respond to issues of power. Although as argued in the sections on engaging Indigenous knowledges and ethics in Chapter Six, this lack can be redressed by embedding deconstructive literacies within the attitude of *as if friends* and this combination would be most effective in the implementation of Gough and Scott's curriculum model.

Gough and Scott emphasise the issue of disciplinary power. In an example of competing readings of (the) environment performed by an economist, a biologist, an engineer, a Western travel writer and a local poet, they maintain that:

> Which of them subsequently, through their practices, influences events the most and so has the greatest input into rewriting of the environment is likely to be decided not by the force of their respective arguments but by the power of their respective institutions (of which their arguments are but one resource). However, it is their different arguments, and different forms of argument, which are likely to seem a proper focus for curricula of one sort or another. (Gough & Scott, 2001, p. 141)

Thus, critical literacies are indispensable to the implementation of their curriculum model. However, as Gough and Scott's argument develops it appears that deconstructive literacies are more suited to the task. Gough and Scott openly challenge, and encourage others to challenge, the overwhelming tendency of cultural institutions, such as collaboration, justice and equality, to dominate. They are not opposed to these cultural institutions *per se*, but with the way in which the venerability of these cultural institutions is wielded to preserve the status quo. In other words, they are concerned with how critiques of existing practices that fall under the aegis of collaboration, justice and equality are placed 'out of bounds'; they insist on the necessity to question the practices that are afforded these designations, to seek out the practices that are being marginalised or silenced and to probe whose interests are being served in order to improve current practices. Thus, Gough and Scott can be read as upholding the need to unrelentingly deconstruct, transform and reform existing practices, especially those that are venerated. Such deconstruction must pay the broadest and closest attention to contexts, which are neither wholly determining nor wholly delimitable; "there is an indefinite opening, an essential nontotalization" (Derrida, 1988, p. 137). This 'essential nontotalisation' creates the constitutive uncertainty of contexts, which is, in turn, inscribed into literacies, practices and institutions, and provides the

condition for their *transformation*, as opposed to finite structuralist rearrangements. Thus, adopting deconstruction in the implementation of Gough and Scott's curriculum model provides a means to analyse and respond to issues of power in a manner that draws upon and preserves uncertainty.

In summary, Gough and Scott's engagement with postmodernist/ poststructuralist literary theory articulates uncertainty to curriculum development through the critique of logocentrism and decentring the subject. As a result, they draw upon the following themes in the formulation of their model: the textuality of (the) environment; (the) environment is rewritten with each reading; rewriting (the) environment simultaneously rewrites (the) self; and the plurality of narratives cannot be reduced to a meta-narrative. The incorporation of these themes enables the narrative uncertainties formulated in Chapter Five to be laid over their model, which provides an extra analytical layer to account for the play of narrative uncertainties in curriculum development, as per their proposal.

Having articulated narrative uncertainties to Gough and Scott's curriculum model, it was possible to forge connections between the implementation of their model and the formulations that narrative uncertainties were applied to in Chapter Six, namely *as if friends* and deconstructive literacies. Drawing upon *as if friends* enables a strong ethical base to be applied to Gough and Scott's advocacy of the inclusion of multiple literacies. This makes it ethically indefensible to apply a reductionist approach that would privilege a particular literacy or a select group of literacies. Adopting the attitude of *as if friends* also provides sociological guidelines to facilitate implementation. However, the attitude of *as if friends* does not provide strategies that respond to the issue of disciplinary power. Embedding deconstructive literacy into the attitude of *as if friends* provides a means to identity, understand and respond to the politics of disciplinary power. This combination enables curriculum development to purposively and generatively engage postmodernist/poststructuralist uncertainties in a manner that does not render uncertainty certain.

DECALCOMANIA II: LAYING THE TRACING OVER THE MAP

The previous section demonstrated the effects induced when the mapping undertaken in this project is plugged into the tracing of environmental education engagements with uncertainty. The reading presented in Chapter Three demonstrated that the existing engagements of uncertainty are limited in number, scope and depth. This results in few opportunities to de-sediment the field in terms of Deleuze and Guattari's (1980/1987) etymological sense of the term. However, when the mapping of uncertainty charted here is placed over a broader tracing of environmental education for the purposes of comparison, that is in the literal sense of decalcomania, the most striking result is that the map covers key areas in environmental education that have not as yet been identified as sites to engage uncertainty. These sites include identity, agency, and environmental values education. Following Deleuze and Guattari, it is vital to ask why the mapping and the tracing are not co-extensive, and what effects are induced when the map is plugged into these sites on the tracing.

UNCERTAINTY, IDENTITY AND AGENCY

The non-coincidence of theorising uncertainty and identity in environmental education can be explained by the lack of attention that has been paid to identity *per se*. Whilst environmental education has deeply and fervently engaged the kind of environmental identities that environmental education ought to endorse and promote, the qualifier 'environmental' has been treated as problematic whereas 'identity' has been largely treated as intuitive and unproblematic. As Payne notes:

> There is a major 'lack' in the discourse of environmental education research. Too little in environmental education, geography, education *for* sustainable development, health education and even citizenship education has been said *directly* about 'identity'. Even less has been said about how these curriculum fields might benefit from grappling more earnestly with the environmental consequences of learners' (and teachers') identity processes and lifestyle pursuits. (Payne, 2000, p. 68, Payne's emphasis)

Payne continues:

> If we can't come to grips with the self-understandings and formative identities [of learners] ... then any theory of environmental education will become just another wish list, rhetorical device or mere slogan destined for ectopian disappointment. (Payne, 2000, p. 72)

The lack to which Payne refers is an under-theorisation rather than a complete absence. However, considerable attention has been focussed recently on the question of identity, especially from 'postmodern' perspectives. Payne has made significant contributions in this area, especially through his consideration of the ways in which curriculum and pedagogy in environmental education can understand and respond to the construction, maintenance and critique of 'postmodern' environmental identities. Furthermore, there are resonances with Payne's work and the arguments developed in Chapter Six of this project. Payne emphasises the importance of recognising that "identities are formed unevenly and are uncertain" (Payne, 2000, p. 82). However, Payne does not elaborate how identities are uncertain and he openly rejects deconstruction and opposes it to reconstruction. Others in environmental education support deconstructive views of identity, but do not acknowledge the role of uncertainty in the discursive construction of identity. Dillon et al., for example, "advocate that the emergent environmentalism research effort needs to be underpinned by materialistic and deconstructive views of identity" (1999, p. 396).

Fien (1993), too, has underscored the importance of the question of identity in environmental education, especially with respect to the notion of agency. Fien is drawn to Giddens' (1979, 1981, 1982a, 1982b, 1984) theory of structuration with respect to the notion of agency for environmental educators. One of several problems that Fien addresses through Giddens' theory of structuration is the perceived inability of teachers to effect institutional reform. Specifically, Fien argues that environmental education needs "a social action theory that does not

reduce explanations of human behaviour to the dualism of individual agency or social structure" (1993, p. 89). Fien's focus in this analysis is more on the question of agency than identity. Indeed, the analysis posits identity as an unproblematic pre-given, although Giddens' work suggests otherwise. As a result, I will be guided by Fien's reading of Giddens in this section, although I will read Giddens differently. This enables resonances to form between this reading of Giddens and the discussion of deconstructive literacy presented in Chapter Five. This in no way discredits Fien's reading. Instead, it introduces another dimension that draws the constitutive role of narrative uncertainties into relief in a manner that may be helpful to critical approaches to environmental education and education *for* sustainability, as well as postmodernist/poststructuralist approaches in environmental education.

Whilst it is acknowledged and respected that Fien writes from the perspective of critical theory, the licence to follow and re-read his engagement with Giddens from a postmodernist/poststructuralist perspective is based on the links that he forges with Foucault (1980). Further qualification is needed, however, with respect to reading Giddens from a postmodernist/poststructuralist perspective. It is well known that Giddens grounds his work firmly within modernism and ardently renounces postmodernism on the basis that he locates postmodernism within modernism. This does not oppose Giddens to theorists who have been labelled postmodern. Lyotard, for instance, similarly maintains that the postmodern "is undoubtedly a part of the modern" (1984, p. 79). Furthermore, as Gaundlett (2002, p. 95) notes, Giddens "does not necessarily disagree with the characterisations of recent social life which other theorists have labelled as postmodern". However, Giddens further maintains that "structuralism, and poststructuralism also, are dead traditions of thought" (1987, p. 195). Giddens regards some aspects of structuralism and poststructuralism to be 'defective', but contends that other aspects must be taken seriously. Thus, he seeks "not so much to write their obituary as to indicate what they have bequeathed to us today in respect of intellectual possessions which still might be put to good use" (1987, p.

195) and he puts aspects of Foucault's and Derrida's theories to 'good use' in his social theory. Giddens' reading of structuralism and poststructuralism is subtle, complex and, in places, problematic. As it is beyond the scope and purpose of this section to cross-read Giddens and leading postmodernist/poststructuralist theorists, I will simply identify resonances between Giddens and the arguments developed in this project.

Giddens' theory of structuration bridges the divide between the Durkheim-style theories of agency, which prioritise macro levels of social life, and Weber-style theories, which prioritise micro levels. Giddens bridges this gap by providing an account of agency in which macro and micro levels of social life are mutually enfolded. According to Giddens:

> The domain of the study of the social sciences, according to structuration theory, is neither the experiences of the individual actor, nor the existence of any form of societal totality, but the practices ordered across space and time. Human social activities ... are recursive. That is to say, they are not brought into being by social actors but are continually recreated by them via the very means whereby they express themselves *as* actors. In and through their activities agents reproduce the very conditions that make these activities possible. (Giddens, 1984, p. 2, quoted in Fien, 1993, p. 88, Giddens' emphasis)

When drawing on Giddens' theory of structuration, Fien identifies two aspects as being central "to the language of possibility in a critical curriculum theory for environmental education" (1993, p. 89). These are the 'duality of structure' (noted above) and "the view of people as knowledgeable agents, 'capable of making a difference' in the world" (1993, p. 89). Giddens explains the interaction of these two aspects: "all human action is carried out by knowledge agents who both construct the social world through their action, but yet whose action is also

constrained by the very world of their creation" (Giddens, 1981, p. 54, quoted in Fien, 1993, p. 89).

This duality of structure provides a strategic framework for environmental educators and learners to perceive ways to intervene in (the) world, to 'be capable of making a difference'. But it does not explain *why* people would be inclined to do so. In order to understand *why* people would be inclined to replace, revise or reproduce existing social structures, it is necessary to theorise identity in a manner that accounts for agency. An understanding of agency alone is insufficient. The broader corpus of Giddens' work is clear on the issue of identity and it intersects with arguments developed on narrative uncertainties and deconstructive environmental literacy.

According to Giddens, "a person's identity is not to be found in behaviour, nor – important though this is – in the reactions of others, but in the capacity *to keep a particular narrative going*" (1991, p. 54, Giddens' emphasis). Thus, for Giddens, identity is not a passive, stable or pre-given entity, but a *process* of narrative construction of selfhood. As such, identity can be rewritten. But, there are constraints to rewriting one's identity. As Giddens notes: "The individual's biography, if she [or he] is to maintain regular interactions with others in the day-to-day world, cannot be wholly fictive" (1991, p. 54). This is not to be read as an endorsement of the fact/fiction dichotomy. Instead, it is an acknowledgement that the narrative construction of the self is negotiated according to the assumptions and blindspots that configure the discourses in which one participates or, in Giddens' words, the process of subjectification "must continually integrate events which occur in the external [social] world, and sort them into the ongoing 'story' about the self" (1991, p. 54).

There are many resonances here between the links advanced between deconstructive literacy, narrative uncertainties and agency in Chapters Five and Six. The most immediate link lies in the fluidity and openness that Giddens attributes to the 'ongoing 'story' of the self'. This forges a link to subjunctive

uncertainty. As noted previously, the subjunctive bears a deep relation to the thinker and creates "the bonds of possibility, probability, contingency, memory, desire, fear and hope" (Le Guin, 1989, p. 119). Thus, subjunctive uncertainty is a key feature of environmental education's critical utopianism. But, the play of subjunctive uncertainty is insufficient basis for theorising agency because it fails to address the issue of power. When subjunctive uncertainty is considered in isolation, it falls into the Weber-style approaches to agency.

Giddens overcomes this through his 'duality of structure', which accords with Derrida's notion of 'double movement' and what has been described in this project as 'ambidextrous inscription'. The 'duality of structure' can be read as decentring the subject and this is a theme that Giddens supports: "The theme of the decentring of the subject is without doubt one which must be taken seriously by anyone interested in modern philosophy or social theory" (1987, p. 207). Despite this strong support, Giddens regards structuralist and poststructuralist versions of decentring the subject as defective and maintains that a detour is necessary to enable a satisfactory account of agency. This detour involves regarding "language as situated in social practices" and rejecting "the structuralist and poststructuralist and poststructuralist distinction between consciousness and unconsciousness" (1987, p. 207). The former detour is of relevance to this project. Giddens' contention that language must be situated in social practices can be read as upholding the importance of context and the view that language/text is not opposed to practice/action. Both of these aspects are accentuated in Derrida's work (1988, 1999) and have been used as structural elements in the formulation of the four narrative uncertainties in Chapter Five. Thus, the theorisation of decentred uncertainty and the discussion of its role in agency resonate with Giddens' decentring of the subject through his notion of 'duality of structure'.

The theorisation of decentred uncertainty and the associated discussion on agency paid attention to how texts instantiate issues and how this instantiation simultaneously constructs subjectivities such that we will subscribe to that instantiation. However, as Giddens (1984) highlights, agency is not reducible to

subjectivity. The discussion on the construction of subjectivities also accounted for whether one has the capacity and inclination to intervene in (the) world or not. Thus, the construction of subjectivity and agency were posited as being contemporaneous. For Giddens, agency can be defined as the "ramified control of the body and a developed knowledge of how to 'go on' in the plurality of contexts of social life" (1984, p. 43). Thus, agency can be read as the embodied practice of deconstructive literacy. Furthermore, viewing agency as the embodied practice of deconstructive literacy draws the issue of disciplinary power into relief. Adopting deconstructive literacy requires developing a vigilance that searches for the shadows of the essential blindspots that are wholly necessary to centre subjectivities such that we will subscribe to particular instantiations and the contemporaneous constructions of agency. Employing vigilance to deconstruct the supposed 'bottom line' of texts prevents deconstructive agency from being reduced to the Durkheim-style theories of agency, which prioritise macro levels of social aspects of agency.

The play of allegorical and *poietic* uncertainties are vitally important here as well. Allegorical uncertainty obtains from the multiplicity of meanings inscribed in a text with varying degrees of explicitness and *poietic* uncertainty is drawn from the postmodernist/poststructuralist motif of the Death of the Author. As a result of allegorical uncertainty, numerous meanings, which may be antagonistic, may be constructed from a particular text. Giddens upholds this notion, maintaining that "reading [is] viewed as the temporary stabilization of the indefinite range of meanings generated by the process of writing" (1987, p. 211). Concomitantly, *poietic* uncertainty shifts the site and timing of the construction of meaning from the author to the reader. This shift problematises the author/reader binarism, but it does not annul authorial intentions. As Derrida notes, the author's "declared intention is not annulled by this but rather inscribed in a system in which it no longer dominates" (1967/1976, p. 1967/1976). Giddens also upholds the validity and importance of the Death of the Author: "In fastening on the theme of the [Death of the Author], structuralists and post-structuralists have been able to

make major contributions to our understanding of cultural production" (1987, p. 211). However, he continues that: "Structuralism and post-structuralism have in my view been unable to generate satisfactory accounts of human agency" (1987, p. 211). This negative finding arises from Giddens' focus on the loss associated with the Death of the Author. Giddens goes so far as to state that: "Writing is sometimes portrayed as though texts wrote themselves" (1987, p. 211). This is a misreading of the Death of the Author; the transfer of the construction of meaning from the author to the reader should be read as an active co-construction of meaning in which the author's intentions do not dominate. The implication for the simultaneous construction of subjectivity and agency is that the subject exercises a degree of control or influence and, hence, responsibility over the narrative construction of the self, rather than being at the mercy of capricious texts or the tyranny of their authors.

Being attentive to narrative uncertainties through deconstructive literacy enables "the ongoing 'story' about the self" (Giddens, 1991, p. 54) to be rewritten in a manner that accounts for both the capacity and inclination to intervene in (the) wor(l)d as agents. This can be of strategic value to Fien's (1993) critical appropriation of Giddens' theory of structuration into environmental education. Critical approaches would benefit from exploring the relationship between identity and agency from the perspective of narrative theory. This does not entail the renunciation of ideology, which is an essential element of critical approaches. As Belsey (1997, p. 657) notes: "According to Althusser's reading (re-reading) of Marx, ideology is not simply a set of illusions, as *The German Ideology* seems to argue, but a system of representations (discourses, images, myths) concerning the real relations in which people live". Thus understood, ideology can be read as narrative existence, which enables the role of narrative uncertainties to be admitted into explorations of the relationship between identity and agency. In addition, the constitutive role of narrative uncertainties in the construction, maintenance and critique of identity resonates with Payne's (2000) research interest in 'postmodern environmental identities', but in a manner that counters

his opposition of deconstruction to reconstruction. Further, it provides an analytical and explanatory framework that accounts for how "identities are formed unevenly and are uncertain" (2000, p. 82).

ENVIRONMENTAL VALUES EDUCATION

Environmental values education is one of the essential and "essentially contested" (Robottom, 1987, p. 26) aspects of environmental education. Numerous competing theoretical positions and associated practices have been advanced. However, anthropocentrism versus non-anthropocentrism and indoctrination are two prominent and enduring themes within the environmental values education debate. Environmental educators heed these themes and critically situate their theoretical positions in relation to them. The lines of flight in this project have also encountered these themes and as such can contribute to the ongoing debates.

Anthropocentrism versus non-anthropocentrism

The philosophical elements of the anthropocentrism versus non-anthropocentrism debate are most clearly delineated in Li's (1996) argument that non-anthropocentrism is logically indefensible and Snauwaert's (1996) counter-argument. The structural elements and the dynamics of these two arguments are representative of the substance and logic used to support other arguments within the field. As a result, I will concentrate on Li's and Snauwaert's arguments to advance that Llewelyn's (1991) cross-reading of Levinas, Heidegger and others introduces a new dimension to this debate.

Anthropocentrism is accepted in environmental education as the "denial that the non-human world has any moral status or other significance that is not reducible to humans, their ends and purposes" (Plumwood, 1990, p. 527). This statement is equivalent to the assertion that the non-human world has instrumental value only and the anthropocentrism versus non-anthropocentrism debate in environmental education revolves around the question of instrumental

value versus intrinsic value. This is problematic because 'intrinsic value' is a contested concept. Some environmental philosophers have expanded the intrinsic/instrumental binarism in order to clarify the debate in the arena of environmental ethics (Callicott, 1989; Regan, 1980; Taylor, 1986); although the terms advanced in the various classification schemes are often in conflict, which creates sematic difficulties. As a result, other environmental philosophers have advanced approaches that avoid the notion of intrinsic value altogether (Carnegie, 2000; Nelson, 1995; Page, 1992).

Li initially draws on Regan's usage of the terms 'intrinsic value' and 'inherent value', where 'intrinsic value' is designated as a subjective valuation that is dependent upon the valuer and 'inherent value' is designated as an objective, self-revealing value that is independent of a valuer. She then, unfortunately, reverses the usage of these terms, but the logic of her multi-faceted argument can be followed by focusing on the descriptors 'subjective' and 'objective'. In short, Li maintains that our moral consciousness is inevitably involved in our perception of 'objective' values. Thus, Li implies that objective values are an illusion and accordingly argues that the anthropocentrism versus non-anthropocentrism debate is irrelevant. She further argues that clinging to the notion of objective value is detrimental because it maintains the human/nature binarism which is held to be deeply complicit in (the) environmental crisis, and unhelpful because objective values do not provide guidelines for environmental behaviours and because problems of distributive justice arise from the inviolability of objective values. As a result of these lines of argument, Li maintains that a 'human-centred', or anthropocentric, perspective is the only logically defensible position to adopt in environmental education and that, whilst anthropocentrism is instrumental and is viewed pejoratively, it is capable of contributing to more sustainable futures.

Snauwaert rebuts Li's proposition that non-anthropocentrism is impossible and argues that "the expansion of the moral community to include nonhumans in principle cannot be achieved on anthropocentric grounds" (1996, para. 2). In relation to the former, Snauwaert invokes Fox's (1990) 'anthropocentric fallacy' to

rebut Li's contention that: as our moral consciousness is inevitably involved in our perception of values, a non-anthropocentric perspective is impossible.

> A fallacy of this kind conflates the trivial and substantive senses of a concept. In this case, what is conflated is the inescapable and trivial fact that all environmental ethics is derived from a human perspective with the substantive content of the ethic. In the trivial sense, all varieties of environmental ethics are equally anthropocentric because they are inescapably conceived by human beings. However, in the substantive sense the wide variety of human conceptions of responsibility pertaining to the environment are extremely divergent, some anthropocentric others ecocentric. ... It is the substance of the argument made by ecophilosophers for an nonanthropocentric, ecocentric ethic that is at issue, not the trivial fact that ecophilosophers are human beings. (Snauwaert, 1996, para. 4)

Having argued for the defensibility of an ecocentric ethics, Snauwaert proceeds to challenge Li's proposition that an ecocentric ethics based on 'intrinsic'[10] values is unworkable because of the problem of distributive justice. Specifically, Snauwaert draws on the two principles of vitalness and nearness articulated by Naess (1995) as an example to illustrate the adjudication of conflict. Thus, Snauwaert argues that intrinsic values do not lead to paralysis as Li contends.

Finally, Snauwaert argues against Li's proposition that an anthropocentric ethics enables an expansion of the moral community to include the natural world. Snauwaert argues that an anthropocentric ethics, by definition, denies the intrinsic value of the non-human world and that this prevents the expansion of the moral community because a "moral community by definition is based upon the

[10] Snauwaert retains Li's reversal of intrinsic and inherent values, which is consistent with the usage in environmental education. The reversal was pointed out, however, due to Li's initial references to Regan's (1980) argument. The remainder of this section will use the term 'intrinsic value' as per Li and Snauwaert for ease of discussion. This does not appear to be detrimental to this discussion, however, it would be problematic in more detailed analyses that connected with the broader corpus of environmental ethics.

recognition of the intrinsic value of each of its members" (1996, para. 8). He acknowledges, however, that the moral consideration of nature could rely on instrumental values rather than an expansion of the moral community, but argues that the domination of nature is implicit in instrumental values. In summary, he argues that the distinction between anthropocentrism and ecocentrism is relevant and that "there is a profound difference between educating for a recognition of the intrinsic value of nature as opposed to educating for a recognition of nature as morally considerable on instrumental grounds" (1996, para. 10).

Llewelyn's (1991) cross-reading of Levinas, Heidegger and others enables an ecocentric ethics that avoids the intrinsic/instrumental debate and its predicaments as they are configured in environmental education. To recapitulate briefly, for Levinas, the face to face is an encounter in which I "*receive* from the Other beyond the capacity of the I" (1961/1991, p. 51, Levinas' emphasis). The face to face is an ethical encounter in which the Other beseeches/commands the I to refrain from the violence of conceptualisation and thematisation, which would dispossess the Other of his or her otherness. This is in no way a plea/command to recognise, respect and protect the intrinsic value of the Other; it is not a question of intrinsic value at all. The utter excessiveness of the alterity of the Other invalidates the notion of intrinsic value because the Other is otherwise than being or beyond essence. The utter excessiveness of the Other is "refractory to every typology, to every genus, to every characterology, to every classification" (1961/1991, p. 73). Therefore, the finitude of the notion of intrinsic value cannot do justice to the infinitude of the Other, even if intrinsic value is set at the maximum level on the greatest scale. Any attempt to impose intrinsic value on the Other would inflict the greatest violence upon the Other, annihilation. This is the same mode of logic used in the more familiar arguments constructed by Nietzsche and Heidegger to advance their renowned proclamations that "God is dead" (1887/1974) and "value does not let being be being" (1952/1977, p. 104), respectively. Levinas avoids the violence that the notion of value inflicts on the Other by constructing his ethics in terms of *responsibility*. Further, as outlined in

Chapter Four, Levinas overcomes the problem of distributive justice through the questioning look of the third party that unwaveringly inhabits the face qua face.

Levinas' formulation of the face to face specifically attends the realm of human sociality. Llewelyn, however, extends the range of the face to face encounter by cross-reading Levinas with Heidegger and others. This extension is not an extension of inter-personal ethics into the non-human realm; instead, "it is an extension beyond humanity of the range of beings with which I can be face to face" (1991, p. 245). Thus, contra Levinas, it is not only another human being with which I can be face to face. Llewelyn achieves this extension, in part, by drawing upon the interconnectedness of Heidegger's four-fold space. This establishes an "ecological dependence of things; human and non-human, other non-human beings have a claim on me through their simply being needy beings other than me" (1991). This neediness, however, is not sufficient to forge a link to Levinas' ethical encounter of the face to face. In order to do this, it is necessary to establish that the encounter is transcendent in Levinas' sense, that is, it is necessary to establish that the non-human Other is otherwise than being or beyond essence. Llewelyn achieves this by drawing on non-qualitative difference. As non-qualitative difference cannot be thematised or conceptualised, it is alterity. This forges the link to Levinas' ethics of responsibility; the non-qualitative difference or "naked alterity of a finite vulnerable being suffices to put me under direct *responsibility* to it" (1991, p. 255, emphasis added).

By drawing on the four-fold space and non-qualitative difference, Llewelyn formulates an ecocentric ethics that avoids the identification, classification and reckoning of value, and responds to the problem of distributive justice through Levinas' formulation of the third party in an expanded domain of the face to face. I submit that this opens up an important avenue for re-thinking the normative aspect of environmental education because the issue of intrinsic verus instrumental value is a hurdle that we keep jumping time and time again. With all this practice, the sophistication and rigour of the arguments have increased and this is not to be dismissed. However, we keep returning to the same hurdle; the

very expression 'environmental values education' steers us back to the consideration of values. Thus, it may be helpful to think of this normative aspect of environmental education in terms of 'environmental ethics' or 'environmental consciousness'.

Llewelyn's ecocentric ethics, however, can only contribute to postmodernist/ poststructuralist strands of environmental education, which admit the notion of alterity or non-qualitative difference. It cannot inform those strands of environmental education, education *for* sustainable development and education *for* sustainability that uphold Huckle's rendition of materialism:

> Everything that exists (including everything mental or spiritual, including our values) comes into being on the basis of material causes and arises and develops in accordance with the laws of science (materialism). The world and its laws are knowable and while there is much in the material world that may not yet be known, there is no unknowable sphere of reality that lies outside the material world. (Huckle, 2002, p. 65)

Following this view of materialism, neither alterity nor non-qualitative difference can be admitted as a means to avoid the question of value. Those committed to this version of materialism, however, may find ways to go beyond the question of value in Nelson's (1995) notion of '*thick* concepts' or Page's (1992) notion of existential 'meaning', both of which are creative alternatives to avoid the question of intrinsic/inherent value when justifying our obligations to the environment (Carnegie, 2000).

Indoctrination

As noted in Chapter One, indoctrination, the teaching of a body of knowledge uncritically in order to elicit acceptance and allegiance, is a highly sensitive issue in environmental education and environmental educators actively strive to distance themselves from charges of indoctrination. The notion of critique is central to this

debate, but 'critique' is not a monolithic concept. Biesta and Stams (2001, p. 59, Biesta and Stams' emphasis) point out that postmodernists/poststructuralists, feminists and neo-pragmatists are among those who question "whether the idea(l) of critical thinking is a neutral, objective, universal and self-evident idea(l), or whether it is in some way *biased* (e.g. by culture, class or gender)". Thus, idea(l)s of critique *per se* can be implicated in indoctrination as well as being advanced as a means to avoid indoctrination.

The indoctrination debate in environmental education is concentrated around liberalist versus critical theorists' approaches to environmental values education. This is particularly evident in Jickling and Spork's (1998) critique of Fien's *Education for the environment: Critical curriculum theorising and environmental education* (1993) and Fien's (2000) response. Liberalist approaches to environmental values education, such as that upheld by Jickling and Spork, advance that all values should be critiqued equally and that it is always up to the individual to evaluate the relative merits of competing positions. Critical theorists reject both aspects of this view; they reject the notion that critique requires all positions be treated equally and they uphold that a committed approach to teaching particular environmental values does not constitute indoctrination when the values in question are disclosed and reflexively subjected to critique. At this level of analysis, Jickling and Spork's and Fien's positions regarding the nature of critique in the avoidance of indoctrination are diametrically opposed, but they are united in their conceptualisation of critique. Jickling and Spork are arguing that fair-mindedness and non-intervention are criteria that should be applied in order to evaluate a specific state of affairs, whereas Fien argues for the recognition of power differentials and committed approaches. Therefore, both conceptions of critique embrace criteria as *foundations* that lie beyond the reach of the critical operation[11] (whilst particular criteria are contested, the notion of criteria is not). Thus, each

[11] I read Fien's (1993; 2000) advocacy of reflexivity as the adoption of a reflexive stance toward to the product of critique rather than a reflexive stance to the operation of critique.

"derives its right to be critical from the *truth* of the criterion" (Biesta & Stams, 2001, p. 60, Biesta and Stams' emphasis).

I am not arguing against this conception of critique, although I would point out that this is not the only conception of critique. Kant's (1781/1929) transcendental critique and Derrida's deconstruction (1967/1978, 1972/1981) offer different conceptions. Therefore, the unproblematic advancement of criteria-based critique could in itself be read as indoctrination. Furthermore, it can be argued that as the notions of foundations and (univocal) truth are discursive features of patriarchy, criteria-based critique marginalises feminist perspectives (Wheary & Ennis, 1995) and, therefore, acts a source of oppression.

It is beyond the scope and purpose of this section to enter into the full range of conceptions of critique and their relations to the issue of indoctrination. I will, therefore, limit the remaining discussion to deconstruction because it has been a major theme in this project. Unlike criteria-based critique, deconstruction is a mode of criticality that radically problematises the idea(l) of critique whilst ardently maintaining the necessity of critical analysis. In an interview with Ewald, Derrida commented that: "*Critical* thinking, which I believe one should never renounce, has a history, and assumptions, the deconstructive analysis of which is also necessary" (Derrida & Ewald, 1991/1995, p. 286, Derrida's emphasis). Thus, deconstruction can be read as a means to avoid indoctrination resulting from the unproblematic advancement of particular modes of critique, which are founded upon, and therefore limited by their histories, presuppositions and constitutive silences.

Deconstruction problematises the idea(l) of critique without invoking a *critique of critique*, which would be deeply problematic at the very least. This is perhaps best understood through Derrida's articulation of *différance* and deconstruction to Saussure's (1959) structuralist linguistics. As noted in Chapter Five, Saussure proposed that signifiers acquire meaning non-referentially through their position in a closed system of language. The radical aspect of Saussure's structural

linguistics lies in his conception of language as a system of differences: "in language there are only differences *without positive terms*" (1959, p. 120, Saussure's emphasis). Thus, each term acquires meaning through systematic oppositions; each signifier acquires meaning from its constitutive other; "what is excluded thereby, in a sense, returns to sign the act of its own exclusion" (Biesta & Stams, 2001, p. 66). Deconstruction cannot, and does not try to, escape this double movement. Therefore, the *operation* of deconstruction is not a *critique of critique*; its aim is humbler, yet more powerful. Every deconstructive gesture is indebted to its constitutive other. As a result, a deconstructive gesture can never be wholly present and, as it is systematically related to its constitutive other, it is 'contaminated' (Derrida & Ewald, 1991/1995). It is in this sense that it is impossible for deconstruction to perform a *critique of critique*. Instead, deconstruction strives to bring the constitutive other 'into view'.

This is relevant to the issue of indoctrination in environmental education at two levels. Firstly, deconstruction can be applied to the *operation* of critique in environmental education. Deconstructing the operation of critique shows "that there is no safe ground upon which we can base our judgements, that there are no pure, uncontaminated, original criteria [such as the liberalist's fair-mindedness or the critical theorist's support for 'pro-environmental' values] on which we can simply and straightforwardly base our judgements" (Biesta & Stams, 2001, p. 68). Thus, deconstruction accentuates the irreducibility of decentred uncertainty that inhabits critique. Furthermore, deconstruction can 'expose' the silences that discursively constitute the critical operation of different modes of critique and the injustices that these operations may effect.

Secondly, deconstruction may be applied to the *objects* of critique in environmental education. The advocacy of critical approaches to avoid charges of indoctrination presently operates at this level in environmental education. As argued in Chapter Six, developing deconstructive environmental literacy enables learners to understand how texts are configured and how they are systematically related to the silences or the constitutive other. Critical understandings can be

gained about which environmental issues are being foregrounded and which are being marginalised, and how the politics of representation and disciplinary power partition and position these issues. Also, developing deconstructive literacy enables learners to discern the ambidextrous inscription, or double movement, of these textual constructions. As rewriting the text simultaneously rewrites the self (Barthes, 1971/1977), critical understandings may be gained about how texts configure environmental issues such that we will accede and respond to that instantiation. In other words, learners can understand how environmentally sensitive and responsive subjectivities are constructed and whether these subjectivities are being foregrounded or marginalised. Furthermore, following the problematisation of the author/reader binarism resulting from the Death of the Author, the reader has an active role in the construction of these meanings; meanings are not tyrannically imposed upon the reader by the text/author. Acceding that the reader plays an active role in the construction of meaning, however, does not imply that the reader has total freedom in this task. Reading is constrained by contexts. However, given that contexts are neither absolutely determining nor wholly delimiting, the text and the self can be written differently. Hence, the reader must accept some measure of responsibility for the ambidextrous construction of meaning and subjectivities.

These critical aspects of deconstructive literacy enable learners to recognise, deconstruct and resist indoctrination, but they do not provide a guarantee against indoctrination. Given the different levels of proficiency of teachers and learners to deconstruct texts, it is essential that safeguards are included to protect learners from unethical deconstructive practices of 'boa-deconstructors' (Hartman, 1981). At a minimum, these safeguards should include: the disclosure of the teacher's preferred textual reading of environmental issues and the constitutive silences that configure that reading, demonstrations that the teacher's texts can be configured differently and accentuating that no reading is innocent.

Finally, it could be objected that the critical aspects of deconstructive literacy sketched above constitute a reinvention of the doctrine of individualism couched

in postmodernist/poststructuralist jargon since the reader is required to choose between multiple readings. This charge has been levelled repeatedly at postmodernism/poststructuralism (Feldman, 1998; Johnston & Lio, 1998; Welch, 2001) and, if it withstands scrutiny, it would appear to return us to the liberalist verus critical theorists' debate. On the surface, there appears to be something to this objection. But a closer reading demonstrates that this objection is deeply problematic and difficult to sustain. The doctrine of individualism is predicated upon the notion of a unitary, stable and self-sufficient subject. Postmodernist/ poststructuralist perspectives, on the other hand, seriously trouble the 'foundation' of individualism by positing subjectivity as an ambidextrous inscription. This ambidextrous inscription accentuates and complicates the relations between the subject and the other; it is antithetical to the reductionism necessary to sustain the notion of individualism. This point is made clearly by Atkinson (2002), who states that:

> Postmodern theory explores the relationship between the personal and the political, between discourse and society. The reductionist view of postmodernism, which sees it as limiting the scope of inquiry to the personal, the contingent, and the local, fails to recognise the postmodern view of the personal as the product of the social, the contingent as a product of the determined, the local as a product of the global, and *vice versa* in each case. (Atkinson, 2002, p. 81)

In summary, deconstruction can be advanced as a means to avoid indoctrination because it requires deconstructing the idea(l) of critique as a matter of logical consistency. This accentuates the untenability of indoctrinating students into a particular mode of critique, which is necessarily limited and exclusionary. Developing deconstructive literacy also enables students to understand the social construction of knowledge and provides them with skills to recognise, deconstruct and resist indoctrination, although safeguards are necessary to protect students from the unethical practices of those who have greater proficiency in

deconstruction. And finally, these critical aspects of deconstructive literacy do not reinstate individualism, as some critics suggest.

CONCLUSION

The conclusion of this chapter marks the suspension of the three-fold process of Deleuze and Guattari's (1980/1987) cartography: tracing, mapping and decalcomania. The first phase was undertaken in Chapter Three, which traced the existing engagements with uncertainty in environmental education. The second phase, mapping, was undertaken in Chapters Four, Five and Six. The mapping process involved forging lines of flight that resonate with environmental education's engagements with uncertainty, but the resonances have unfamiliar inflections. This chapter enacted the third phase, decalcomania, which involves placing the tracing over the maps in order to see how the lines of flight can open up new spaces by de-sedimenting and reforming the existing terrain, and drawing blockages that fix affects in the existing terrain into relief.

The relative importance that should be assigned to the last two phases is disputed. Braidotti privileges the second phase, mapping lines of flight: "all that counts is the going" (1994a, p. 170). This privilege can be supported by Deleuze and Parnet's contention that: "The only great error [lies] in thinking that a line of flight consists in fleeing from life; the flight into the imaginary, or into art. On the contrary, to flee is to produce the real, to create life, to find a weapon" (1977/1987, p. 46). In contrast, Gedalof (2000) accentuates the importance of the last stage, decalcomania. She argues that "What should be important ... is *not* 'the going', but a different type of relationship with the space one inhabits" (2000, p. 343, Gedalof's emphasis). This stance can also be supported by Deleuze and Guattari's previous quotation. I align Deleuze and Guattari with Gedalof. The justification for this positioning is twofold: firstly, there would be no point to 'finding a weapon' if it were not to be used; and secondly, positioning Deleuze and Guattari with Gedalof is consistent with the conviction that if postmodernist/ poststructuralist thought is motivated by a concern for the other, then the 'insights' gained from the lines of flight should be folded back onto existing

practices in order to make a difference. Thus, I agree that we should "consider the necessary tensions between our 'roots and routes'" (Gedalof, 2000, p. 343, quoting Gilroy, 1993, p. 133). Having said this, it is clear that the time and space devoted to following lines of flight in this project were greater than that devoted to the final stage. This is not to be read as privileging 'the going'. Quite simply, this occurred because it was necessary to traverse great distances in order to discern the bearing of the lines of flight to environmental education.

Laying the tracing over the map was performed in two sections to demonstrate the effects that the map can produce in the tracing and to explore their non-correspondences. The former process was applied to environmental education's engagements with uncertainty through scientific uncertainty and the precautionary principle, chaos and complexity theories, and Gough and Scott's (2001) poststructuralist philosophical/literary model of curriculum development. It was argued that whilst scientific uncertainty is wholly dependent upon a commitment to totalisation, the lines of flight undertaken within this project intersect with environmental education's engagements with scientific uncertainty by emphasising the need to take this context into account. It was specifically argued that deconstructive environmental literacy should be used to interrogate which environmental issues are being designated as uncertain, which issues are being silenced and probe whose interests are being served. This argument was conjoined to an examination of the precautionary principle which advanced that the warm reception that is extended to the precautionary principle should be tempered. The precautionary principle is being heralded as a sound ethical platform in environmental education, however, it was argued that the precautionary principle offers a precarious ethical platform because the ethical component is an optional extra that can be jettisoned easily. This does not mean that the precautionary principle should be abandoned as an ethical platform, but that 'responsible environmental citizenry' would be better served by deconstructive readings of the precautionary principle.

Plugging the lines of flight into existing engagements with chaos and complexity theories resulted in rewriting an argument that I advanced earlier (Hardy, 1999a). The earlier argument proposed the direct application of science and complexity theories as a means to engage scientific uncertainty in environmental education. It was argued, however, that the previous argument uncritically transgressed the correspondence/metaphorical divide. This transgression went unnoticed because of the privilege that was afforded to mathematical/scientific discourse. The deconstructed argument advances that environmental education's engagements with chaos and complexity theories are better served by embracing Doll's (1993) metaphorical approach. Re-reading Doll's metaphorical approach led to the identification of Derridean themes, which enabled a link to be forged between Doll's transformative curriculum model and deconstructive literacy. This link enabled the play of the narrative uncertainties, formulated in Chapter Five, to be articulated to learning processes.

Gough and Scott's poststructuralist model of curriculum development was the final tracing to be laid over the maps constructed in this project. As Gough and Scott's project draws on the same poststructuralist themes that were used to construct the maps, this aspect of decalcomania did not de-sediment their model of curriculum development. Instead, it added further layers. Firstly, links were forged between their curriculum model and the narrative uncertainties formulated in Chapter Five. Secondly, Stone's (1995) feminist attitude, *as if friends*, was advanced as a means to facilitate dialogue between different voices/literacies in a manner that did not reduce difference. The sociological qualities needed to support the attitude of *as if friends*, namely the multi-faceted qualities of receptivity and humility, were also considered from the perspective of curriculum development. The articulation of *as if friends* to Gough and Scott's model of curriculum development also adds an ethical imperative for the inclusion of multiple voices/literacies. This ethical imperative is absent in their formulation, which makes it vulnerable to the erasure of antagonistic voices by vested interests. Finally, it was argued that *as if friends* did not explicitly provide strategies to

respond to the destructive capacity of disciplinary power. As a result, it was advanced that deconstructive literacy should be embedded in *as if friends* so that the plurality of voices/literacies can recognise and respond to disciplinary power, which threatens to overpower the community of difference.

The second phase of decalcomania involved laying a broader tracing of environmental education over the maps in order to discern non-correspondences. The aim of this is not to bring one into conformity with the other, but to identify blockages that fix affects in the existing terrain. The lines of flight had identified identity, agency, and environmental values education as themes that had not been explicitly identified as sites for engaging uncertainty in environmental education.

The non-coincidence of theorising of uncertainty and identity in environmental education can be explained by the under-theorisation of identity in environmental education. It was noted, however, that some attention has been focussed on identity recently, especially from 'postmodern' perspectives (Dillon et al., 1999; Payne, 2000). The discussion focussed on Fien's (1993) critical appropriation of Giddens' (1981, 1982a, 1982b, 1984) social theory because of links that Giddens explicitly forges between identity and agency. However, this argument re-read Giddens differently by drawing on the broader corpus of his work. Specifically, it focussed on reading Giddens' formulation of identity as a process of narrative construction of (1991). This enabled an examination of the play of narrative uncertainties in the construction of identity and the simultaneous construction of agency. It was argued that the play of narrative uncertainties can be of strategic value to Fien's critical appropriation of Giddens' social theory into environmental education, and, following Althusser, this does not entail renouncing the concept of ideology, which is central to critical approaches in environmental education.

Finally, the non-coincidence of the tracing and the maps focused on the issue of environmental values education. Specifically, it analysed two prominent and enduring themes in environmental values education, namely the

anthropocentrism/non-anthropocentrism debate and the thorny issue of indoctrination. In relation to the former, it was argued that the intrinsic/extrinsic debate effectively blocks links to Levinas' ethical relationship to the face to face (Levinas, 1961/1991, 1974/1991). This link is precluded because the notion of attributing value to the Other dispossesses the Other of his or her otherness. It was argued that if the normative aspect of environmental education shifted the focus of the debate from values to responsibility, then an eco-ethics could be pursued following Llewelyn's (1991) cross-reading of Levinas, Heidegger and others. As argued in Chapter Four, this enables environmental education to engage the possibilities afforded by 'postmodern uncertainties', as formulated by the Panel for Education *for* Sustainable Development (1998). The Panel for Education *for* Sustainable Development cast 'postmodern uncertainties' as the conjunction of the limitation of knowledge and plurality. This conjunction is exemplified in Levinas' formulation of the face to face and in Llewelyn's extension of it into the non-human realm.

The analysis of the indoctrination debate advanced that the notion of critique is endorsed as a means to avoid indoctrination by both liberalists and critical theorists in environmental education. Both of these groups advance a criteria-based mode of critique, but the criteria that they endorse differ. The criteria-based mode of critique, however, is only one of several different conceptions of critique. Thus, it can be argued that the unproblematic advancement of this one mode of critique constitutes a means of indoctrination in itself. It was advanced that adopting deconstruction overcomes this problem because deconstruction radically problematises the idea(l) of critique without resorting to a *critique of critique*. In addition to providing a means to interrogate the *operation* of critique, deconstruction offers a means of interrogating the *object* of critique in a manner that reduces the risk of indoctrination. This is possible because deconstruction analyses the assumptions and constitutive silences that configure texts. Drawing attention to these discursive elements facilitates the re-writing of texts. Thus, developing deconstructive literacy in environmental education assists learners to

recognise, deconstruct and resist indoctrination. Safeguards are necessary, however, to protect learners from the risk of unethical practices of those who have greater proficiency in deconstruction. Developing deconstructive literacy not only has the potential to protect students from indoctrination, it also makes explicit and engages the play of narrative uncertainties that were mapped in Chapters Five and Six.

The three stages of Deleuze and Guattari's cartography – tracing, mapping and decalcomania – have traced existing engagements with uncertainty, mapped new theorisations of uncertainty and plugged these new theorisations into the existing terrain, respectively. The influences that the mappings can induce in the field have been sketched briefly because of the space that needed to be devoted to pursuing the lines of flight. Thus, the arguments presented in this chapter open up spaces for further exploration.

INTRODUCTION

Chapter One advanced the figuration of 'the neighbourhood of' to problematise the notion of an introduction. It was argued that 'the neighbourhood of' enables situated introductions to occur, whilst acknowledging that beginnings never are. The notion of a conclusion is equally problematic. Postmodernist/poststructuralist rejections of totalisation banish any notion of conclusion from 'now-here' to 'no-where': "Conclusions never are" (Baker et al., 1998, p. 173). The problem that arises now is how to 'conclude' a project in 'the neighbourhood of' where beginnings and ends have no efficacy? Conclusions uphold the dominant privilege granted to closure in the closure/openness binarism, but the reversal of this privilege has provided a key structural element in the arguments presented. Epistemological questions of power are at stake here. There are also issues of power of a different order that intensify the problem. There is the will to power of the researcher that results from the "desire to convince our colleagues of the truth of our vision" (Reid, Kamler, Simpson, & Maclean, 1996, p. 94) and this will to power is sustained by and sustains the "disciplinary gaze" (St. Pierre, 2000a, p. 261). These could be classified as pragmatic questions of power. The fundamental question here, however, is not whether or not to offer a conclusion; such a simplistic opposition does not withstand the scrutiny of the *either/and* logic that operates within the rhizomatic 'neighbourhood of'. The fundamental question is how to enact "an operation involving the summing up relative to the expectation of meaning from some interpretation" (Boucher, 2000, para. 6) whilst troubling the notion of a conclusion. This alone is a daunting task, but the problem is compounded by another issue that must be faced. It is also necessary to confront the problem of how to conclude a project that sought to theorise uncertainty in a manner that respected uncertainty *as* uncertain. How can this be done without fixing uncertainty?

I will invoke Deleuze and Guattari's (1980/1987) notion of 'becoming' as a means to grapple with these issues and trouble this conclusion both in *form* and *substance.* The introduction of any new material in a conclusion goes against conventional form, which is founded on "the formalist desire to find closure integral to the structure of the work, and the corollary assumption that texts can and do achieve closure" (Cooke, 1995, p. 523). The introduction of new material disrupts this assumption and upholds the view that "the text overruns all limits assigned to it" (Derrida, 1977/1979, p. 84). A variety of themes would disrupt the *form* of this conclusion, but Deleuze and Guattari's notion of 'becoming' has been specifically chosen due to its capacity to trouble the *substance* of this conclusion as well. The notion of 'becoming' troubles the *substance* of the conclusion by inserting an assemblage that resists further dichotomising logic between the poles of the beginning/end binarism. Becoming is always in-between; it "is a verb with a depth all of its own" (Iyer, 2002, p. 96). Deleuze and Guattari describe 'becoming' as follows:

> A becoming is always in the middle, one can only get to it by the middle. A becoming is neither one nor two [beginning nor end], it is the in-between, the border or line of flight or descent running perpendicular to both. (Deleuze & Guattari, 1980/1987, p. 293)

I will use the notion of 'becoming' to frame the reflections on the denouement of this project, the manner in which the 'aims' and 'objectives' were enacted, and the 'findings'. I will also advance that 'becoming-uncertain' is an important pedagogical venture for environmental education. Firstly, however, a reading of Deleuze and Guattari's notion of 'becoming' is required.

BECOMING

> Why are there so many becomings of man, but no becoming-man? First because man is majoritarian par excellence, whereas becoming is minoritarian; all becoming is a becoming-minoritarian. When we say majority, we are referring not to a greater relative quantity … It

> is not a question of whether there are more mosquitoes or flies than men, but of knowing how 'man' constituted a standard in the universe in relation to which men necessarily (analytically) form a majority...the majority in the universe assumes as pregiven the right and power of man. In this sense women, children, but also animals, plants and molecules, are minoritarian. (Deleuze & Guattari, 1980/1987, p. 291)

Deleuze and Guattari's notion of 'becoming' is a radical theorisation of the politics of thought; 'becoming' is the process of radical politics; 'becoming' is the radical other of 'being'. The introductory quotation proclaims that there is no becoming-man, this is, according to Deleuze and Guattari, because man declares 'being' in both senses of the term 'declares', that is, man is the ground of being and man fixes the limits of being. Colebrook (2000, p. 11) incisively summarises this state of affairs: "man is not just one concept among others, but it presents itself as the origin of all concepts". This declaration of being is political and Deleuze and Guattari designate it as 'majoritarian' or 'molar' politics. Majoritarian or molar politics attends unities, stabilities, certainties, totalities and presence. In short, majoritarian or molar politics is synonymous with patriarchal discourse. Man designates and assumes the central point. Accordingly, man "has the property of organizing binary distributions within the dualism machines, and of reproducing itself in the principal term of the opposition" (Deleuze & Guattari, 1980/1987, p. 292).

Becoming, on the other hand, attends 'minoritarian' or 'molecular' politics. Deleuze and Guattari cast minoritarian politics in binary opposition to majoritarian politics, which simultaneously casts 'becoming' in binary opposition to 'being'. However, in order to avoid subsuming minoritarian politics to majoritarian politics by reproducing majoritarian, patriarchal, Platonic, dichotomising logic, they do not cast minoritarian and majoritarian politics in total opposition. Instead, they disrupt and contaminate the majoritarian by emphasising that whilst there are distinctions between majoritarian and

minoritarian politics, "they are inseparable, they overlap, they are entangled" (Deleuze & Guattari, 1980/1987, p. 213).

Two powerful consequences emerge as a result of this entanglement. Firstly, this entanglement precludes the possibility of becoming being subordinated to being, thus openness cannot be legitimately subordinated to closure. This has a direct bearing on the notion of a conclusion: becoming troubles the notion of a conclusion, but the entanglement of the minoritarian and the majoritarian does not allow the notion of a conclusion to be abandoned. This is important for this conclusion because, as noted in the preliminary remarks, beginnings and ends have no efficacy in 'the neighbourhood of', but the notion of a conclusion cannot be discarded because such a simplistic opposition does not withstand the scrutiny of the *either/and* logic that operates in the rhizomatic 'neighbourhood of'. Furthermore, it bears direct relevance to this project because this project has repeatedly argued that uncertainty and openness co-enable each other. Secondly, becoming has the power to disrupt the majoritarian and the majoritarian has the power to arrest becoming, but these opposing powers do not simply neutralise each other and attain equilibrium. Rather than attaining stability, each destabilises the other, creating a latent, but potent, tension. The second consequence is relevant to environmental education generally because it signals the possibility of deploying the disruptive capacity of becoming as a tactical means to disrupt the status quo that sanctions and sustains environmental degradation and exploitation. Just as majoritarian politics of thought is reified in the discursive construction of institutions, policies, practices and subjectivities, the 'transgressions' effected by becomings can become reified as a result of the entanglement of the two realms. To put it bluntly, becoming can produce tangible effects.

The expression and possible reification of the minoritarian, through the entanglement with the majoritarian, involves an essential phase of becoming, namely 'becoming-imperceptible'. The notion of 'becoming-imperceptible' may not sound very appealing to environmental education theorists given that they are engaged in a constant struggle to counter the marginalisation of environmental

education within the broader arena of education. But becoming-imperceptible is a crucial element of minoritarian politics and it does not mean becoming imperceptible, invisible or silent. Instead, of being "a function of invisibility or lack of importance", becoming-imperceptible "is a function of recomposition" (Flieger, 2000, p. 46). Becoming-imperceptible refers to breaking away from the hegemonic constructs of the majoritarian register and entering the radically other domain of minoritarian thought. Becoming-imperceptible, then, does involve becoming indiscernible in the sense that the majoritarian gaze cannot penetrate minoritarian territory. Majoritarian surveillance does not and cannot operate here because majoritarian thought denies the minoritarian realm and there is no Memory of that which has been excised. This is "no-man's-land" (Deleuze & Guattari, 1980/1987, p. 293). There are (in)sights and memories here, but they are not collected, organised, recorded and recollected by the majoritarian Memory. The (in)sights and memories are available for rewriting (the) wor(l)d, however, by those who enter this molecular realm, that is, by those who undertake the process of becoming. Thus, the molecular politics of becoming can contribute to the utopianism of environmental education. Indeed, Colebrook (2000, p. 17) argues that "any movement of utopianism or politics of the future is perhaps best thought of through a Deleuzian notion of becoming".

In summary, Deleuze and Guattari's figuration of becoming informs *this* 'conclusion' by opening up a space in which it is possible to grapple with the notion of a conclusion without reverting to dichotomising logic which threatens to collapse 'the neighbourhood of'; and it provides a means to grapple with the idea of concluding a project on uncertainty without resorting to totalising practices which would undoubtedly render uncertainty certain. Deleuze and Guattari's becoming can also be of great strategic value to environmental education's overt political agenda. The entanglement of the majoritarian and minoritarian realms enables becomings to produce tangible effects.

BECOMING-UNCERTAIN

In this troubled conclusion I advance that becoming-uncertain ought to be both a pedagogical venture and a key educational objective in environmental education. However strange this may *sound*, the hyphen indicates that 'becoming-uncertain' is distinct from 'becoming uncertain'. 'Becoming-uncertain' is not the path to, or arrival of, incertitude. Becoming is a pedagogical venture; it is a process that involves opening up spaces within present conditions, enabling de-territorialisations and re-territorialisations of dominant knowledges (Iyer, 2002). Accordingly, becoming-uncertain designates the *experience* of thinking the concept of uncertainty differently, *experiencing* the capacity of the concept of uncertainty to affect and be affected when freed from the domination of majoritarian politics, and *experiencing* the possibilities that becoming-uncertain opens up, forecloses or transforms. Thus, both the general notion of 'becoming' and the specific notion of 'becoming-uncertain' designate purposeful processes, which enable this conclusion to reflect upon and evaluate the denouement of this project, the 'aims' and 'objectives', and the 'findings' of this project. However, the disruption that becoming effects in the beginning/end binarism requires the notions of purpose and purposeful processes to be thought differently. Purpose and purposeful processes need to rethought in terms of opening up new spaces. Open-endedness and purpose are not cast in binary opposition.

DENOUEMENT OF THIS PROJECT: 'AIMS' AND 'OBJECTIVES'

The denouement of this project was framed by 'aims' and 'objectives' that were placed under erasure (*sous rature*). The 'aims' and 'objectives' were regarded as being *parergonal* (Derrida, 1978/1987), that is as frames that don't just or simply divide inside from outside. The 'aims' and 'objectives' delimited the scope of the inquiry and sanctioned the lines of inquiry that could be legitimately admitted, whilst the nature and legitimacy of the 'aims' and 'objectives' were systematically and necessarily inscribed by the text. This mutual inscription challenges and complicates delimitation; it allows neither the unproblematic appointment of frames nor the "dream of the pure and simple absence of a frame" (Derrida,

1978/1987, p. 73). As a result, care was taken to avoid a rigid formulation of the 'aims' and 'objectives' because such an approach upholds an unproblematic view.

'AIMS'

Two broad aims guided the denouement of this research project. Neither could be described as the principal aim, but one logically preceded the other. The first of these aims was to explore the (im)possibility of theorising uncertainty in a manner that respected uncertainty *as* uncertain. This aim can be read as a desire for becoming-uncertain. It was argued that to theorise uncertainty differently, to render uncertainty certain, would eradicate the topic of investigation and deprive uncertainty of the honour of its name. This approach is an ethical imperative from postmodernist/poststructuralist perspectives, which can be characterised by their concern for the Other. However, the aim to respect uncertainty *as* uncertain has a seemingly tautological quality. It does not quite comply with the 'A is A' formulation of a strict tautology, but it is close to it. This closeness to tautological form caused considerable concern at the outset of the project. The cause of this concern can be discerned in Corcoran's description of tautology: "Since tautologies do not exclude any logical possibilities they are sometimes said to be 'empty' or uninformative; there is even a tendency to deny that they are genuine propositions and that knowledge of them is genuine knowledge" (Corcoran, 1995, p. 788).

The mapping of prospective methodologies for theorising uncertainty in a manner that respected uncertainty *as* uncertain was in no way ancillary or subordinate to the enactment of that theorisation. The mapping involved readings of constructive consonance (Drees, 1988, 1990), fallibilism (Peirce, 1931) and rhizomatics (Deleuze & Guattari, 1980/1987). Constructive consonance and fallibilism were rejected during the denouement of this project because of their modernist orientations. Nevertheless, each has the potential to contribute to theorisations of uncertainty and other themes in the contested 'neighbourhood of' environmental education; constructive consonance offers a strategic means to

mediate critical theory and postmodernism, and fallibilism offers a theoretical framework for engaging scientific uncertainty. Deconstruction is also a valuable approach for postmodernist/poststructuralist research in environmental education. However, deconstruction was not investigated as a method for this project because deconstruction yields its 'best' results on comprehensive texts which purport to have all the loose ends neatly 'tucked in'. Deconstruction was excluded on this basis because the present engagements of uncertainty in environmental education are sparse and underdeveloped.

Deleuze and Guattari's (1980/1987) rhizomatics was ultimately selected because it enabled a theorisation that respected uncertainty *as* uncertain that was neither 'empty' nor 'uninformative'. This is possible because of Deleuze and Guattari's rejection of the majoritarian Platonic mode of individuation. Instead of grounding identity in an inner set of qualities that can be set in contradistinction to all other sets, Deleuze and Guattari locate identity in outward connections; concepts, organisms, systems of ideas and institutions become individuated by their capacity to affect and be affected. Thus, it was possible to theorise uncertainty by asking questions such as: What does uncertainty connect with? What is its capacity to affect and be affected? How can we position theory and practice in relation to uncertainty? Addressing these kinds of questions avoids the violence of rendering uncertainty certain and provides a rich theoretical terrain to inform curriculum and pedagogical questions. This illustrates the productive entanglement of majoritarian and minoritarian politics and the transformative potential of that entanglement. Rhizomatics provides a *process* for becoming-uncertain.

This first aim was two-pronged. In addition to exploring the (im)possibility of theorising uncertainty in a manner that respected uncertainty *as* uncertain, it was anticipated that such a theorisation might have relevance beyond environmental education and the broader arena of education. This bold sub-aim was advanced because it was necessary to draw beyond the conceptual resources available in environmental education; the conceptual resources in environmental education

were inadequate for the task. As a result, the project drew on postmodernist/ poststructuralist philosophy and literary theory, which inform a diverse range of disciplines. On reflection, it appears that this bold sub-aim has been met; the postmodernist/poststructuralist theorisations of uncertainty that have been advanced have the capacity to inform contemporary debates in feminist theory. Uncertainty is a recurrent theme in feminist theorising and feminists often articulate uncertainty to topics that have featured in this project: subjectivity (Gardiner, 1995; Kushner, 2002), epistemology (Rose, 1997), ethics (Clifford, 2002), political and social change (Crowley, 1999; Gardiner, 1995; Moss & Matwychuk, 2000), difference (Mullings, 1999), open-endedness and possibilities (Moss & Matwychuk, 2000). The connections that are made between uncertainty and these themes, however, are often under-theorised and intuitive. In the context of difference, Mullings (1999, p. 337) argues that: "recognising and naming these uncertainties is an important step towards not only establishing rigor in the research process, but also displacing the indomitable authority of the author". Thus, the theorisations of uncertainty presented in this project, especially narrative uncertainties, may be of interest to feminist theorists beyond the education arena.

The second aim of this project was to articulate to and extend postmodernist/poststructuralist discourse in environmental education and to contribute to the contestation that comprises 'the neighbourhood of' environmental education. In relation to the former aspect, this project has articulated to postmodernist/poststructuralist constructions of (the) environment through narrative theory (Gough, 1993, 1998b; Stables, 1996, 1997), the deconstruction of subjectivity (Dillon et al., 1999; N. Gough, 1997, 1999a; Payne, 2000) and eco-political agency (N. Gough, 1999a; Payne, 2000). Each of these articulations has extended the already-said by theorising the play of uncertainties in these themes and by admitting the notion of radical alterity as per Adorno (1966/1973) and Levinas (1961/1991, 1974/1991). This project has also articulated to current postmodernist/poststructuralist discourse in environmental

education by drawing on the philosophies of Barthes (1957/1972, 1966/1987, 1968/1977, 1971/1977), Derrida (1967/1978, 1972/1981, 1972/1981, 1972/1982, 1977/1979, 1978/1987, 1980/1987, 1988, 1993/1994, 1991/1995) and Lyotard (1983/1988, 1984, 1992, 1985), yet it has extended the current postmodernist/poststructuralist discourse in environmental education by drawing on these philosophies in greater depth than previous engagements and by substantively mobilising the philosophies of Deleuze and Guattari (1980/1987) and Levinas (1961/1991, 1974/1991). However, this project has not articulated to Foucauldian discourse in environmental education, such as that being undertaken by Ferreira (1999/2000). A conscious decision was made to not articulate to Foucault's corpus in a structural manner when the possibilities and the practicalities of this project were being mapped. This was a pragmatic decision; engaging with Foucault's corpus in a structural manner as well as the work of the other postmodernist/poststructuralist philosophers mentioned above would have taken the scope of this project beyond a manageable limit. However, Foucauldian themes have been used for illustrative purposes.

It is anticipated that this project will add to the contestation that comprises 'the neighbourhood of' environmental education. In particular, it is anticipated that the narrativisation of (the) environment will draw fierce criticism from those committed to realist ontologies and the Gaianist orientation. Whilst those committed to critical realism problematise the notion of transparent access to 'reality' by admitting biases introduced by the socio-cultural construction of reality and theory-ladenness, they have not challenged the notion of reference. Thus, the critique of logocentrism and Derrida's famous remark that "*there is nothing outside of the text*" (1967/1976, p. 158, Derrida's emphasis) are likely to continue to be read as a denial of the materiality of (the) environment. It is also likely that Gaianists will strenuously object to the critique of logocentrism because it prevents environmental Truths and Values being grounded in (the) environment. Critical realists who uphold Huckle's (2002) rendition of dialectical materialism will necessarily have to reject those aspects of this project that admit the notion of

radical alterity. Accordingly, those critical realists will necessarily question the notion of a Levinasian eco-ethics that has been advanced. It is also anticipated that the deconstruction of the indoctrination debate is likely to intensify the debate around that issue simply because it is such a sensitive issue in environmental education. Thus, this project can make substantial contributions to the contestation that constitutes 'the neighbourhood of' environmental education.

'OBJECTIVES'

The first and second objectives of this project were undertaken collectively. Together, these objectives involved the enactment of a theorisation of uncertainty that respected uncertainty *as* uncertain in the context of environmental education. This was undertaken by enacting Deleuze and Guattari's (1980/1987) cartography, also known as rhizoanalysis, nomadism, schizoanalysis and micro-politics. Cartography is a three-fold process: tracing, mapping and decalcomania. Tracing involves following the denouement of the theoretical terrain that has already been configured in the field and extending the already-said by following the paths that have been preconfigured. The tracing stage was undertaken in Chapter Three and although the existing engagements with uncertainty in environmental education are sparse and underdeveloped, the tracing process drew a surprisingly diverse terrain into relief. This terrain included engagements with scientific uncertainty and allied concepts, such as risk, ignorance, indeterminacy and the precautionary principle (Diduck, 1999; Diduck & Sinclair, 1997b; Panel for Education *for* Sustainable Development, 1998; Rosenbaum & Bressers, 2000; Scott, 2001), chaos theory (Hardy, 1999a), and curriculum development (Gough & Scott, 2001). Interestingly, the projects that constitute this diverse body of work explicitly take normative positions in relation to uncertainty, although these positions are polarised.

Mapping, the second stage, enabled the third objective to be pursued, as well as being integral to the realisation of the first and second objectives. The third objective involved the articulation of the postmodernist/poststructuralist

theorisations of uncertainty to key themes in environmental education, with particular attention to environmental values education and engaging indigenous voices. The mapping stage constituted the major component of this project, with Chapters Four, Five and Six being devoted to this task. The lines of flight followed divergent trajectories into Levinas' (1961/1991, 1974/1991) ethics of responsibility, narrative theory, Stone's (1995) feminist formulation of *as if friends* and deconstructive literacy. The articulation of these lines of flight to key environmental education themes will be elaborated in the later section, 'Revisiting Environmental Education'.

These lines of flight also made a crucial contribution to the first objective, to explore the (im)possibility of theorising uncertainty in a manner that respected uncertainty *as* uncertain. Specifically, these trajectories resulted in divergence, juxtaposition, overlap, contiguity and incongruence. Thus, multiple theorisations were presented and this multiplicity does not submit to resolution in a meta-narrative. This multiplicity that refuses to submit to dialectical resolution in order to form a coherent stability prevents uncertainty being rendered certain and is, thus, essential to any theorisation that is committed to respecting uncertainty *as* uncertain.

The final stage of cartography, decalcomania, was performed in Chapter Seven. This final stage enabled the fifth objective to be pursued, as well as contributing to the realisation of the first, second and third objectives. The fifth objective was to investigate whether the postmodernist/poststructuralist engagements with uncertainty de-territorialise and re-territorialise existing engagements with uncertainty in environmental education and to identify the existence, if any, of other sites in environmental education that have not been hitherto identified as sites in which to engage postmodernist/poststructuralist uncertainties. Decalcomania was essential for this task.

Deleuze and Guattari critically appropriate the term 'decalcomania' from the fine arts and deploy the term to refer to the process of putting the tracing(s) over

the map(s) in order to discern non-correspondences and to investigate the effects that the map(s) can induce in the tracing(s). Thus, decalcomania has a decidedly deconstructive aspect. Two approaches to decalcomania were possible: the first involved the identification of a small number of non-correspondences and performing detailed analyses of the implications of the theorisations of uncertainty; whereas the other approach was a broader treatment that analysed a greater number of non-correspondences in less detail.

The latter approach was adopted as the non-correspondences were heterogenous. Thus, it allowed a diverse range of environmental education themes to be analysed: scientific uncertainty, the precautionary principle, chaos and complexity theories, curriculum development, identity, agency and environmental values education. The broader treatment afforded by the latter approach enabled the fifth objective to be engaged more substantively. The analyses that the broader approach enabled are elaborated in the later section, 'Revisiting Environmental Education'. The latter approach was also taken on pragmatic grounds to compensate for the absence of 'going to the field' in the conventional empirical sense. Thus, the analyses undertaken are introductory and, as such, represent sites for further research.

The fourth objective of this project was to explore the efficacy of one of the objectives advanced by the Panel for Education *for* Sustainable Development (1998). The particular objective under consideration stated that students should: "understand the concept of cultural change in the shift from the certainties of the modern age to the uncertainties of the postmodern age, and what opportunities this may afford for realising a more sustainable society" (1998, p. 11) . In the absence of postmodernist/poststructuralist theorisations of uncertainty in environmental education and the broader arena of education, environmental educators could do no more than draw on intuitive understandings of 'postmodern uncertainties' in their enactments of this objective. The lack of a theoretical framework to envision 'postmodern uncertainties' affirmed and fuelled the aim to theorise uncertainty in a manner that respects uncertainty *as* uncertain.

Concomitantly, this project sought to explore the 'opportunities' that the Panel for Education *for* Sustainable Development identified with the shift to the uncertainties of the postmodern age. Given the lack postmodernist/ poststructuralist theorisations of uncertainty, this conjunction was intriguing. It could signal nothing more than hope and faith, an appeal to serendipity. There was no reason to presume that postmodern uncertainties would be associated with opportunity rather than disaster. The lines of flight pursued in this project, however, forged pathways in 'the neighbourhood of uncertainty' and advanced possibilities for engaging uncertainty in environmental education in ways that may afford opportunities to realise more sustainable futures, such as a Levinasian eco-ethics, deconstructive literacy and *as if friends*, each of which can be read as a means of becoming-uncertain. This is discussed further in the following section.

'FINDINGS'

Contradictory meanings have been attributed to the term 'findings' throughout history. During the twelfth century, 'finding' designated the action of inventing or devising and its root 'find' designated 'to go' or 'to journey'. In the sixteenth century, however, 'finding' was rewritten; the action of inventing or devising was replaced by the action of uncovering (Oxford English Dictionary). Deleuze and Guattari's (1980/1987) juxtaposition of rhizomatic and arborescent logic resonates with this sematic shift. Deleuze and Guattari do not deny arborescent logic and the contemporary rendition of 'findings', but they challenge the hegemony of arborescent logic and the contemporary rendition of 'findings' and the constraints that they impose on the intellectual landscape. According to Deleuze and Guattari, knowledge is also actively *constructed* by forging rhizomatic connections that draw disparate elements together. Furthermore, Deleuze and Guattari articulate rhizomatics to nomadism. As a result, Deleuze and Guattari's rhizomatics accords with the medieval rendition of 'findings'. Therefore, the contemporary meaning that is attributed to 'findings' is conspicuously at odds with the rhizomatic approach adopted in this project. Even though the term 'findings' has been placed under erasure thus far, it will be discarded and the term

'intensities' will be used instead. The term 'intensities' is used to designate a volatile juncture where disparate elements are held together in an intensive state creating a dynamism that in this instance affects and is affected by theories and practices in 'the neighbourhood of' environmental education.

This project constructed four major intensities – Levinasian eco-ethics, narrative uncertainties, *as if friends* and deconstructive literacy – and each of these intensities involves the experience of thinking the concept of uncertainty differently, experiencing the capacity of uncertainty to affect and be affected, and experiencing the possibilities that are opened up. Of these four intensities, Levinasian eco-ethics, *as if friends* and deconstructive literacy can be read as modes of becoming-uncertain. The play of narrative uncertainties is an important element in each of these modes of becoming-uncertain, but it does not in and of itself constitute a mode of becoming-uncertain. Levinasian eco-ethics, *as if friends* and deconstructive literacy each involves a departure from the majoritarian register of politics into the minoritarian register, but the departure is incomplete and this incompleteness is essential to utopian politics that strive to effect changes in (the) wor(l)d. The minoritarian and the majoritarian are entangled, which enables agency. Accordingly, Levinasian eco-ethics, *as if friends* and deconstructive literacy can be read as agentive pedagogical ventures that promote becoming-uncertain in environmental education.

LEVINASIAN ECO-ETHICS

This intensity draws together: the rendition of uncertainty advanced by the Panel for Education *for* Sustainable Development (1998); Levinas' (1961/1991, 1974/1991) ethics of responsibility; Llewelyn's (1991) cross-reading of Levinas, Heidegger and others; the anthropocentrism (Li, 1996) versus the non-anthropocentrism (Snauwaert, 1996) debate in environmental values education; environmental education's commitment to eco-political agency (A. Gough, 1999; Gough, 1994b, 1999a); the advocacy of narrative theory in environmental education (Gough, 1993; Stables, 1996, 1997, 2003) and narrative uncertainties.

The Panel for Education *for* Sustainable Development casts uncertainty as the conjunction of the plurality of discourses that does not admit to dialectical resolution in a meta-narrative and the limitation of knowledge. Thus, engaging uncertainty as the conjunction of the plurality of discourses and the limitation of knowledge in a manner that eludes/transgresses majoritarian politics would constitute a mode of becoming-uncertain. This mode of becoming-uncertain can be undertaken by participating in Levinas' ethics of responsibility.

Levinas' ethics of responsibility disrupts majoritarian politics by: welcoming the utter excessiveness of the Other, the Saying (*le Dire*), which defies totalisation through thematisation, the Said (*le Dit*); decentring the self-sufficient humanist subject by locating the construction of subjectivity in the heteronomous face to face relationship; challenging the modernist myth of seamlessness by accentuating the fractured movement from the ethical realm of the face to face to the political realm; and by replacing the economistic appraisal of value with a responsibility that exceeds all quantification and that cannot be abrogated or delegated. Levinas' ethics of responsibility is entangled in majoritarian politics, however, by the unwavering presence of the third party that inhabits the face qua face. The third party shatters the transcendence of the face to face, causing a shift from the ethical to the political domain where *response ability* for the Other can be enacted. The shift from the ethical to the political domain necessitates that the "Saying is fixed in the Said, is written, becomes a book, law and science" (Levinas, 1974/1991, p. 159). The shift from the Saying to the Said epitomises the entanglement of the majoritarian and minoritarian. Yet this shift can and must be read concomitantly as a narrative enterprise, which further disrupts majoritarian politics by admitting the play of narrative uncertainties. Thus, Levinas' ethics of responsibility can be regarded as an ethics of becoming-uncertain.

Following Levinas, this ethics of becoming-uncertain attends the realm of human sociality. This is germane to environmental education given its commitment to social justice. However, becoming-uncertain through Levinas' ethics of responsibility can be extended to incorporate environmental ethics

through Llewelyn's (1991) cross-reading of Levinas, Heidegger and others. Both Levinas' ethics of responsibility and Llewelyn's extension can inform environmental education practice. Specifically, becoming-uncertain through these ethics can be promoted by providing learning experiences that: promote receptivity to the Other; challenge the myth of seamlessness by accentuating the fractured movement from the ethical to the political domain; and shift the focus of the normative aspect of environmental education away from the concept of values and its corollary of ranking, to Levinas' thesis of responsibility for the Other.

DECONSTRUCTIVE LITERACY

Practising deconstructive literacy can also be read as a pedagogical enterprise that promotes becoming-uncertain. The link between deconstructive literacy and uncertainty arises from the narrative uncertainties that deconstruction unshackles and mobilises within the text. This can be regarded as a mode of becoming in Deleuze and Guattari's sense because deconstruction is a minoritarian mode of politics and it is inextricably entangled in majoritarian politics, which enables deconstruction and narrative uncertainties to manifest tangible effects in the molar register.

Practising deconstructive literacy can be read as a minoritarian mode of politics because it does not submit to the philosophical assumptions that configure majoritarian politics. The minoritarian philosophical assumptions that guide deconstructive readings challenge and complicate the customary notion of reference through the critique of logocentrism, decentre and resituate (the) subject, disrupt the naturalness and purported self-evident nature of binarisms, and probe the margins and silences of the text, all of which render the familiar strange and contingent and demonstrate that the witting, or unwitting, construction of the familiar privileges specific ends.

However, deconstruction is inextricably tied to majoritarian politics; it cannot effect a 'transgression' (Derrida, 1972/1981). The entanglement of

deconstruction in majoritarian politics occurs at many levels. At the abstract level, deconstruction is entangled in majoritarian politics because each deconstructive gesture is counter-signed by its constitutive other. This counter-signature occurs because both minoritarian and majoritarian politics are inscribed in language; each occurs in the endless chains of signification that ultimately become entangled. At a more concrete level, deconstruction is entangled in majoritarian politics because it is applied to majoritarian texts or to the effects of majoritarian politics that are inscribed in texts that claim minoritarian allegiance. This more concrete form of entanglement was prominent in this project because a deconstructive stance was adopted towards majoritarian motifs in environmental education, such as environmental knowledge, eco-political agency and environmental values education.

Thus, practising deconstructive literacy in environmental education can be read as a mode of becoming-uncertain because it involves *thinking* the concept of uncertainty differently, *experiencing* the new spaces that are opened up, and *experiencing* the capacity of uncertainty to affect and be affected. Becoming-uncertain enables learners and environmental educators to deconstruct how customary renditions of certainty and uncertainty determine and constrain their environmental identities, their capacity and disposition towards eco-political agency and environmental knowledges. Thus, I submit that becoming-uncertain through deconstructive literacy is a strategic pedagogical approach because it promotes the awareness, knowledge, attitudes, skills and participation objectives advanced in *The Tbilisi Declaration* (UNESCO-UNEP, 1978). Becoming-uncertain through deconstructive literacy also accentuates and accommodates environmental education issues that have become prominent subsequent to *The Tbilisi Declaration*, such as political literacy, critical environmental literacy and indoctrination (Fien, 1993, 1997a, 2000, 2001; Jickling, 1992; Jickling & Spork, 1998; Stables, 1996, 1997, 1998, 2003; Stables & Bishop, 2001).

Becoming-uncertain through deconstructive literacy also affects professional practices in environmental education at another level. Environmental education

theory and practice are not anterior to deconstructive literacy or, to put it another way, environmental education is not simply the stage on which deconstructive literacy is enacted. Practising deconstructive literacy in environmental education requires environmental educators to adopt a reflexive deconstructive stance toward theory and practice. This is not to say that environmental education does not strive to scrutinise theory and practice; the contestation that constitutes 'the neighbourhood of' environmental education is testament to the lively and ongoing scrutiny within the field. Deconstructive literacy affirms environmental education's commitment to prevent the field from becoming sedimented. However, the need to deconstruct several aspects of environmental education theory and practice has been identified during the denouement of this project. These aspects specifically include the need to subscribe and respond to the irremedial inadequacy of any ethical program, the uncritical promotion of criteria-based critique as a means to avoid indoctrination and the uncritical embrace of the precautionary principle as a sound ethical platform.

AS IF FRIENDS

The intensity *as if friends* (Stone, 1995) draws together narrative uncertainties, poststructuralist feminisms, difference and indigenous knowledges in an ethical relationship that can be read as a means of becoming-uncertain. The link to uncertainty arises from the accent on preserving difference. The privilege granted to difference is most clearly expressed in Stone's composition of *as if friends* in a fictional letter to late the Senegalese feminist Mariama Bâ: "In spite of some similarities, we are to my mind, significantly different. This is the difference that I want to retain and yet communicate across" (Stone, 1995, p. 175). This preservation of difference promotes the play of narrative uncertainties. For example, subjunctive uncertainty, which obtains from the plurality of voices, is promoted by this preservation of difference. The preservation of difference also promotes the play of decentred uncertainty by obstructing logocentric manoeuvres that would erase difference by either privileging particular voices or

subsuming the diversity of different voices to a meta-narrative. The play of other narrative uncertainties follows the challenge to logocentrism.

As if friends can be read as a means of becoming-uncertain because it involves minoritarian politics whilst being entangled in majoritarian politics. The minoritarian aspect of *as if friends* arises from the commitment to refrain from erasing difference through the violent form of tolerance that accentuates sameness over difference. This commitment necessarily precludes the construction of meta-narratives on both epistemological and ethical grounds, and, in the same gesture, frustrates the apparent certainty that the construction of meta-narratives strives to procure. Plurality, discontinuity, incongruity and the uncertainties that obtain are valued as the 'uncommon ground' (Cronon, 1995) on which *as if friends* is enacted.

The entanglement of the minoritarian and majoritarian realms can be read as occurring in at least three ways. Firstly, from a negative perspective, the minoritarian and majoritarian are entangled by the constant threat that majoritarian politics poses to *as if friends*. Majoritarian politics constantly threatens to destroy the community of difference by either effecting a power takeover or fragmenting the community. Secondly, *as if friends* is entangled in both minoritarian and majoritarian politics because it is a feminist formulation. Feminist scholars have grappled with this entanglement and accede that no text, not even 'feminist' texts, can escape this entanglement because "the very categories, concepts, and methodologies available today are spawned by [patriarchal] history" (Grosz, 1994, p. 190). Finally, the minoritarian and majoritarian realms are entangled by the ways in which dominant discourses have constructed and positioned the participants and the situations in which *as if friends* is enacted. The latter has been the focus in this project and professional implications for environmental education can be advanced.

Enacting *as if friends* as a mode of becoming-uncertain has important professional implications for environmental education because it forges links with prominent contemporary issues, such as the need to disrupt patriarchal theory and

practice, and the need to include indigenous voices (Di Chiro, 1987a; Fien, 2001; A. Gough, 1997; Panel for Education *for* Sustainable Development, 1998; UNCED, 1992). Fien (2001) and Gough (1997) have emphasised the interrelatedness of these two issues and the need to address them in conjunction. *As if friends* provides a means to respond to these issues in conjunction, whilst avoiding the problems of the naïve appropriation of indigenous knowledge and romantic turns (Bonnett, 1999; Gough, 1991, 1994b; Stables & Scott, 2001; Suchet, 2002). Not only does *as if friends* create a milieu in which to deconstruct the social construction environmental knowledges and environmental issues, it also advances sociological qualities that support the establishment and maintenance of a community of difference. The attitude of *as if friends* requires openness and humility, each of which is multidimensional. These sociological qualities can inform professional practices such as curriculum development that is committed to the inclusion of different voices as per Gough and Scott (2001) as well as informing pedagogical practices for the inclusion of different voices as per the Panel for Education *for* Sustainable Development (1998).

NEW SPACES, NEW KNOWLEDGE

The intensities outlined above have opened up new spaces in existing practices for environmental education to engage uncertainty in a manner that respects uncertainty *as* uncertain. These intensities designate volatile junctures where disparate elements are held together in an intensive state. Some of the elements were available in the existing theoretical terrain; they were resources. But other elements were constructed after prying open new spaces. It became possible to think new thoughts in these new spaces; new knowledge was generated and used in combination with existing conceptual resources to construct these intensities. As the intensities took shape, however, some of the new knowledge that was integral to their construction receded into the background. It is important to recall this new knowledge to prevent these intensities from appearing self-evident.

It is possible to divide this new knowledge into that which pertains to environmental education explicitly and that which has broader applications. The new knowledge that pertains explicitly to environmental education will be presented in the following section.

The overarching contribution of this project to new knowledge is the determination that it is possible to theorise uncertainty in a manner that respects uncertainty *as* uncertain. This is possible by employing Deleuze and Guattari's (1980/1987) rendition of identity which locates identity in the act of making outward connections. This act, according to Deleuze and Guattari, is dynamic; identity is not fixed and stable; it is a work in progress. Thus, it is possible to theorise uncertainty without rendering it certain. This involves asking what uncertainty functions with, how it connects with other things, how it affects and can be affected. Thus, theorisations that respect uncertainty *as* uncertain do not valorise uncertainty and they do not make uncertainty enigmatic or unknowable. Instead, they demystify uncertainty by asking pragmatic questions that do not seek to capture uncertainty in a concept and deprive it of the honour of its name.

Although, the determination that it is possible to theorise uncertainty in a manner that respects uncertainty *as* uncertain is the overarching contribution to new knowledge, the new knowledge that will perhaps be of the greatest strategic advantage to environmental education and beyond is the formulation of the four narrative uncertainties: *subjunctive uncertainty* which arises from the openness and plurality of text; *decentred uncertainty* which arises from the refusal to ground the truth or validity of text in logocentric centres; *allegorical uncertainty* which arises from the postmodernist/poststructuralist motif that words, concepts and texts overflow their boundaries; and *poietic uncertainty* which arises from the ever-present construction of meaning following the Death of the Author. The formulation of these narrative uncertainties provides an analytical and explanatory framework for the ubiquitous and constitutive role of uncertainty in the deconstruction of knowledge, subjectivities and agency. Feminist theory appears to be a potentially receptive site for this formulation of narrative uncertainties because feminist

scholars attribute a high profile to the role of uncertainty in knowledge construction (Rose, 1997), the construction of subjectivities (Kushner, 2002), agency and social change (Crowley, 1999; Gardiner, 1995; Moss & Matwychuk, 2000). Furthermore, Mullings (1999) has voiced the need for such an analytical and explanatory frame to increase the rigour of feminist theorising.

The last contribution of new knowledge that has broad application is the determination that a relationship, in the strong sense, exists between ethics and uncertainty in postmodernist/poststructuralist thought, as per Derrida (1999) and Levinas (1961/1991, 1974/1991). This is important because whilst uncertainty is taken variously to be a symbol, theme and consequence of postmodernist/ poststructuralist thought and postmodernist/poststructuralist thought has a strong ethical character due to its attentiveness to the Other, this conjunction is not sufficient to claim a relationship between uncertainty and ethics in postmodernist/poststructuralist thought: ethics and uncertainty could simply coincide without any relationship existing between them. The analysis of a relationship between ethics and uncertainty through the theme of excess, however, enabled a strong relationship to be advanced and defended.

A final comment can be made as a result of these three contributions to new knowledge. It is common to encounter claims that herald postmodernism as the Age of Uncertainty, but given that uncertainty is taken variously to be a symbol, theme and consequence of postmodernist/poststructuralist thought, such claims seldom, if ever, rise above rhetoric. The new knowledge constructed in this project, however, provides conceptual resources that enable discussions of postmodernist/poststructuralist thought and uncertainty to move beyond rhetoric to substantive dialogue. This could be regarded as a fourth contribution to new knowledge.

REVISITING ENVIRONMENTAL EDUCATION

Enacting the third stage of Deleuze and Guattari's cartography, decalcomania, resulted in new spaces being opened up in existing knowledges and practices in

environmental education. It became possible to think new thoughts in relation to existing engagements with uncertainty scientific uncertainty and the precautionary principle, and chaos and complexity theories. It also became possible think about the implication of uncertainty in the social construction of (the) environment, identity, agency, environmental values education and including indigenous voices. The social construction of (the) environment and identity formation had been loosely identified as sites to engage uncertainty by the Panel for Education *for* Sustainable Development (1998) and Payne (2000), respectively. The remaining themes, however, had not been explicitly articulated to uncertainty. The following sections briefly review this project's contributions to these themes in environmental education.

Scientific Uncertainty and the Precautionary Principle

The majority of environmental education's engagements with uncertainty address scientific uncertainty (Adams, 2001; Ashley, 2000; Diduck, 1999; Diduck & Sinclair, 1997a; Panel for Education *for* Sustainable Development, 1998; Rosenbaum & Bressers, 2000; Scott, 2001), in which a totality and an irreducible lack coincide without either losing integrity. The commitment to totalities that scientific uncertainty requires has been ardently rejected in this project. Nevertheless, this project does not and cannot reject the notion of scientific uncertainty. Rather, it subscribes to the views that scientific uncertainty is wholly contingent upon context and that that context, like all contexts, is constructed upon constitutive blindnesses. Thus, this project argues that the social construction of scientific uncertainty should be made more visible and open to analysis. This draws the issues of disciplinary power and the politics of representation into relief. This project advocates that participants in environmental education should use deconstructive literacy to discern which environmental issues are being designated as uncertain, which issues are being silenced and whose interests are being served.

Many of the engagements with scientific uncertainty welcome the precautionary principle, which has been paraphrased into environmental education as "thoughtful action in advance of scientific proof" (quoted in Ashley, 2000, p. 272). The precautionary principle is widely applauded in environmental education, education *for* sustainable development and education *for* sustainability as a stance that promotes ethical action in the face of scientific uncertainty (Ashley, 2000; Fien, 2001; Panel for Education *for* Sustainable Development, 1998; UNCED, 1992). However, the renditions of the precautionary principle that have been admitted in environmental education have been uncritically simplified. This simplification has resulted in the precautionary principle being presented as an ethical principle. However, this project argues that the precautionary principle is an epistemological manoeuvre that provides an escape route from the impasse that results when totality and irreducible lack coincide in scientific uncertainty. The ethical dimension of the precautionary principle is an optional extra that can be jettisoned easily. This is not to say that the precautionary principle cannot or should not be embraced as an ethical platform in environmental education. However, it should be recognised as a precarious platform. At present, the precautionary principle is being heralded as a key element in 'responsible environmental citizenry'. Responsible environmental citizenry would be better served by deconstructive readings of the applications of the precautionary principle.

Chaos and Complexity Theories

Engagements with uncertainty through chaos and complexity theories in the broader education arena have resulted in implications being advanced for learning processes (Hardy, 1996, 1999a; Sawada & Caley, 1985; Tillmann et al., 2000) and the dynamics of education settings (MacPherson, 1995; Sungaila, 1990). These proposals are highly contested; some education theorists claim direct links between chaos and complexity theories and education, whereas other support metaphorical engagements. This polarisation occurs in environmental education: Gough (1998d) advances that chaos and complexity theories should be

approached as heuristic metaphors for education, whereas I have previously argued for more direct applications (Hardy, 1996; 1999a).

The previous argument that I advanced drew on findings from neural physiology and behavioural biology (Allman, 1993; Tillmann et al., 2000) to argue that learning can be modelled by chaos and complexity theories. The argument then turned to Doll (1993), who, it was argued, translated the abstractions from science and mathematics into concrete curricular and pedagogical guidelines. This project has re-read the shift to Doll's transformative curriculum vision. As a result, I advance: that the shift from studies in neural physiology and behavioural biology to Doll's curriculum vision uncritically transgressed the correspondence/metaphor divide; this shift resulted in two separate arguments being presented under the guise of one seamless argument; and that this transgression resulted from the privilege afforded to scientific and mathematical discourses.

This project has also re-read Doll's curriculum vision and argued that whilst Doll considers metaphors from chaos and complexity theories in light of the process philosophies of Dewey and Whitehead, there are strong Derridean themes. Doll can be read as upholding the critique of logocentrism, which enables the play of narrative uncertainties to be engaged through deconstructive literacy. As a result, I advance that Doll's metaphorical approach provides an analytical and explanatory framework for engaging uncertainty as an integral and constitutive element of curriculum. Furthermore, I argue that Doll's curriculum vision provides a framework that enables deconstructive literacy to be enacted. Conversely, I argue that hope for a correspondence between chaos and complexity theory and education requires the installation of a 'black box'. This mystifies the dynamics of uncertainty. Thus, I renounce my previous support for a correspondence between chaos and complexity theories and education; I align myself with Gough's conviction that chaos and complexity theories should be approached as heuristic metaphors for environmental education. However, the argument that I advance goes beyond that advanced by Gough by considering the

play of uncertainty in the deconstruction of knowledges, subjectivities and agency in Doll's curriculum vision.

The Social Construction of (the) Environment

The notion of (the) environment as a social construct can be upheld across most philosophical orientations in 'the neighbourhood of' environmental education, although the meanings assigned to the 'social construction of (the) environment' differ greatly. For positivists, postpositivists and classical liberalists, the social construction of (the) environment refers to the intentional or unintentional alteration of *the* material environment. As such, the social construction of (the) environment has been occurring since the dawn of humankind. Contemporary liberalists, critical theorists and poststructuralists differ from positivists, postpositivists and classical liberalists by subscribing to the power/knowledge complex. However, disparities proliferate beyond this broad level of agreement. The contemporary liberalists and critical theorists admit the influence of some restrictive social influences in the construction of knowledge and ignore others (Feinberg, 1975). This view casts some aspects of (the) environment as prediscursive, which constrains the extent to which we can participate in the social construction of (the) environment. Poststructuralists following Derrida, however, subscribe to the view that all knowledge is mediated by language. This challenges and complicates the issue of reference. This does not amount to a denial of the materiality of (the) environment, but it decentres *the* environment as the ground of our truth claims, which means that (the) environment becomes intelligible at the "moment we name it and imbue it with meaning" (Di Chiro, 1987b, p. 25).

This project has subscribed to the view that all knowledge of (the) environment is mediated by language; it has treated (the) environment as text that can be re-written differently. This view, which is also upheld in environmental education by Gough (1993, 1998d, 1999a) and Stables (1996, 1997), enabled the four forms of narrative uncertainty to be mobilised in order to understand the

constitutive role of uncertainty in the social construction of (the) environment. This second aspect extends Gough's and Stables' readings of the social construction of (the) environment, which do not attend explicitly to the role of uncertainty. A link between uncertainty and the social construction of (the) environment has been advanced in the report presented by the Panel for Education *for* Sustainable Development (1998), but this link is underdeveloped. This is not a criticism of the panel's report; the development of the link between uncertainty and the social construction of (the) environment would have required a theorisation of 'postmodern uncertainties', which was beyond the purpose and scope of the report. Instead, the panel simply advances links between uncertainty and the plurality of environmental knowledges constructed by different groups and advocates that this plurality should be engaged in environmental education. However, the absence of a theorisation of 'postmodern uncertainties' enables the plurality of voices to be discursively denigrated to equivocation about *the* environment, which re-installs *the* environment as the centre of environmental discourse. This project prevents this logocentric manoeuvre by drawing on the critique of presence when theorising narrative uncertainties. This project also argues that Stone's (1995) formulation of *as if friends* can be used as a pedagogical approach that preserves difference during intertextual readings of (the) environment. This provides a practical approach for environmental educators to prevent the plurality of voices to be discursively denigrated to equivocation about *the* environment.

Identity and Agency

The lines of flight forged in this project mapped the constitutive role of uncertainty in the formation of identities and agency. Identity formation has been identified as a site where uncertainty plays a role by Payne, who emphasises that "identities are unevenly formed and uncertain" (2000, p. 82). However, Payne does not elaborate how identities are uncertain and he openly rejects deconstruction. In contrast, Dillon et.al. (1999) and Gough (1999a) advocate the

introduction of deconstructive views of identity, but do not acknowledge the role of uncertainty in the formation of identities.

This project has contributed to this discussion in environmental education by theorising the role of uncertainty in deconstructive views of identity. Given that this project subscribed to the view that all knowledge and experiences are mediated by language, it has, as a matter of logical consistency, embraced the textuality of subjectivity. This posits subjectivity as a construction that emerges from the play of differences and deferrals rather than a fixed, stable and unitary entity. Thus, the play of narrative uncertainties can be mobilised and different subjectivities can be constructed. Most importantly, following the Death of the Author, (the) subject exercises a degree of control or influence and, hence, responsibility for the construction of subjectivities rather than being at the mercy of capricious texts and/or tyrannical authors.

Accepting responsibility for the construction of subjectivities signals links to agency. Fien (1993) has underscored the importance of the question of identity in environmental education, especially with respect to the notion of agency. Thus, the mapping of uncertainty's role in the construction of identities and agency was laid over Fien's theorisation. This enabled Fien's work to be read differently. It was acknowledged and respected that Fien uphold critical theory, but the licence to re-read his work from a postmodernist/poststructuralist perspective was based on the links that he forges with Foucault (1980). Giddens' work was also re-read as Fien draws on Giddens' (1979, 1981 1982a, 1982b, 1984) social theory.

Giddens' (1987) support, albeit reserved support, for postmodernist/ poststructuralist themes, such as the Death of the Author, and his view that identity is located in "the capacity to *keep a particular narrative going*" (1991, p. 54, Giddens' emphasis), enabled the conclusion that being attentive to narrative uncertainties through deconstructive literacy allows "the ongoing 'story' about the self" (Giddens, 1991, p. 54) to be written as a work in progress in a manner that accounts for the capacity and inclination of (the) subject to intervene in (the)

wor(l)d as an agent. This can be of strategic value to Fien's critical appropriation of Giddens' social theory into environmental education. Critical approaches in environmental education would benefit from exploring the relationship between identity and agency from the perspective of narrative theory, which enables the role of narrative uncertainties to be rendered visible and more open to analysis.

Environmental Values Education

Environmental values education is one of the essential and "essentially contested" (Robottom, 1987, p. 26) areas in 'the neighbourhood of' environmental education. Numerous competing positions and associated practices are advanced. The lines of flight forged in this project have encountered two of the most contested aspects of environmental values education: the anthropocentrism versus non-anthropocentrism debate and the thorny issue of indoctrination.

The philosophical elements of the anthropocentrism versus non-anthropocentrism debate are most clearly delineated in Li's (1996) argument that non-anthropocentrism is logically indefensible and Snauwaert's (1996) counter-argument. This debate hinges around the (im)possibility of intrinsic values. The predicament of the (im)possibility of intrinsic values drives the debate into an impasse. However, the readings of Levinas' (1961/1991, 1974/1991) and Llewelyn's (1991) ethics presented in this project enable a biocentric ethics to be advanced in environmental education that avoids the question of intrinsic value altogether.

To recapitulate briefly, for Levinas, the face to face encounter is an ethical encounter in which the Other beseeches/commands the I to refrain from the violence that would dispossess the Other of his or her otherness. This is in no way a plea/command to recognise, respect and protect the intrinsic value of the Other; it is not a question of intrinsic value at all. The utter excessiveness of the Other would be violated by the finitude of the notion of intrinsic value. Levinas

avoids the violence that the notion of value inflicts upon the other by constructing his ethics in terms of *responsibility*.

As a result of mapping Levinas' ethics and Llewelyn's ecological cross-reading of Levinas, Heidegger and others, this project contributes to the environmental values education debate by arguing that the anthropocentrism versus non-anthropocentrism impasse can be avoided by replacing ethics founded on the economistic notion of value with an ethics of responsibility. However, only postmodernist/poststructuralist perspectives in environmental education can admit the notion of radical alterity that is constitutive in Levinas' thesis. Nevertheless, this project has identified Nelson's (1995) and Page's (1992) work as other possible pathways to avoid the predicament of intrinsic value without invoking the notion of radical alterity.

Indoctrination

Indoctrination, the teaching of a body of knowledge uncritically in order to elicit acceptance and allegiance, is a highly sensitive issue in environmental education. The indoctrination debate is concentrated around liberalist versus critical approaches to environmental values education (Fien, 2000; Jickling, 1992). Liberalists advocate that values should be critiqued equally, whereas critical theorists defend the view that a committed approach to teaching particular values does not constitute indoctrination when the values in question are disclosed and subjected to critique. This project contributes to the indoctrination debate on two levels.

First, this project points out that both liberalist and critical theorists embrace the same notion of critique to avoid charges of indoctrination; both conceptions of critique embrace criteria as *foundations* that lie beyond the reach of the critical *operation*. Critical theorists and liberalists simply endorse different criteria. Criteria-based critique, however, is merely one among at least three modes of criticality. Therefore, the unproblematic advancement of one mode of criticality can be read as a means of indoctrination. Furthermore, this project advances

deconstruction as a means to avoid this mode of indoctrination. This is possible because deconstruction radically problematises the notion of criticality without resorting to a *critique of critique*, which would be deeply problematic at the very least. Deconstruction avoids the *critique of critique* because every deconstructive gesture is counter-signed by its constitutive other. As deconstruction cannot escape this entanglement, it cannot occupy a metacontextual position from which to conduct a *critique of critique*. Thus, this project contributes to the indoctrination debate by introducing more philosophical considerations.

This project also contributes to the indoctrination debate at the existing level in environmental education by advocating the use of deconstructive literacy as a means to minimise the risk of indoctrination. Specifically, it is advanced that developing critical literacy enables learners to understand how texts are configured and how they are systematically related to constitutive silences. Critical understandings can be gained about which environmental values and issues are being foregrounded and which are being marginalised. Also, developing deconstructive literacy enables learners to discern how texts are positioning them so that they will subscribe to particular views and how they can be positioned differently. These critical aspects of deconstructive literacy enable learners to recognise, deconstruct and resist indoctrination, but they do not provide a guarantee against indoctrination. Given the different levels of proficiency of learners and teachers to deconstruct texts, it is essential that safeguards are included to protect learners from unethical deconstructive practices. At a minimum, these safeguards should include: the disclosure of teachers' preferred textual reading of environmental issues and the constitutive silences that configure that reading, demonstrations that teachers' texts can be configured differently and accentuating that no reading is innocent. This provision of safeguards to protect against indoctrination aligns this aspect of this argument with Fien (1993).

Summary

The lines of flight forged in this project have made it possible to think new thoughts in relation to existing knowledge and practice in environmental education. New spaces were opened up in existing engagements with uncertainty and in environmental education themes that had not been specifically identified as sites to engage uncertainty.

This project supports existing engagements with scientific uncertainty, even though scientific uncertainty requires a commitment to totalisation, which this project stridently rejects. This seemingly contradictory position arises because this project acknowledges that the possibility of scientific uncertainty is wholly contingent upon the context in which it is constructed. This project goes beyond existing engagements with scientific uncertainty, however, by upholding that the context of scientific uncertainty should be deconstructed in environmental education in order to determine which issues are being designated as uncertain, which issues are being marginalises and whose interests are being served.

Similarly, this project argues that environmental education's engagements with the precautionary principle, which is directly related to scientific uncertainty, should be deconstructed. Hitherto, the precautionary principle has been welcomed as a sound ethical platform to guide environmental decision making. I have agued, however, that the precautionary principle is an epistemological manoeuvre to escape the impasse that arises when a totality and an irreducible lack coincide in scientific uncertainty. The precautionary principle is not an ethical principle. The ethical aspect of the precautionary principle is an optional extra that can be jettisoned easily. This does not mean that environmental education cannot or should not embrace the precautionary principle as an ethical platform, but that it should be recognised as a precarious platform. Therefore, applications of the precautionary principle should be deconstructed.

The project has also re-read engagements with uncertainty through chaos and complexity theories. This re-reading has caused me to align myself with Gough's

(1998d) conviction that chaos and complexity theories should be approached as providing heuristic metaphors for environmental education. This re-reading also required Doll's (1993) curriculum vision to be re-read. Doll can be read as upholding the critique of logocentrism, which enables the play of narrative uncertainties to be engaged through deconstructive literacy. As a result, I advance that Doll's metaphorical approach provides an analytical and explanatory framework for engaging uncertainty as an integral and constitutive element of curriculum. Furthermore, I argue that Doll's curriculum vision provides a framework that enables deconstructive literacy to be enacted.

This project supports postmodernist/poststructuralist views on the social construction of (the) environment, which involve treating (the) environment as text. This position is upheld by Gough (1993, 1998d, 1999a) and Stables (1996, 1997). However, this project goes beyond the positions advanced by Gough and Stables by using the four formulations of narrative uncertainties to analyse and explain the constitutive role of uncertainty in the social construction of (the) environment.

The critique of logocentrism that requires (the) environment to be treated as text also has implications for discussions on identity and agency. As a matter of logical consistency, (the) subject must also be regarded as text. This enables the formulation of narrative uncertainties to be used to analyse and explain the constitutive role of uncertainty in the construction of subjectivity and agency. This analysis focused on Fien's (1993) theorisation of identity and agency through Giddens' (1979, 1981 1982a, 1982b, 1984) social theory. This analysis concludes that critical approaches in environmental education would benefit from exploring the relationship between identity and agency from the perspective of narrative theory, which enables the role of narrative uncertainties to be rendered visible and more open to analysis.

Finally, the lines of flight forged in this project enabled contributions to be made to two of the most contested issues in environmental values education: the

anthropocentrism versus non-anthropocentrism debate and the issue of indoctrination. The rendition of uncertainty proposed by the Panel for Education *for* Sustainable Development (1998) enabled a line of flight to be forged from environmental education to Levinas (1961/1991, 1974/1991). Levinas' ethics of responsibility and Llewelyn's (1991) ecological cross-reading of Levinas, Heidegger and others enable the introduction of a biocentric ethics that avoids the predicaments of the (im)possibility of intrinsic value into environmental education.

This project also contributes to the indoctrination debate on two levels. Firstly, the project advocates deconstruction as a mean to avoid indoctrinating the *operation* of critique. Deconstruction enables the play of uncertainty in the operation of critique to be rendered visible and open to analysis because every deconstructive gesture is counter-signed by its constitutive other. Secondly, this project advocates the development of learners' deconstructive literacy to minimise the risk of indoctrinating the *object* of critique. It is argued that developing critical literacy enables learners to understand how texts are configured and how they are systematically related to constitutive silences. This enables the play of uncertainty in construction of environmental values and issues to be rendered visible and more open to analysis Critical understandings can be gained about which environmental values and issues are being foregrounded and which are being marginalised. Also, developing deconstructive literacy enables learners to discern how texts are positioning them so that they will subscribe to particular views and how they can be positioned differently.

OPENINGS

Many rhizomatic openings were mapped throughout the denouement of this project, but not all could be pursued. Some were not pursued because preliminary investigations indicated that the resultant rhizomatic assemblages were configured by philosophical assumptions that were contrary to those upheld in this project; whereas, others were not followed simply because of the limited time and space available. As a result, this project has mapped openings for further lines of flight

that hold promising possibilities for engaging uncertainty in 'the neighbourhood of' environmental education.

At the methodological level, both Drees' (1988, 1990) constructive consonance and Peirce's (1931) fallibilism present environmental education with opportunities to re-think and engage uncertainty in different ways. The link to uncertainty in Drees' constructive consonance arises from the rejection of the correspondence theories of truth in favour of an eclectic approach that invokes both the coherence and pragmatic theories of truth. This eclectic approach engages uncertainty because the coherence and pragmatic theories of truth are mutually exclusive. This eclecticism creates a constitutive instability that can act as a generative source of debate. However, despite the constitutive uncertainty that constructive consonance embeds into transdisciplinary dialogue, constructive consonance was not chosen as the method for this project because of its inattentiveness to the constitutive role of language in the social construction of realities, knowledges and subjectivities. Nevertheless, there are decidedly postmodern turns in constructive consonance, such as the rejection of the correspondence theories of truth, and many points of agreement between constructive consonance and critical approaches to environmental education and education *for* sustainable development, such as the existential dimension. As a result, constructive consonance may provide a useful method for those in environmental education who are committed to mediating critical theory and postmodernism, often under the banner of 'reconstructive postmodernism', such as Huckle (1999). Adopting constructive consonance in environmental education would, however, challenge and compel environmental educators to elevate notions of truth to the level of discourse, thereby, making the status and role of truth more visible and open to analysis. This would enhance contemporary debates in environmental education because although the arguments presented in these debates uphold different theories of truth, their bearing is invariably tacit.

Pierce's doctrine of fallibilism also warrants reading in environmental education. Fallibilism provides a theoretical perspective on ineradicable

uncertainty that has methodological implications. According to Peirce: "Fallibilism is the doctrine that our knowledge is never absolute but always swims, as it were, in a continuum of uncertainty and of indeterminacy" (1931, p. 70). Given Peirce's ardent support for scientific method, the doctrine of fallibilism is germane to contemporary theorisations of scientific uncertainty and can inform postpositivist approaches in environmental education, such as that advanced by Scott (2001). Further, when Peirce's fallibilism is cross-read with his formulation of the pragmatic theory of truth, resonances form between Peirce's philosophy and discussions in environmental education that articulate scientific uncertainty and the precautionary principle. Like constructive consonance, engaging Peirce's philosophy would entail rigorous debate about notions of truth in environmental education. But unlike constructive consonance, fallibilism would further privilege scientific discourse.

Further research into engaging uncertainty in environmental education through constructive consonance and/or fallibilism would yield assemblages that are thoroughly at odds with those constructed in this project, but this is not to be discouraged. Contestation is one of the greatest assets of 'the neighbourhood of' environmental education. Closer readings of constructive consonance and fallibilism would intensify and enrich environmental education's engagements with uncertainty.

The denouement of this project has also mapped openings for constructing further intensities, especially with feminist thought and indigenous voices. The link between uncertainty and feminism was initiated through the formulation of subjunctive uncertainty. According to Le Guin (1989, p. 44), the subjunctive creates the narrative "bonds of analogy, possibility, probability, contingency, memory, desire, fear and hope". The most conspicuous link to feminisms lies in the fact that these narrative bonds are stereotypically assigned to (the) feminine: correspondence/analogy, actuality/possibility, certainty/probability, surety/ contingency, satisfaction/desire, courage/fear, will/hope. Following this thread, rhizomatic links were made to a poststructuralist reading of Stone's (1995)

formulation, *as if friends*. However, *as if friends* was simply chosen as an example of the rhizomatic links that could be forged between uncertainty and feminisms. Other third wave feminist perspectives may provide further insights into engaging uncertainty in environmental education, as well as providing further strategies for disrupting patriarchal discourse, which has been identified as a priority (Fien, 2001; A. Gough, 1997).

One such further investigation of third wave feminism that is particularly relevant to this project and could be considered a logical extension of it involves feminist readings of Levinas. This opening was signalled in the reading of *as if friends*. Like Levinas' face to face relationship, *as if friends* occurs in a paradoxical space where proximity and distance coincide. The resonances between *as if friends*, Levinas and feminist readings of Levinas were not pursued, however, because the focus of the project was elsewhere at that stage and because of constraints on space. Cross-readings of feminist thought and Levinas would also be germane to this task. Howitt's (2001, 2002) and Howitt and Suchet-Pearson's (2003) cross-readings of Levinas and third wave feminisms in cultural geography provide a scholarly point of entrance that is both critical and exegetic, and they carry the analysis into areas that are of direct interest to environmental education in Australia, such as the issue of indigenous land rights. Thus, this appears to be a fertile site for environmental education to map. Furthermore, feminist readings of Levinas and cross-readings of Levinas and feminisms have not been initiated in the broader arena of education to date. Thus, this task could have implications beyond environmental education.

The notion of radical alterity has been embraced in this project and its embrace is essential if a Levinasian eco-ethics, such as that developed by Llewelyn (1991), is to disrupt the economistic appraisal of value that dominates the anthropocentrism/ecocentrism debate in environmental values education. However, only postmodernist/poststructuralist orientations in environmental education can admit the notion of radical alterity. The notion of radical alterity is inadmissible to those in environmental education who uphold Huckle's (2002)

rendition of dialectical materialism. Nevertheless, the denouement of this project opened up possible ways for those committed to Huckle's dialectical materialism to escape the bind that the economistic appraisal of value imposes on environmental values education. Further research into Nelson's (1995) notion of '*thick* concepts' and/or Page's (1992) existential 'meaning' may help environmental education to move beyond the economistic appraisal of value by avoiding the question of intrinsic/inherent/extrinsic value altogether when justifying our obligations to the environment (Carnegie, 2000).

Finally, an important area for further research that overflows 'the neighbourhood of' environmental education concerns the question of why uncertainty has emerged as a transdisciplinary issue worthy of attention. This question was not broached at all in this project because responding to this question is a thesis in its own right. A Foucauldian genealogical approach that excavates the historical layers and analyses the historically specific social practices that enabled uncertainty to emerge as a legitimate concern and object of inquiry is required. Such a genealogical approach involves analyses of the "vast heterogenous webs of social practices criss-crossed by relations of power" (Darier, 1999, p. 15). As a result, such an analysis would provide a critical account of: how uncertainty is being represented; which representations of uncertainty are being privileged, by whom and by virtue of which authority. The extensive searches conducted for this project failed to locate any such analysis. Such an analysis is important, however, because it provides a means to analyse the material effects of the social practices that are ambidextrously inscribed in contemporary theorisations of uncertainty and, more importantly, because such an understanding enables strategies of resistance to be formulated and enacted against oppressive and/or destructive material practices and their effects. The intensities constructed in this project are involved in this task. However, a genealogical analysis of uncertainty is 'bigger' than the contributions of this project.

IN-CONCLUSION

It is not possible to offer the final word in 'the neighbourhood of' because beginnings and ends have no efficacy in that irrepressibly fluid space. The notion of having the final word is also annulled in poststructuralist thought by the Death of the Author (Barthes, 1968/1977; Derrida, 1972/1981; Foucault, 1969/1988) and Deleuze and Guattari's (1980/1987) notion of 'becoming'. Each of these factors thoroughly problematises the notion of offering a conclusion, but an outright rejection of the conclusion is not an option. This is not an option because such a stance simply provides another prescription, where the absence of the conclusion serves as a 'termination-function'. The only way to overcome this dilemma is to problematise the conclusion by subscribing to the view that multiple theoretical conclusions are possible.

This is not an evasive manoeuvre. It is, instead, an acknowledgement that the meaning of the text is co-constructed by the author and the reader, and that these meanings may vary because of the different intertextual linkages enabled by respective socio-cultural contexts. The multiplicity of theoretical conclusions also arises from Barthes' (1968/1977) contention that meaning is constructed in the present rather than the recuperation of the Author's intended meaning. Therefore, the text is in a continual state of becoming in the conventional sense, which enables conclusions to be continually rewritten. Finally, a multiplicity of possible conclusions is an inevitable consequence of the rhizomatic approach: "any point of a rhizome can be connected to anything other, and must be" (Deleuze & Guattari, 1980/1987, p. 7). Hence, the intensities that have been constructed here can be dismantled and arranged differently, leading to alternative conclusions.

Each of these postmodernist/poststructuralist twists and turns thoroughly problematises the notion of the conclusion by renouncing the notion of finality; but this does not preclude the formation of situated and provisional conclusions. The readers of this work will assuredly draw their own conclusions. But in addition to those conclusions, I would like to share my conclusion with you. To

think differently is to exist differently (Gatens, 2000). Therefore, becoming-uncertain by thinking the concept of uncertainty differently, by experiencing the capacity of uncertainty to affect and be affected, and experiencing the spaces that this opens up, transforms or forecloses involves existing differently, in ways that may be more or less sustainable. I submit that becoming-uncertain is an important objective and pedagogical venture in environmental education, and that becoming-uncertain through practices such as enacting a Levinasian eco-ethics, deconstructive literacy and feminist formulations such as *as if friends* may afford more sustainable futures. Becoming-uncertain can contribute to the critical utopianism of environmental education.

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