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# CO-EVOLUTIONARY RELATIONSHIPS BETWEEN ENVIRONMENTAL ETHICS AND ENVIRONMENTAL ASSESSMENT

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## DECLARATION

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I, the undersigned, hereby declare that the work contained in this dissertation is my own original work and has not previously in its entirety or in part been submitted at any university for a degree.

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Opinions expressed in this dissertation, or conclusions made, are those of the author and are not necessarily those of the NRF.

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## ABSTRACT

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The dissertation traces the development of environmental assessment and environmental ethics as these disciplines have evolved independently in response to the global environmental crisis. The aim is to determine the extent to which they can promote the integration of the dissociated objective and subjective spheres of human valuation of the environment. This is a necessary condition, it is argued, for arresting the pathology in the human-environment relationship. The study concludes that both disciplines were initially trapped in narrow, monistic approaches, which rendered them largely ineffective. However, their evolutionary advancement, and a common grounding in a radical conceptualization of sustainable development, greatly enhances their usefulness in environmental decision-making.

## SAMEVATTING

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Die verhandeling ondersoek die evolusionêre ontwikkeling van *omgewingsimpakbepaling* en die filosofie van *omgewingsetika*, na die ontstaan van die twee dissiplines in reaksie tot die globale omgewingskrisis. Die studiedoelwit is om te bepaal tot watter mate hulle die integrasie van die gedissosieerde objektiewe en die subjektiewe sfeer van menslikeomgewingswaardering kan bevorder. Daar word geredeneer dat sodanige integrasie noodsaaklik is om die patologie in die verhouding tussen die mens en sy omgewing te stuit. Die belangrikste gevolgtrekking is dat beide dissiplines, tydens hulle aanvangsstadia, vasgeval was in 'n monistiese benadering wat hul doeltreffendheid belemmer het. Die onlangse ontwikkeling van *omgewingsimpakbepaling* en *omgewingsetika*, sowel as 'n gemeenskaplike uitgangspunt binne 'n radikale vertolking van volhoubare ontwikkeling, versterk grootliks hulle bruikbaarheid vir omgewingsbesluitneming.

## SUMMARY

### CO-EVOLUTIONARY RELATIONSHIPS BETWEEN ENVIRONMENTAL ETHICS AND ENVIRONMENTAL ASSESSMENT

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Since the early 1970s many initiatives have emerged to arrest what is described in this dissertation as the current pathology in the human-environment relationship. Important in this respect is the practice of *environmental assessment*, which has a relatively strong anthropocentric perspective in terms of dealing with the environmental crisis, and the discipline of *environmental ethics*, which deviates from the anthropocentrism of human ethics in its attempt to deliver a new moral theory of environmental value.

The dissertation has as its research intent the investigation of the individual evolutionary trajectories of environmental assessment and environmental ethics, and the co-evolutionary dialectical relationship between the two disciplines. The significance of this relationship arises from its potential to promote the integration of the objective and subjective human cultural value spheres from their dissociated state – which, it is argued, largely explains the current pathology in the human-environment relationship. Since the concept of sustainable development also seeks to promote such integration, the key question that is threaded into the research theme is one that aims to establish whether the dialectical relationship between environmental assessment and environmental ethics is aligned with the key principles of sustainable development?

Reflection on the initial evolutionary development of environmental assessment brings to the fore its very strong rational grounding in scientific materialism. In this respect, much of its focus has been on the objective assessment and prediction of development impacts pertaining to those sensory aspects of the bio-physical environment that have physical location – a procedure eminently suited to investigation and communication in value-free scientific *it-language*. In response to the imperative to accommodate social issues and the multiple subjective values that humans attach to the environment, environmental assessment has undergone significant evolutionary change, which is evident in the emergence of approaches that now integrate humans, and their social and economic traits, into the definition of environment. In this way environmental assessment is now capable of engaging the multiple subjective *I-languages* of human society and making dialogue possible with the objectivity of *it-language* employed in its traditional methods. This is reflected in the emergence of new generation approaches to environmental assessment, such as Strategic Environmental Assessment (SEA), which engage *we-language* in order to secure broad agreement on shared ideals around sustainable development - which can be articulated in spite of divergent justifications of these ideals.

Measured against the tradition of human ethics, in which the environment is valued mainly in terms of its instrumental utility, the aim of environmental ethics, which is to situate the environment as the object of human moral concern rather than one of mere utility, is considered to be a revolutionary endeavour. However, an interpretation of developments within the discipline that mark its evolutionary trajectory, indicate that the discipline has yet to deliver the anticipated revolution in value theory. In this respect, environmental ethics is still at an originary stage, which is characterised by the high degree of experimentation and uncertainty that exists within the discipline as the effects of unresolved environmental crisis triggers a divergency of different ideas and value theories intended as responses to this crisis.

The divergence in value theory is described through reference to a central dichotomy between competing arguments grounded in entrenched paradigms of instrumental environmental value, on the one hand, and 'new-paradigm' claims pertaining to either the intrinsic value of the environment or calls for radical cultural and institutional change in human society, on the other. Whilst the entrenched value paradigms are relatively familiar in terms of their close relationship with human ethics, it is concluded that the 'new-paradigm' claims are largely 'slogan-driven' at present, and cannot be defended, in the paradigmatic tradition, on the basis of tested and viable fundamental principles. The high degree of reductionism implicit in the many initiatives concerning, for example, the notion of intrinsic environmental value is a major contributing factor that explains their failure thus far to attract an allegiance that is indicative of their potential paradigm status. Paradoxically, such attempts at reductionistic and monological representations of value systems, are viewed as having a number of parallels with the reductionism of neoclassical economics, which the discipline of environmental ethics seeks to replace.

It is concluded that the evolutionary trajectory of environmental ethics is currently moving towards a practical philosophy, based on environmental pragmatism, which is accommodating of moral pluralism. *Enlightened anthropocentrism*, is one form of such philosophy, which is dialogical in the dual sense of its rejection of monological accounts of human valuation of the environment, and its differentiation from the individualistic values of conventional ethical systems. It assumes that it is a worthy cause for human culture and consciousness to be perpetuated in the long term and that it is this justification that can persuade current human generations, perhaps from a variety of value positions, to maintain the integrity and health of ecosystems on which human life and consciousness depends.

The dissertation clearly differentiates between the paradigmatic qualities of environmental assessment and the contrasting non-paradigmatic qualities of environmental ethics. In this situation, where there would seem to be little potential for discovering a *direct* dialectical relationship between the two disciplines, the rationale for incorporating the evolutionary progression of *environmentalism* as a dialectical intermediary, to reveal an *indirect* relationship between the two disciplines, is apparent. Mediated by developments in environmentalism pertaining to the crisis of *participation* and *survival*, the revealed dialectical relationship manifests as a close alignment between the new generation approaches to environmental assessment and the pragmatic ethics of enlightened anthropocentrism. Such

alignment is evident in the similar evolutionary trajectories of both disciplines, as these have been directed by the broadly acknowledged imperative of sustainable development. In this respect, it is concluded that there has been a shift away from the narrow monistic approaches that characterized early developments in both disciplines (the narrow scientific objectivity of environmental assessment; the search for a monistic theory of value in environmental ethics) towards an acknowledgement of the autonomy of multiple environmental values - the holders of which can, nevertheless, find convergence about the shared ideals of sustainable development. It is concluded that both disciplines have promoted the integration of the dissociated subjective and objective human cultural value spheres, and in this way they have the potential to contribute to an arrest of the pathology in the human-environment relationship. The enabling condition for this is the priority of *welanguage*, used to articulate shared sustainability ideals.

Whilst the imperative of sustainable development has clearly served as a catalyst in terms of the forged dialectical relationship between environmental assessment and environmental ethics, uncertainty concerning what this concept implies in practice places into question the significance of its supporting principles as a context within which alignment between the two disciplines is shown to exist. Considering certain contested core ideas of sustainable development, it is concluded that both new generation approaches to environmental assessment and enlightened anthropocentrism fit the concept's *radical* definition, which is described in the dissertation. Importantly, this offers the potential to integrate the subjective and objective human cultural value spheres, not only at a conceptual level, but also in practice. The alternative, which is a continued allegiance to the *conservative model* of sustainable development, leaves the world more or less in its current pathological state.

The *radical model* of sustainable development and the related taxonomies of environmental assessment and environmental ethics reject conservatism, and open up the possibility for the emergence of a new intersubjective moral disposition concerning human perception and valuation of the environment. This is unlikely to manifest as a narrowly defined new ideology, based on a single conceptualisation of sustainable development, but will be successful only if it is continually open to dialogue and the accommodation of different values and positions pertaining to sustainability – particularly in the multiple contexts in which these arise.

## ACRONYMS USED IN THIS DISSERTATION

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<b>CEQ</b>	Council on Environmental Quality
<b>CSIR</b>	Council for Scientific and Industrial Research (South Africa)
<b>DEAT</b>	Department of Environmental Affairs and Tourism
<b>EC</b>	European Community
<b>EIA</b>	Environmental Impact Assessment
<b>EPA</b>	Environmental Protection Agency
<b>GEAR</b>	Growth, Employment and Redistribution Policy
<b>GEO</b>	Global Environmental Outlook
<b>GIS</b>	Geographic Information System/s
<b>GNP</b>	Gross National Product
<b>IAlA</b>	International Association for Impact Assessment
<b>IBRD</b>	International Bank for Reconstruction and Development
<b>IDA</b>	International Development Association
<b>IFC</b>	International Finance Corporation
<b>ISO</b>	International Standards Organization
<b>IUCN</b>	International Union for the Conservation of Nature and Natural Resources
<b>NEMA</b>	National Environmental Management Act
<b>NEPA</b>	National Environmental Protection Act
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>RDP</b>	Reconstruction and Development Programme
<b>SEA</b>	Strategic Environmental Assessment
<b>SIA</b>	Social Impact Assessment
<b>UNEP</b>	United Nations Environment Programme
<b>UK</b>	United Kingdom
<b>UN</b>	United Nations
<b>US</b>	United States of America
<b>WCED</b>	World Commission on Environment and Development

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**INTRODUCTION**

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## 1.1 INTRODUCTION

Society faces a suite of environmental problems that could become a significant barrier to continued human evolutionary advancement. There are various perspectives on what needs to be done to halt what might be termed this current pathology in the human-environment relationship and these range from responses directed by the assignation of rights to the non-human natural environment to anthropocentric responses driven by economic imperatives. A conceptualisation of an appropriate evolutionary trajectory in the human-environment relationship, which largely encompasses this range of perspectives, is very clearly articulated in Aldo Leopold's *land ethic* (Leopold, 1991), which is discussed later in the dissertation. Interpretation of the *land ethic* suggests that such a trajectory must be shaped by principles (shared ideals) that promote *both* human well-being *and* the integrity of the biotic community (the enabling context for human well-being) into the indefinite future. It also suggests that although these principles may have their grounding in a diversity of positions pertaining to the value/valuation of the environment, they reflect a commonality in purpose that finds its locus within the relatively novel concept of *sustainable development* (Norton, 1991: 187-204).

Since the early 1970s two initiatives have evolved in response to the environmental problematic as this has been variously articulated by the environmentalist movement. The practice of *environmental assessment* [environmental impact assessment (EIA) and its derivatives], which is a key action-forcing element of environmental policy, is a response to the practical agenda of environmentalism that arguably has a strong anthropocentric perspective in terms of approach to, and rationale for, dealing with environmental issues.<sup>1</sup> This perspective differs from the purpose of *environmental ethics*, which is to address the practical agenda of environmentalism via delivery of a new moral theory that will ethically enfranchise nonhuman natural entities and nature as a whole (Callicott, 1990: 99). Although linked by their common purpose (the resolution of the environmental problematic), EIA and environmental ethics would seem to be

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<sup>1</sup> For example, O'Riordan (1986: 4-6) views EIA as a tool that enables the economic break-even point to be determined at which marginal investments in environmental enhancement balance marginal costs to human well-being; i.e. a firm grounding in 'strong' anthropocentrism.

directed differently by their respective groundings in anthropocentric and nonanthropocentric (or biocentric) appeals to environmental value. Whilst this apparent dichotomy in underpinning value theory suggests a degree of conceptual incommensurability between the two disciplines, this might not manifest in practice if the Leopoldian principles, which accommodate and link - through long term relationship - the interests of humanity and the integrity of the biotic community, are valid.

This dissertation has as its research intent the investigation of the individual evolutionary trajectories of environmental assessment and environmental ethics and, more importantly, the co-evolutionary dialectical relationship between the two disciplines. Departing from the assumption that sustainable development offers the potential to arrest the current pathology in the human-environment relationship - the concept has attracted sufficient allegiance to suggest its promise in this respect - the key question that is threaded into the research theme is one which aims to establish whether this dialectical relationship (in essence, a Leopoldian enabling condition) has its grounding in the key principles of sustainable development? Conversely, the question can also be asked if, and how, a continued dialectical relationship can help us implement the principles of sustainable development. The relevance of these questions will emerge from the discussion in Sections 1.2 and 1.3, which points to the need for such (constructive) dialectical relationship in order to integrate the currently dissociated objective and subjective aspects of human understanding and valuation of the world - in order to halt the pathology in the human-environment relationship.

To set the context for the investigation that is described in the chapters that follow, this introductory chapter is structured into four main parts.

In Section 1.2, a narrative is provided which briefly tracks some key developments in human evolutionary advancement and the influence of changing societal worldviews (how humanity perceives the environment and acts in it) in directing this advancement. The position of priority of scientific materialism in Western society - the foundation that this provides to the prevailing *rational worldview* (eg. Waller, 1980) - emerges from this narrative, and will be shown to manifest as a deep entrenchment in scientific rationality

and social utilitarianism which are perceived to be the key drivers of human progress (Rees, 1988: 275). The evolution in human-environment relationships which lead to this juncture will be described as a trajectory marked by changes that reflect shifts in dominant worldviews linked to the different epochs of human development; i.e. technological or developmental epochs that have advanced in stages from *foraging* to *industrial*, and worldview correlates that have shifted, also in stages, from *archaic* to *rational*. The interpretation of this evolutionary narrative is drawn largely from Wilber's (1996, 1998) philosophical discussion of the links between the objective, modern empirical world and the subjective world of human consciousness from which, for example, the motive for environmental ethics originates. This component of the introduction to the dissertation will provide much of the context in which EIA will later be shown to have its locus in the linguistic dominance of objective scientific method. It also provides the context for later explanation of the limitations that the rational worldview (its language, in particular) imposes on the purpose of environmental ethics, which is to develop a new *trans-rational* environmental ethic; i.e. a shift from utilitarianism to a relationship based on an allegiance to new moral considerations, still to be defined.

The dominant cultural paradigm will be shown to contrast the diminished importance attached to the subjective human value spheres (eg. moral sentiments concerning the environment, its aesthetic appreciation, etc.), which (it will be argued) should be more strongly integrated into the prevailing worldview. In this respect, the *objective language* of science will be shown to dominate the other *subjective languages* according to which perceptions and valuation of the environment are articulated. The attention directed in Section 1.3 at the significance of the objective *it-language* of science, and the subjective/inter-subjective *I-* and *we-languages* of society is intended to provide a context for discussion of the historic limitations of EIA resulting from barriers preventing effective dialogue with environmentalism. In terms of current developments, the important shift that will be described later is the primacy now afforded to *we-language* in the new generation approaches to environmental assessment and management. The significance of such language (*we-language*) also emerges in the investigation of the evolution of environmental ethics and the co-evolutionary dialectical relationship between this discipline and environmental assessment. As implied in the opening

paragraph of this chapter, *we-language* is the medium through which a critical *commonality in purpose* around achieving sustainable development can be secured through application of both environmental assessment and a pragmatic form of environmental ethics.

Since there is extensive reference to paradigms and paradigm claims throughout the dissertation, Section 1.4 provides an overview of Thomas Kuhn's interpretation of their role with respect to *revolutionary* and *normal* advancement of human understanding of the world. In this section, attention is also focused on Kuhn's interpretation of the incommensurability of competing paradigms since this could suggest an incoherency or absence of evolutionary contact between environmental assessment and environmental ethics - due to their different respective groundings in *rational* and *trans-rational* worldviews. Whilst the weak initial dialectical relationship between environmental assessment and environmental ethics will be explained through reference to the failure/deficiency of their early monological languages, the strengthening current relationship will also be described through reference to the dialogical opportunity which both disciplines now invite (in, for example, *visioning* as an element of the new generation approaches to environmental assessment, and the accommodation of *moral pluralism* in environmental ethics). The discussion presented in Section 1.4 will provide an important context for interpretation of the changes in co-evolutionary relationship and degree of commensurability that now exists between environmental assessment and environmental ethics.

The concluding section of this chapter (Section 1.5) describes the investigative method employed in the dissertation.

## **1.2 STAGES OF HUMAN TECHNO-DEVELOPMENTAL EVOLUTION AND CORRELATIVE WORLDVIEWS**

The earliest relationships between humans and the environment were those created by *foraging* (hunter-gatherer) societies that emerged between a million and four hundred thousand years ago. These societies are credited by Wilber (1996: 47) as having

achieved the *original breakthrough creativity* that enabled humans to emerge out of a given nature - the biosphere - to begin the construction of a noosphere and the evolution of *subjective mind* out of *objective nature*.<sup>2</sup> Through the noosphere conceptualisation of the world it is argued that in becoming differentiated from their evolutionary predecessors (primates, apes), humans acquired a state of consciousness that shaped an emerging *subjective worldview* - one that transcended mere sensorimotor perception - which empowered humans to direct their course of evolution. According to Reed (1989: 56), this *separateness* of humans from the objective world and the autonomy of the mind also provided humans with the potential to recognise values in nature.<sup>3</sup>

The first primal human perception of the environment is defined by Wilber as an *archaic* worldview - one that permitted a narrow (albeit broadening) range of external environmental and internal stimuli (consciousness, the mind) to shape an understanding of the world (Wilber, 1996: 74, 172). Given the early evolutionary state of human consciousness, such perception would still have been largely directed by sensation and impulse - sensorimotor stimuli that would not have included, for example, well developed ecological principles as a grounding for the relationship between humans and their environment. Although without recourse to such principles, the human-

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<sup>2</sup> Since the anthropocentric implications attached to the concept of noosphere and the ecocentric concept of biosphere occupy polarised positions in the prevailing debates within the field of environmental philosophy - positions that emerge elsewhere in this dissertation - it is appropriate to briefly discuss these concepts here. The notion of *biosphere* originates from the work of Vladimir Vernadsky, which focused on explanation of the Earth's biogeochemical cycles (Vernadsky, 1945: 1-12), and it is from this base that the modern definitions of the biosphere have emerged; eg. the definition provided by Polunin (1984: 198) that the biosphere is 'an integrated living and life-supporting system comprising the peripheral envelope of planet Earth together with its surrounding atmosphere so far down, and up, as any form of life exists naturally'. The concept of biosphere has assumed a particularly powerful role in defining humanity's relationship with nature and is central, for example, to Aldo Leopold's *land ethic* described in Section 3.4.2 (Leopold, 1991). The concept of *noosphere* originates from the work of Pierre Teilhard de Chardin whose interest in humanity from a global evolutionary perspective manifested in the view that human consciousness is capable of controlling the direction of future planetary evolution. Teilhard termed this evolutionary phase the noosphere (Teilhard de Chardin, 1961: 180, 181) - which represents a 'special environment or medium for humanity, consisting of the systems of *organised thought* and its artifacts among which humans move and have their being' (Serafin, 1988: 128).

<sup>3</sup> A contrary ecophilosophical view, described elsewhere in this dissertation, is that to deal with such *differentiation* requires expansion of the concept of the human self to *include* nature in order to address the current pathology in the human-environment relationship (Fox, 1986: 67). The latter argument is based on the premise that human beings are the equals of (not superior to) other species comprising the biosphere (Marietta, 1988: 251). It will also be shown to contradict the view of the Earth (Gaia) as a *self-(not human-)regulating(ed) system* comprising biota (including humans) and their environment (Serafin, 1988: 121).

environment relationship (from a perspective of human impact on the state-of-environment) would have manifested as a benign interaction (human use of environmental surplus) attributable to a lack of human means to intensify this impact as opposed to an inherent or evolved ecological wisdom.

The continued development in human cognitive capacity, and an expanding consciousness, would direct human evolution away from a tribal *foraging* system towards one based on agriculture. An *archaic* worldview - one largely dominated by sensation and impulse - would prove limiting to the evolution of human society towards a trans-tribal state and a corresponding higher degree of evolutionary order. Transcendence of this situation would occur through the emergence of *horticultural* and *agrarian* societies, each of which would prove more capable of escaping the limitations and problems inherent in preceding human evolutionary states (Wilber, 1996: 48, 50).

The advancement towards an *agrarian* societal system - with the plough as a symbol of this epoch in human techno-developmental evolution - signalled a dramatic change in human-environment relationship.<sup>4</sup> Humans no longer 'gathered what nature offered' but began 'manipulating' nature. Enabling this mode of production was a shift in human consciousness framed by what Wilber describes as *magic* and, later, *mythic* worldviews (Wilber, 1996: 172-173). A *magic* worldview is explained as one according to which the environment is perceived through reference to images and symbols which humans create in order to derive meaning of the world - attempts to express and control the abundance of the environment and the forces affecting human life (Wilson, 1998: 250). However, with continued evolutionary development of the human consciousness, the inadequacy of *magic* to order the environment would be exposed and this would correlate with the transition from *horticultural* to more advanced *agrarian* societies. This occurred around 4000-2000 BCE and *agrarian* practices would remain the dominant mode of production until the industrial revolution (Wilber, 1996: 52). A correlated *mythic*

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<sup>4</sup> The meaning of evolutionary *advancement* as it is used here draws on Wilson's (1998: 107) definition of 'progress', which implies the 'production through time of increasingly complex and controlling ... societies'. The human attainment of high intelligence and culture is viewed as an important phase in the evolutionary progression of life on Earth.

worldview would provide definition to this human-environment relationship and in this respect it was the Gods who were perceived to be the controls of nature and also, therefore, human developmental performance (Atkins, 1995, 124); i.e. egocentric prayer, rather than egocentric magical power, would largely provide meaning to the *agrarian* human perception of the world. This *mythic* worldview would also strongly underpin the early (pre-Darwinian) phase of the industrial revolution, when the perceived God-appointed state of human dominion over nature would persist as a dominant Western worldview.<sup>5</sup>

In a way that foragers never could, *agrarian* society with its *mythic* worldview had the potential (and exercised this potential) to significantly transform the environment - mostly to human evolutionary advantage, although in some instances with repressive consequences.<sup>6</sup> Most significantly, however, the advancement of *agrarian* farming practice created a situation of food surplus that released sectors of human society to pursue activities other than production (Wilson, 1998: 164). Specialised societal classes emerged; cultural development accelerated; art and religion were practiced; mathematics, writing and advanced methods of warfare were invented; and binding social order was established at a truly trans-tribal scale that opened the way for the emergence of the modern nation-state. Moral thinking also continued its emergence as an evolutionary outgrowth of the overall process of this advancement of the human consciousness (Leavenworth, 1970: 133-143).

*Archaic, magic* and *mythic* worldviews would run their course of evolutionary usefulness to human society. However, it would ultimately be realised that nothing magical or mythical would favour continued human evolution without corresponding growth. This growth would occur through the transition from *agrarian* to *industrial* modes of production and a dramatic change in worldview from a *mythic* towards a *rational*

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<sup>5</sup> Section 3.2.1 makes further reference to this mythic worldview, specifically with respect to the God-appointed status of dominion of humans over nature.

<sup>6</sup> The Mayan culture provides an example of the collapse of an advanced agricultural society that had transcended primal *foraging* only to later become dissociated from the biosphere - the rainforest ecosystem - which, once depleted as a result of intense human impact, could no longer sustain the Mayans (Wilber 1996: 67).

conceptualisation of the environment. In response, the greatest divide in the evolutionary advancement of humanity opened between pre-scientific and the rational science-based cultures that emerged. The instruments and knowledge that science was able to deliver released humanity from the cognitive limitations that constrained the advancement of early cultures (Atkins, 1995: 123). This was directly enabled by the *sustained* contemplative endeavours that humans were able to engage in at the time of the Renaissance and, thereafter, during the Enlightenment, which sought to demystify the world and liberate the human mind from the restrictions created by earlier worldviews. *Knowledge* replaced mythic *imagination* in a phase of evolution in human consciousness that heralded the beginning of modernity - an era that is characterised by Wilber (1998: 41) as having its definition shaped by major development trends within the domains of philosophy, art, science, cultural cognition, personal identity, political and civil rights and technology.<sup>7</sup>

Cartesian dualism - the view that mind/spirit and body exist as two separate substances - and its reductionistic aim of seeking correct and logical representation of the objective world based on sensory nature as the ultimate reality would emerge as a dominant philosophy of modernity (Drengson, 1980: 226). The stage was thus set for subsequent scientific enquiry into this dualism - a challenge which was defined more clearly by the *raison d'etre* for modern science, whereby knowledge became regarded not as an end but as a means, expressed and applied through technology, by which the human mind was directed towards assuming power over the material world (Austin, 1985: 204). The legacy of the industrial revolution is evidence of the role that science has played in terms of equipping humans with this power and the epistemological foundation for attracting a new allegiance whereby previous traditions of thinking, values and worldviews have been abandoned. Thus, the positivistic orientation of modern science displaced/undercut the preceding paradigm that enabled its emergence and served to reveal an orderly and intelligible universe (Drengson, 1980: 225; Atkins, 1995: 124). The

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<sup>7</sup> The great branches of learning, including the natural sciences, social sciences and the humanities, emerged out of the Enlightenment vision of unity of knowledge (Wilson, 1998: 39).

subsequent breakthroughs in knowledge that were achieved, particularly in the physical and biological sciences during the 19<sup>th</sup> century, contributed greatly to the liberation of the human mind and it would represent the West's greatest contribution to civilization (Wilson, 1998: 5, 13, 21, 39).

Wilber explains that the achievements of modernity have their originary location in the *differentiation* that was achieved between the human cultural value spheres - i.e. differentiation of art-aesthetics from politics-morals-religion and empirical-science - and the attribution of autonomy to each (Wilber, 1998: 11). Religious and civil authority were de-mystified and precedence was given to the ethic of free enquiry (Wilson, 1998: 39). Whilst pre-modern cultures (foraging, horticultural, agrarian) possessed forms of art, morals and science, these were largely undifferentiated and, as a result, one sphere (often the politico-religious sphere) could control and dominate what happened in the others. Advancement, for example, in the ecological sciences did not occur in pre-modern cultures because they lacked this differentiation. Modernity's *rational* worldview would change this situation and the transcendence of the previous limitations to human evolutionary advancement would be overcome as a result. This would shift ethnocentric values towards universal or global values, and the potential for humans to adopt the person-planetary perspective that Marietta (1988: 250) believes is essential for avoiding pathology in the human-environment relationship was thus created. The trans-tribal evolutionary process initiated in post-foraging societies was able to continue its trajectory towards an increasingly higher state of human societal order through the emergence of this modern worldview.

Having contributed so effectively to the achievement of the *differentiation* of the human value spheres, Wilber argues that the impact of scientific materialism has extended too far, resulting in their *dissociation* (Wilber, 1998: 13, 52). Science, art, philosophy and other subjective aspects of human understanding and valuation of the world have become distantly separated. Material knowledge has become separated from values (Drengson, 1980: 225), and the rational worldview has asserted its primacy and self-sufficiency in this respect (Callicott, 1986: 301; Skowlimowski, 1981; Atkins, 1995: 125). Informational content of scientific language has become dissociated from its emotional

content (Wilson, 1998: 67); objective reason has become emphasised at the expense of subjective emotion and, according to Ehrenfeld (1978: 133-174), this precludes an integrated synthesis of these two aspects of human consciousness. The evolved emotional human value sphere (i.e. the complex elements of human consciousness, excluding the rational element upon which the modern worldview is based), which can justifiably claim to have survival value, are not seen to match the dominance of reason (Ehrenfeld, 1978: 142).

The science of the Enlightenment, which promised to deliver a complete objective basis for moral reasoning based on an understanding of the physical functioning of the human mind, could not deliver (Wilson, 1998: 66). The envisaged leadership of science and its promise of directing the way to a unity of knowledge failed (Wilson, 1998: 35, 40). In the place of such promise, scientific reductionism, which proved so effective (seemingly omnipotent) in advancing human evolutionary consciousness, proceeded in its own positivist direction [assuming that the only certain knowledge is the exact description of what is perceived with the senses (Wilson, 1998: 40, 66)] and invaded and dominated the spheres of art and morals, denying in the process their relevance to alternative or integrated explanations of the world. The greater the authority attributed by modernity to scientific materialism and its achievements in terms of explaining the objective exterior world, the less significant has become the authority of the interior human apprehension - moral wisdom, introspective perceptions and aesthetic-expressive realities.

### **1.3 PATHOLOGY IN THE HUMAN-ENVIRONMENT RELATIONSHIP EXPLAINED IN TERMS OF THE DISSOCIATED LANGUAGES OF *IT*, *I* AND *WE***

From the preceding discussion it emerges that modernity has become established upon the firm base of scientific materialism, which seeks to explain 'external' objective realities that can be located, reduced and quantified through an empirical mode of investigation (Drengson, 1980: 226); i.e. it assumes a lawful, material definition of the freestanding reality of the world (Wilson, 1998: 6, 65). With this view, the earth is

disclosed as an object which manifests as a stockpile of energies and resources and according to which meaning, purpose, values, or moral/ethical precepts are not found as objective aspects of the universe (Foltz, 1984: 335; Klemke, 1981: 169; Midgley, 1995: 137).<sup>8</sup> Such rational disclosure of the world is articulated through use of monological *it-language*, which has been used, in a constructive sense, to differentiate objective reality from both the individual whim of subjective human preferences and the collective view/ideology, for example, of religion and politics (Wilber, 1996: 120). Description of the world by means of *it-language* is the one most susceptible to precise description; however, it is not considered to be the only realm of human cognizance of their environment and it is in this respect that *it-language* has also become largely dissociated/alienated from the interior *I-language* of the human consciousness (Tallmadge, 1981: 353). The latter is articulated in first-person accounts and is understood through dialogue, not scientific reductionism and language that characterises, for example, the repertoire of physics (Midgley, 1995:138).<sup>9</sup> In fact, the *it-language* of objectivist-reductionistic science denies in essence the validity of the interior *I-language*.

Scientific materialism has created a monological global framework of industrial, economic, informational and other systems that have made possible the development of human skills at a scale previously unprecedented. This advancement is described by Ehrlich and Ehrlich (1998: 2) as being greater than at any time since the beginning of the agrarian epoch of human development. However, what has remained outside such advancement is the meaning and value of the environment that humans seek and which make them whole (Haught, 1986: 146; Caldwell, 1963: 139). Scientific materialism more than adequately describes what the world is, not what it ought to be from multiple human perspectives; i.e. science succeeds without philosophical justification (Atkins, 1995: 129), and tends to rebel against the restrictions imposed by prevailing culture

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<sup>8</sup> The rational explanation of human consciousness (within which the issues of values, moral behaviour and ethics have their locus) is that it is no more than a mere 'resultant' - an outcome of movements in the matter-energy continuum that (theoretically) can be specified through scientific procedure (Haught, 1986: 143).

<sup>9</sup> The language of science is monological - a single person talking by him/herself. Science does not require that there is dialogue with the object of investigation in order to derive its empirical data (Wilber, 1998: 37).

(Dyson, 1995: 1). In this respect, modernity is remarkable not only for its breadth of knowledge but also for its narrowness of (rebellion against) value judgements (Holmes Rolston, 1982: 150).

The dominance of *it-language* employed in scientific materialism has caused the intersubjective experience of human life and experience of the environment to be undermined and to become *subjective* in the pejorative sense (Drengson, 1980: 223). The animate has proved incapable of finding resolution in terms of the inanimate (Haught, 1986: 147). Reason (the essence of the objective, rational worldview), with its rich capacity for dialogue, ethics and mutual recognition, and, as stated by Snoeyenbos (1981: 234) its capacity to generate a vision that acknowledges the importance of a functional environment necessary for long-range human welfare, has become dry and abstract and finds no normative structures within the human-environment relationship (Holmes Rolston, 1982: 150).

As stated by Atkins (1995: 131), the rational worldview assumes that there is no aspect of knowledge about the world where sentiment (values, ethics) can provide a better base than is possible through objective, value-free science. However, it is inconceivable that this view can practically find all-encompassing application in the complex, far-ranging systems of social relations and human value systems, which cannot, for example, be reduced to elements of physics (Midgley, 1995: 139). Missing, is the *integration* of scientific knowledge with the currently dissociated moral and other spheres of human value and there is a need for a double-aspect account of the inner and the outer, the subjective and objective (Nagel, 1986: 4). Without this, dissonance between the affected human value spheres (science vs the art-aesthetic value sphere; science vs ethics including, for example, the moral endeavour of valuing nature) is the inevitable consequence.

It will later be argued that the dissonance that exists between objective *it-* and subjective *I-language* presents a particular barrier to the effectiveness of EIA and its potential to arrest the pathology in the human-environment relationship. Since EIA attempts to reveal objective truths about predicted environmental impacts of human

development, mainly through reference to scientific *it-language*, its inadequacy becomes apparent when it attempts to deal with situations that resonate with the *I-language* of multiple and contradictory subjective human preferences. Its objective, value-free scientific methods cannot respond adequately to the intersubjectivity that constitutes human society (its heterogeneity, its multiple expressions of environmental value) and in its early evolutionary state, instead of making its contribution to effective dialogue, it remained part of the objectivity-subjectivity dialectic (*vide* Drengson, 1980: 230). It will also be argued that a similar barrier has existed for the advancement of environmental ethics largely as a result of the dissociation between the *it-language* of scientific materialism that comprises some of the entrenched paradigms of environmental value and the generally trans-rational *I-* and *we-language* dialogue that characterises much of the other ethical discourse within the discipline - particularly with respect to the 'new-paradigm claims' pertaining to the valuation/value of the environment.

Paradigms, and what will be described as 'new-paradigm claims', explain in part the *it-*, *I-* and *we-language* dialectic that exists between and within the practice and discipline of environmental assessment and environmental ethics. A related incommensurability between competing paradigms would also seem to explain the dissociation of the human value spheres and the absence of the integration that is considered necessary in order to halt the pathology in the human-environment relationship. Before proceeding with a description of the investigative approach that is used in this dissertation to establish the potential of environmental assessment and environmental ethics to arrest this pathology, some discussion of the theory of paradigms is therefore appropriate. In the following section, aspects of Thomas Kuhn's paradigmatic explanation of the process of advancement of human understanding of the world (eg. through scientific discovery) are described in order to provide a context for later explaining the origin, evolution and co-evolutionary relationships between environmental assessment and environmental ethics.

## **1.4 KUHNIAN THEORY: AN INTRODUCTION TO ITS APPLICATION TO ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTAL ETHICS**

To explain the evolutionary patterns and relationships within and between the disciplines of environmental assessment and environmental ethics, reference is made in the chapters that follow to Thomas Kuhn's theory pertaining to the role of paradigms in explaining the advancement of knowledge and understanding of the world. It will be proposed in Chapter 2 that Kuhn's understanding of the history of intellectual advancement can explain the process whereby the advent of EIA has enabled the advancement of sustainable development ideals through the accommodation of environmental concerns in development decisions; i.e. a revolutionary paradigm-shift from the situation of narrow economic determinism in decision-making which characterised the pre-EIA era. Whilst Kuhnian theory is less useful in terms of explaining the divergence and polarisation which exists within the field of environmental ethics (i.e. due to its weak paradigmatic character),<sup>10</sup> it will nevertheless be proposed in Chapter 3 that this pattern fits to some extent Kuhn's description of the 'disorganised' activity, universal criticism and uninhibited proliferation of ideas that can characterise a discipline during the interval preceding the emergence of a unifying paradigm.<sup>11</sup> This situation is aligned with Sessions' (1995: 97) view concerning the application of Kuhnian theory to the field of ecophilosophy.

Kuhnian theory is also used in Chapter 4 as an investigative medium (analytical logic) to determine the evolutionary coherency in the respective origins and development of environmental assessment and environmental ethics.

Although the relevance of Kuhnian theory to the different elements of the dissertation is expanded in later chapters, it is appropriate to provide a review in this introductory

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<sup>10</sup> The weak paradigmatic character of environmental ethics is attributed by Weston (1996: 147) to the early stage of development of the discipline, when it is to be anticipated that new values pertaining to the environment are just *beginning* to be culturally constituted and consolidated (see Section 3.1).

<sup>11</sup> Unlike physics and other fields within the natural sciences, modern sociology can rarely be explained in terms of paradigms (Chalmers, 1982: 91). Whilst not entirely a sociological endeavour, the disorganised state of environmental ethics can be explained in terms of the absence of a unifying paradigm.

chapter of the theory's central tenets as well as some points of critique to which it has been exposed. The review presented here is based largely on Kuhn's (1970a) publication, *The structure of scientific revolutions*, which contains the most persuasive account of the author's theory and his response to criticism leveled at a first edition of this publication (Kuhn, 1962). The review is also based on Kuhn's later publication, *The essential tension* (Kuhn, 1977) and interpretations of Kuhnian theory which are provided by Krige (1980), Chalmers (1982), Oldroyd (1986) and others. Reference is also made *inter alia* to Toulmin's (1972) critical analysis of certain of Kuhn's arguments - which highlights some of the key challenges to which they have been exposed. Aspects of Toulmin's interrogation are presented here with the purpose of providing a backdrop against which a tempered interpretation of Kuhn's views - pertaining specifically to the *incommensurability* of competing paradigms - is incorporated into the final chapter of the dissertation. Here, the aim of investigation will be to define a locus for the diverse value positions in environmental ethics within the new generation approaches to environmental assessment. To this effect, it will be argued that there is an important area of convergence to be discovered within the *shared* ideals to which *different* environmental values give common expression - in spite of the polarizing arguments which point to an apparent incommensurability between 'competing' value systems.<sup>12</sup>

Kuhnian theory explains the occasions and causal processes which determine the significant events and profound conceptual transformations which mark the history of advancement in human knowledge (Toulmin, 1970: 39).<sup>13</sup> Such events, it is argued, tend to occur in a revolutionary rather than linear or heuristic pattern, involving dramatic shifts in advancement, which occurs in a succession of tradition-bound periods punctuated by non-cumulative breaks (Kuhn, 1970a: 208; Shapere, 1964: 383;

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<sup>12</sup> The issue of incommensurability between competing paradigms is a concept that has been largely distorted by the misreading of Thomas Kuhn. Kuhn does not imply that competing theories are incomparable, but that the choice between them cannot be entirely based on theory-neutral rules and data. Transitions between paradigms (approaches to solving problems) must be made typically through dramatic switches in allegiance, but not to the extent that the rationality of science is thereby impaired (Wilber, 1998: 31).

<sup>13</sup> Robin Attfield (pers. comm.) questions the usefulness of Kuhnian theory, suggesting that reference to the *advancement* of science makes no sense because there are no criteria according to which *advancement* can be determined. Whilst Kuhn's largely non-rationalist arguments could be compromised by his (rationalist) reference to *advancement*, Newton-Smith's (1981: 3) analysis of Kuhnian theory suggests that the term '*change*' (rather than *advancement*) adequately deals at least with this point of criticism.

Wilson, 1998: 63). In this respect, Kuhn's ideas are grounded to some extent in the views of R.G. Collingwood who proposed that the course of intellectual history can be defined as a series of rigid divisions into separate phases controlled by incompatible constellations of absolute presuppositions; i.e. that intellectual progress does not result from a universal and uniform method (Collingwood, 1940: Ch. iv-vi; Toulmin, 1972: 99, 121). Kuhn adds to this by positing an explanation of the occasions, processes and procedures whereby an older theory (a basic set of collective concepts) are displaced by an incompatible new one and thus create the discontinuity which exists between the divided phases of advancement in knowledge.

Kuhn argues that the practice of science has two clearly differentiated typologies that he describes as *normal* and *revolutionary* science. *Normal science* is defined as research that is based upon established significant scientific achievements that a particular community accepts as providing an adequate foundation for its further practice; it is cumulative, but delivers no novelties of fact or theory (Kuhn, 1970a: 10, 52). This form of enquiry is dominated by acknowledged laws, theories and sets of established first principles which collectively provide general methodological prescriptions, standards and instrumental techniques which promote coherent traditions of scientific research, or puzzle-solving (Chalmers, 1982: 91; Oldroyd, 1986: 320). Such traditions are thus shaped monistically by the influence of an overall master-theory or *paradigm* that is capable of satisfactorily resolving the most pressing challenges within a particular area of research (Kuhn, 1970a: 20).<sup>14</sup>

According to Kuhn, paradigms represent a 'strong network of commitments - conceptual, theoretical, instrumental and methodological' which map out the directions for success in scientific enquiry and provide the enabling techniques which guarantee such success (Kuhn, 1970a: 42).<sup>15</sup> They provide models of research conducted

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<sup>14</sup> The paradigmatic label which Kuhn attaches to normal science draws on the Wittgensteinian definition of a *paradigm* as representing a mold that shapes and directs thoughts in predetermined directions (Toulmin, 1972: 107). Whilst the use of the term mold implies a high degree of definition/rigidity, Kuhn acknowledges that it is not possible to spell out all necessary and sufficient conditions under which activities might fit within the definition of a paradigm (Chalmers, 1982: 93). This deficiency (*inter alia*) exposes Kuhn's explanation of the paradigmatic character of normal science to criticism (eg. Shapere, 1964: 388).

<sup>15</sup> Whilst he is critical of Kuhn's views of the exclusivity and restrictions which paradigms impose on the practice of

according to shared rules and standards that define a coherent research tradition applicable to special classes of problems yet to be solved (Kuhn, 1970a: 23-24).<sup>16</sup> These paradigmatic attributes secure the commitment and consensus of a scientific community that is necessary for the continuation of particular research traditions which are perceived to be more attractive than any competing mode of scientific activity (Kuhn, 1970a: 11, 19).

In effect, paradigms are worldviews. They define the way in which a scientific community perceives the world, describe what is seen, and determine where and how things are looked for (Newton-Smith, 1981: 118). Such perception is determined not only from the basis of accepted theory, but also from a wider range of beliefs, and attitudes (Kuhn, 1977: 294; Newton-Smith, 1981: 107). In his analysis of Kuhnian theory, Oldroyd (1986: 321, 323) describes how scientists are trained within and work according to the edicts of paradigmatic worldviews and how this 'training' introduces a solid level of acceptance over the fundamentals from which a paradigm is constructed. To understand the origin of Kuhn's views relating to the paradigmatic nature of normal science requires an explanation of their deeper grounding in arguments such as those articulated by Quine (1963; 1969), who challenges certain dogmas of empiricism. Quine argues that the construction of knowledge will always be "tainted" relative to the languages of communities and their theories or *paradigms* which define the ways in which they understand the world (Quine, 1963: 42; 1969: 81). Likewise, Kuhn (1970a: 145) suggests that there can be no scientifically or empirically neutral system of language or concepts and it is in the context of this role of *community language* that Kuhn's explanation of the paradigmatic nature of normal science and the knowledge which it generates finds support in Quine's argument (Quine, 1969: 87).<sup>17</sup> Supporting

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normal science Feyerabend (1970: 201), for example, acknowledges that the process of creating knowledge does need the guidance which an accepted theory can provide; i.e. science cannot start from nothing and be explored at random.

<sup>16</sup> Karl Popper is generally critical of Kuhn's paradigmatic characterisation of normal science; however, he suggests that there typically does exist in various scientific disciplines an organised structure that provides scientists with a 'generally accepted problem situation into which his own work can be fitted' (Popper, 1970: 51); i.e. in this sense, science does have a somewhat paradigmatic character.

<sup>17</sup> A particular appeal of applying Kuhnian theory, specifically to explain the origin and development of environmental assessment, lies in the importance which Kuhn attaches to social considerations (i.e. the role of *communities*) in

this view, Norton (1995: 47) concludes that although science attempts to create more precise vocabularies in order to disaggregate values and facts as they become interpenetrated in discourse, such language cannot ultimately achieve pure description; i.e. every choice of vocabulary to describe one facet of the world requires the exclusion of other facets of reality.

Once socialised into a paradigm, practitioners of normal science do not question its fundamentals; i.e. a paradigm is trusted implicitly and normal science does not have as its aim the refutation of current theory (Krige, 1980: 22; Watkins, 1970: 27; Williams, 1970: 49). Thus, the allegiance which a paradigm attracts differentiates this form of science from a *pre-paradigm situation* - which tends to be marked by constant debate over fundamentals (Chalmers, 1982: 92). Normal science presupposes that a paradigm provides the theoretical basis and method for the solution of the puzzles posed within it as well as the criteria that indicate when the goal of puzzle-solving has been achieved (Kuhn, 1977: 167). According to Kuhn the anticipated outcome of such science is assured by the paradigm according to which it is practiced and in this way normal science is able to progress efficiently (Oldroyd, 1986: 322; Toulmin, 1972: 101; Watkins, 1970: 27).<sup>18</sup> The cost of such efficiency, however, is the constraint which paradigms impose in terms of the lack of novelty which (paradigmatic) normal science is able to deliver (Shapere, 1964: 384).

Puzzles that cannot be resolved in terms of the conceptual and instrumental techniques that a paradigm provides are viewed as anomalies rather than falsifications of the paradigm, and rarely place into question accepted laws and methodological principles (Kuhn, 1970a: 77; Chalmers, 1982: 92; Newton-Smith, 1981: 107). Most anomalies are ultimately resolved through normal means, for example, through revision of a paradigm's instrumental standards (Kuhn, 1970a: 186; 1977: 174). The parts of nature

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the conduct of scientific enquiry (Kuhn, 1977: 295, 296; Oldroyd, 1986: 319). It will be suggested elsewhere in this dissertation that such considerations are relevant to EIA, which assumes its paradigmatic character largely through the allegiance of the *community* of EIA advocates and practitioners which it has attracted.

<sup>18</sup> Whilst the paradigmatic nature of normal science might guarantee rapid progress in the area of research which it defines, Oldroyd (1986: 322) states that the knowledge gained through such research does not necessarily explain the way things are in the world.

which do not satisfactorily fit the model of solution which the paradigm provides tend to be ignored or suppressed because they are subversive of the basic commitments demanded of normal science (Kuhn, 1970a: 5, 24); alternatively, they are dealt with using *ad hoc* hypotheses (Oldroyd, 1986: 321-322). However, where the resolution of an anomaly is important, the failure of normal science to resolve this - following exhaustive application of both the concepts and instruments which a paradigm provides - may strike at the fundamentals of a paradigm, thereby introducing a situation of crisis which can mark the beginning of revolutionary discovery and a break in the tradition-bound activity of normal science (Kuhn, 1970a: 6; 1977: 173; Chalmers, 1982: 94; Drengson, 1980: 227).

Kuhn explains that as the scale of scientific crisis increases and attempts to resolve it become increasingly more radical, the inflexible rules of the reigning paradigm become progressively loosened by the extra-ordinary philosophical and metaphysical disputes that arise within a scientific community in the quest for a resolution (Kuhn, 1970a: 90). In contrast to its once tacit acceptance, the adequacy of the paradigm (its methodology, etc.) is questioned and as an awareness of its constraining character develops, its guiding influence over the practice of normal science becomes weakened as a consequence (Newton-Smith, 1981: 108). It is in this situation that a proliferation of competing views on the resolution of the crisis emerge, that there is recourse to philosophy and debate over fundamentals and ultimately, that *revolutionary science* occurs - analogous to political revolution, whereby a new ideological paradigm displaces a previous one through dramatic change - which brings about sudden and irreversible advancement in terms of resolving the crisis situation (Kuhn, 1970a: 91).<sup>19</sup> Out of the pluralism of several possible alternative paradigms one will eventually emerge - a Darwinian victor (Wilson, 1998: 57) - which is not only incompatible, but is

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<sup>19</sup> Whilst accepting that intellectual advancement can occur in discontinuous transitions between incommensurable systems of thought, Krieger (1980: 11) questions whether revolution - a process that is dramatic, sudden and sometimes perceived to be rationally inexplicable - must necessarily drive such transition. According to this author, transitions can be slow, requiring considerable effort for new theoretical concepts to be developed and to gain acceptance; i.e. that transformations are rationally intelligible. Similarly, Toulmin (1970: 41) argues that revolution (political or otherwise) never involves an absolute and outright breach of continuity of the kind to which Kuhn makes reference; eg. Newtonian physics, although displaced by an Einsteinian one, still retains some validity at the periphery of the new paradigm.

incommensurable with the one it replaces (Kuhn, 1970a: 102). The new paradigm, having advanced in its status from being 'interesting', 'suggestive' and 'persuasive' to its ultimate status of 'compelling' will achieve general acceptance and will introduce and direct a new era of normal science which is practiced according to a new set of intellectual and manipulative scientific 'equipment' (Kuhn, 1970a: 91; 1977: 226; Wilson, 1998: 64).<sup>20</sup> As the struggle with an anomaly is resolved in a revolutionary mode of scientific discovery, new perspectives of the world are revealed (Kuhn, 1977: 175). The transition from a paradigm in crisis to a new tradition of normal science is not merely a cumulative extension of the old paradigm. It represents a reconstruction of the field from new fundamentals that changes the most elementary theoretical generalisations relevant to the affected area of science, its methods and applications (Kuhn, 1970a: 85). This having been achieved, the function of normal science in the post-revolutionary era will be to both consolidate the theoretical generalisations which the paradigm introduces through the development of new methodological rules and to widely extend its power of explanation amongst the community whose allegiance it has secured (Oldroyd, 1986: 322; Toulmin, 1972: 112).

A switch in paradigm allegiance occurs for a variety of reasons, including a connection with some social need, the ability of a paradigm to solve a specified kind of problem/anomaly (both old and new, which are not resolvable within the context of a previous paradigm), value systems and, therefore, the preferences of individuals with regard to paradigm choice. According to Kuhn (1970a: 121) the transition to a new paradigm occurs 'not by deliberation and interpretation, but by a relatively sudden and unstructured event like the gestalt switch'; i.e. 'it is the abandonment of critical discourse which marks the transition to a science' (Kuhn, 1970b: 6).<sup>21</sup> A new paradigm is not

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<sup>20</sup> Kuhn's interpretation of how a new paradigm reshapes an intellectual framework, through its re-statement and re-formulation of fundamental concepts, is similar to Koyré's (1968: 19-20) views in this respect.

<sup>21</sup> Newton-Smith (1981: 112) describes the essential characteristics which Kuhn attributes to good scientific theory which a paradigm offers; i.e. characteristics which (in part) determine theory choice. A theory should be *accurate*, *consistent*, have *broad scope*, be *simple* and *fruitful* in terms of new phenomena that it reveals and explains. Kuhn explains that although these characteristics - some of which may be internal to a particular theory - may influence theory choice, they do not constitute rational algorithmic elements in this respect; i.e. in themselves they are insufficient, and non-rule governed *judgment* (influenced by individual preferences, for example) plays an important role (Newton-Smith, 1981: 115-116, 122).

adopted by a scientific community through logically compelling or rule-governed (rational) argument since Kuhn argues that the discontinuity and conceptual incongruity that exists between the fundamental premises of competing paradigms does not permit this (Newton-Smith, 1981: 110). The fundamental questions which candidate paradigms pose, their standards and metaphysical principles are thus incompatible (Kuhn, 1970a: 150), and according to Oldroyd's (1986: 323) and Chalmers' (1982: 96) interpretation of Kuhnian theory, two competing paradigms cannot be simultaneously valid since they will be mutually incomprehensible.<sup>22</sup> Debates over paradigms are characterised by an 'incompleteness of logical contact' between proponents of competing paradigms, and converts to a new paradigm share no theoretical concepts with scientists whose intellectual loyalties are committed to its predecessor (Kuhn, 1970a: 109). As a consequence, scientists in different paradigmatic camps can neither communicate with one another about disagreements nor seek common theoretical topics for debate or research; i.e. the concepts of one theory cannot be compared since they cannot be expressed in terms of the concepts of a competing theory (Newton-Smith, 1981: 10, 148).

Kuhn (1970a: 206) argues that the manner in which paradigm allegiance is ultimately secured indicates that scientific revolution does reflect a coherent direction of ontological development. According to Shapere (1964: 383, 389) Kuhn thus challenges the positivistic argument that science is cumulative - that earlier sciences are derivable from later. Supporting Kuhn's argument in this respect, Paul Feyerabend, in his criticism of the position which science is assumed to hold in terms of its capacity to generate knowledge, states that what counts as the truth (for one scientific community, as opposed to another community) is determined more by what the respective communities *allow* than by either the relationship between different theories about the world or the 'advancement' achieved through science as it is practiced according to

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<sup>22</sup> Chalmers (1982: 136) finds a similar (albeit qualified) interpretation of incommensurability offered by Paul Feyerabend, who argues that there are situations where it is not possible to logically deduce some of the consequences of one theory from the tenets of its rival for the purposes of comparison (Feyerabend, 1970: 219). Feyerabend's views in this respect are somewhat more restrained than Kuhn's and indicate that incommensurability arises only under conditions when certain universal principles upon which an existing theory is built are suspended by those supporting a competing theory (Newton-Smith, 1981: 10, 142).

successive paradigms (Oldroyd, 1986: 323, 326). Aligned with this interpretation, Quine (1963: 41) argues that there is no universal linguistic structure; observation language can be arbitrarily adjusted by different scientific communities to project meaning derived either analytically (independent of matters of fact) or synthetically (grounded in fact) according to circumstance (Quine, 1963: 25, 27, 41); i.e. alternative, sometimes incommensurable, explanations of a particular situation may be offered by different scientific communities.

Kuhn's view that the course of evolution in human understanding of the world is marked by *discontinuous* transitions between incommensurable systems of thought is also shared, to some extent, by Foucault (1974a).<sup>23</sup> In *The order of things*, Foucault describes the extent to which fundamental codes of human culture on the one hand - such as those determining language, techniques and values - and scientific theory and philosophical interpretation on the other, function within historically determinable spaces that lead humans to derive, over time, multiple (incommensurable) interpretations of how things are/should be ordered (Foucault, 1974a: xx-xxi). The potential thus exists for order either to be defined in discontinuous and fragmented ways or, conceivably, continuously and graduated, according to different systems of coherence. With this understanding, Foucault, in his study of the archaeology of the human sciences, describes the major discontinuities which define the history of the theory of knowledge in Western culture (Foucault, 1974a: xxii). Providing further support for Kuhn's views, Foucault (1976; 1974b: 150) also provides an interpretation of the discontinuity evident in the history of progress in medical science as a specific illustrative example.

It is Kuhn's notion that rational exploration between the boundaries and relationships between old and new paradigms is not possible which is severely challenged by several authors. In this respect, Toulmin (1972: 103) questions whether scientific advancement ever produces the radical discontinuities that Kuhn describes and whether the depth of

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<sup>23</sup> In his earlier work, of which *The order of things* (1974a) is exemplary, the notion of discontinuity is emphasised much stronger than in his later "genealogical" and "ethical" works.

conceptual change is ever sufficiently great (and immediate) as to preclude rational transitional enquiry. Toulmin suggests that in highly organised sciences, new theoretical propositions are always extensively discussed and intensively argued over, reasoned about and criticised prior to their accreditation by interested and affected scientific communities. According to this author, the transition between two scientific positions can be guided by rational argument even in the absence of common theoretical concepts; i.e. rival paradigms or presuppositions are *rationally commensurable* (Toulmin, 1972: 103, 126; Newton-Smith, 1981: 7).<sup>24</sup> It is argued that proponents of new theories defend and sanction these through compelling argument in order to attract the allegiance of a scientific community.<sup>25</sup> To do this, a *theory-neutral* common language and broadly accepted procedures must be employed to facilitate debate, rational analysis and comparison of the alternative theoretical propositions (Popper, 1970: 56-57; Chalmers, 1982: 139; Newton-Smith, 1981: 121).<sup>26</sup> On this basis Toulmin concludes that competing paradigms cannot be perceived as rigidly discontinuous worldviews and that the apparent *intellectual discontinuities* (which might well manifest at a theoretical level, since different conceptual systems may often be based on incongruous principles and axioms) conceal a deeper methodological continuity which can exist between paradigms (Toulmin, 1970: 44; 1972: 106).<sup>27</sup> It is thus argued that

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<sup>24</sup> Feyerabend (1970: 202) argues that for one theory to be accepted as being *better* than another that it might replace requires a degree of *commensurability* between the two theories. This requirement aside, Newton-Smith (1981: 7), supported by Chalmers (1982: 138), makes further reference to Feyerabend's argument which suggests that rival theories are not compared only through rational enquiry and that it is inevitable that subjectivity enters the process of comparison and theory choice. In this respect, non-rational persuasion will apply in cases where theories are truly incommensurable (Feyerabend, 1970: 219).

<sup>25</sup> Like Toulmin, Scheffler (1967: 79), for example, states that whilst the architects of a new paradigm may attribute this discovery more to an intuitive, gestalt re-organisation of perception than a consequence of deliberation or interpretation, it does not follow that rational analysis and interpretation will not form part of the defence and criticism of a new paradigm by the scientific community whose allegiance it might ultimately secure.

<sup>26</sup> By Kuhn's own admission, adherents of opposed views can 'recognise each other as members of different language communities and then become translators' (Kuhn, 1970a: 202); i.e. contrary to his original thesis [and contrary to some of his critics (Kuhn, 1970a: 199)], Kuhn, in agreement with Popper (1970: 56), suggests that scientists with different worldviews can engage in rational discussion; i.e. mutual incomprehension between scientists of successive generations is never more than partial, and as a consequence, "translation" enables persuasion and thereafter, conversion to a new paradigm becomes possible (Kuhn, 1970a: 203, 204).

<sup>27</sup> Popper (1970: 55) argues that constant and fruitful discussion can and must exist between advocates of competing dominant theories.

paradigm-switches are never as complete and as incommensurable as Kuhnian theory suggests.

Kuhn's non-rationalist explanation of the discontinuity in intellectual progress clearly places him in a position largely at odds with the positivist conception of science whereby the movement towards 'truth' occurs through the emergence of ever more true facts and corroborated theories which are rationally substantiated through the application of objective methodology and justification (Newton-Smith, 1981: 9, 111, 121; Mouton, 1993: 54). Kuhn's explanation that paradigm switches occur in the absence of logically compelling argument obviously attracts rationalist critique on the basis of the relativism which it implies (Shapere, 1964: 393). Whilst this issue emerges elsewhere in this dissertation, it is raised here since it is Kuhn's challenge of scientific positivism which predictably sets his theory up to be challenged in turn. In this respect, Toulmin (1970: 45; 1972: 114) questions the significance of *revolution* as a descriptor for scientific advancement, suggesting that Kuhn's interpretation of scientific progress should be perceived as one which recognises a spectrum of conceptual and theoretical advancements. Whilst recognizing that some of these advancements may occur outside the application of either formal logic or inductive principles and could thus be considered more "revolutionary" than others, Toulmin argues that instead of a revolutionary explanation of change, an evolutionary account can better describe how an intellectual state is progressively transformed (Toulmin, 1972: 116, 122); i.e. the reluctance to accept the concept of revolution is informed by the degree of rational continuity that this author detects in the historical record of science.<sup>28, 29</sup>

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<sup>28</sup> Responding to this evolutionary account of scientific advancement, Kuhn (1977: 175) argues that the mode of discovery covered by this definition is typically anticipated and sought in advance, demanding no radical adjustment or adaptation of traditional concepts and instrumental method. Normal cumulative discovery thus differs from revolutionary discovery which departs from such tradition.

<sup>29</sup> Challenging the concept of normal versus revolutionary science, Feyerabend (1970: 207; 1981: 160) argues that Kuhn's ideas are false in the sense that there has never been a *period* of normal science in the history of thought; i.e. scientific anomaly occurs frequently and the proliferation of theory which occurs in response to such anomaly is a continuous phenomenon which is located outside the context of only occasional revolution; i.e. there is *simultaneity* and *interaction* between the normal component of science and the philosophical criticism which is instrumental in driving theoretical transitions (Feyerabend, 1970: 212). The author finds more palatable a continuist theory of scientific advancement offered by Imre Lakatos, who suggests that science advances heuristically in the sense that a sequence of theories leads to novel predictions in an *evolutionary*, rather than revolutionary, fashion - whereby one theory (or hypothesis) is gradually replaced by another in what Lakatos refers to as an evolving research program.

In a somewhat different line of criticism to that offered by Toulmin, Krige (1980: 12-13, 31, 218) questions whether paradigm change occurs with the rapidity implicit in Kuhn's explanation of the role of 'revolution' as the motor of scientific advancement. The author argues that changes in paradigm allegiance occur in an *asymmetrical* fashion, in that rejection of the old and acceptance of the new do not occur simultaneously: Whilst the foundations of a new paradigm might be laid *rapidly* following the rejection of the old, *it takes time* for the new to become fully articulated and thereby replace the old. According to the explanations of scientific advancement, developed for example by Popper and Lakatos, an entire established order is not rejected in one fell swoop - as posited by Kuhn (Krige, 1980: 70, 214, 219).<sup>30</sup>

Moving beyond the debate around his thesis of scientific advancement through *revolution*, Kuhn's views on the role of *normal* science are also challenged by the Popperian understanding of science which perceives this endeavour to be a deeply *critical* process and a defining characteristic of science - a position which represents the antithesis of the scientific *indoctrination* which is captured by Kuhn's paradigmatic model of normal science (Popper, 1970: 53; Toulmin, 1970: 40; Oldroyd, 1986: 324).<sup>31</sup> If the dogma implicit in this model is to find some credence, Toulmin (1972: 111) suggests that this might be found in the *sociological context* of scientific tradition. In this respect, the magisterial authority of leading theorists can be shown to attract scientific discipleships, whose activity might be constrained by the requirement of sanction from the school within which it takes place (Scheffler, 1967: 77; Toulmin, 1970: 40).

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<sup>30</sup> Krige (1980: 37) explains that as a new system emerges from an old order, it carries with it - for a time at least - some surviving elements of the previous paradigm which betray its heritage. Whilst in agreement with Kuhn regarding the discontinuities that mark the history of scientific advancement, Krige explains that it is this carry-over of paradigmatic residue (which is ultimately discarded) which provides the spurious appearance of strong continuity in scientific advancement. This so-called 'Marxist' theory of revolutionary change sees the new as struggling to differentiate itself from the old in which it is initially embedded, but from which it ultimately breaks to create *discontinuity* (Krige, 1980: 39).

<sup>31</sup> According to Popper (1963: Chapter 3) the *right to challenge* is an important determinant of a truly scientific procedure. This view is in stark contrast to the apparent dogma captured in Kuhn's definition of normal science, which suggests that paradigms provide *unquestioned principles* according to which scientific practice takes place. Whilst recognizing the power of divergent and critical thought in science - a pre-requisite for revolutionary scientific advancement - Kuhn (1977: 226) suggests that *convergent (paradigmatic) thinking* in science is essential to make effective the practice of normal science and, ultimately, pave the way for the comparatively rare occasions of revolution.

However, Toulmin (1972: 105, 111, 117) argues that this must be seen as distinct from the intellectual authority of scientific theory, the validity of which is determined through rational interrogation and not through force of institutional authority; i.e. that in the conscious reasoning mind, argument and discussion are the motors of scientific advancement.<sup>32</sup>

Building on the context provided by the above understanding of Kuhnian theory, the investigative approach adopted in this dissertation will be described next. This will reveal the extent to which constructive change in the human-environment relationship is being effected on the one hand, through the application of environmental assessment in its post-revolutionary, 'normal' phase of practice, and on the other, through the new-paradigm claims arising from within the discipline of environmental ethics.

## **1.5 INVESTIGATIVE APPROACH USED IN THIS DISSERTATION**

The investigative approach that is used in this dissertation to establish the potential of environmental ethics and environmental assessment to arrest the pathology in the human-environment relationship is outlined in this section. The approach will be shown to have continuity with Kuhnian theory as a mode of explanation of the (revolutionary/post-revolutionary) advancement that environmental assessment has made in terms informing development decisions - compared with earlier approaches to decision-making, based mainly on narrow economic determinism - and the application of such theory (its relevance and limitations) to the discipline of environmental ethics. It will also be shown to maintain continuity with the previously described (linguistic) theme of *it-, I and we-language*, with an emphasis on the need to elevate the significance of *I*-and, more importantly, *we-language* in the dialogue that informs decision-making around *sustainable development*, which will be described as an alternative to the present pathology in the human-environment relationship.

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<sup>32</sup> In his criticism of Kuhn's belief in the non-rational advancement of science, Krige (1980: 26, 29), like Toulmin, argues that for scientific development to lie beyond the bounds of rational intelligibility is to question the rationality of science itself and to undermine the epistemological and social authority which it enjoys.

Understanding the role of environmental assessment and environmental ethics in promoting sustainable development requires insight into their respective origins and the trajectories that mark their evolutionary courses of development. It also requires the investigation of co-evolutionary relationships that reveal dialogical opportunity - as opposed to the objective monological basis of scientific materialism [to which, it is claimed, EIA is aligned (O'Riordan (1986: 4-6)] and/or theoretical monism in environmental ethics - to promote the ideals of sustainable development through the *integration* of the currently dissociated human cultural value spheres. In this respect, the integration that is proposed deals with the linkage between the rational sphere of scientific objectivity (the platform of EIA) and the subjective value spheres from which much of the dialogue in environmental ethics emanates.

Chapter 2 opens with an analysis of the revolutionary origin of environmental assessment, which will be shown to arise from a situation of *anomaly* and *crisis* which - in the Kuhnian sense - are typical precursors of paradigm shifts and the non-cumulative advancement of human understanding of the world. The *anomaly* that has triggered the emergence of environmental assessment as a new paradigm for directing development decision-making will be shown to have its source in the failure of crude economic expansionism - development policy of the 19<sup>th</sup> century and the first half of the 20<sup>th</sup> century - to guarantee continued growth of the Western world economies. At the time, such growth was placed under threat as colonial frontiers could be pushed back no further in pursuit of new production opportunities and consumption costs began to outweigh production benefits. Through reference to the failure of several environmental policy initiatives (statutes etc.), the emergence of further *anomaly* - created by continued environment-related threats to the economy - will be shown to have led to a situation of *crisis*, which manifested most clearly in the adverse effects of pollution on human well-being during the post-war era (extending from the late 1940s into the 1960s). The 'normal' responses applied to resolve this crisis will be described in terms of a failure to effect any change in the situation, thereby opening the way to 'abnormal' intervention through major reformation in development decision-making and re-orientation concerning environmental values. Revolution will be shown to have resulted from the signing into effect of the US *National Environmental Policy Act* (also,

equivalent initiatives in other developed countries) and the emergence of environmental impact assessment (EIA) as its key action-forcing provision.

Following the discussion of its revolutionary origin, the remainder of Chapter 2 presents an analysis of the subsequent evolution of EIA and its derivatives, which is described through further reference to Kuhnian theory and its incorporation into a temporal model that is used to interpret the post-revolutionary 'normal' advancement of the practice of environmental assessment. This begins with some reference to the scepticism according to which EIA was applied initially, which is a response that could have been anticipated following the emergence of a new paradigm prior to its attraction of a widespread allegiance. Such allegiance will be shown to have been secured during the first decade of development in EIA methodology (during the 1970s) as the process of paradigm clarification and reformulation was worked out; i.e. as 'rules' were developed according to which the new paradigm could be applied to resolve the environmental/economic crisis. In this respect, the early EIA methodology will be shown to have been firmly grounded in scientific materialism and the technocratic vocabulary of *it-language* - a situation that would become increasingly challenged as the shift towards stronger participatory democracy occurred during the following decade (the 1980s). The response to this challenge is described through reference to *scoping* as a key methodological innovation in EIA, which was designed to extract societal values and concerns (pertaining to development and the environment) as these are articulated in the multiple *I-languages* of consulted stakeholders. In spite of this advancement in EIA process, the potential for *it-* and *I-language* dialogue will be shown to have been limited, rather than enhanced, by the attempted resolution of the *animate* (human preferences and human intersubjectivity) through the *inanimate* technique that is described.

Chapter 2 concludes with an overview of some new generation approaches to environmental assessment that take a much bigger contextual perspective of environment and development than is possible through EIA. The emergence of this perspective is linked to the global allegiance to the concept of sustainable development that was initiated since the late 1980s and which continues up to the present. The role

of these new generation tools in promoting sustainable development through their potential to engage, in the first instance, the essential *we-language* that is necessary to articulate shared views about sustainable development, including moral positions concerning the environment, that can be discovered in spite of differences in environmental values, is a theme that is taken up again in the concluding chapter of the dissertation. Although the rational *it-language* of science (eg. ecology) that is used in EIA and other objective analytical modes of enquiry (eg. economics) will be shown to have an important role in informing the dialogue around sustainable development, it will be argued that *we-language* must hold a position of precedence over the other contributing languages (*it-* and *I-language*).

The investigative approach adopted in Chapter 3 begins with a discussion of the origin of environmental ethics. The focus is on its divergence from the anthropocentrism of conventional ethics (which guides the interactions between humans) towards an ethic that seeks to situate the environment as the object of moral concern rather than one of *utility*; i.e. an entity of value independent of human preferences and values. In the early part of Chapter 3, the failure of the discipline to deliver such an ethic (a unifying theory of value) is described - through reference to Kuhnian theory - as typical of a pre-paradigm situation in which multiple theories are offered to resolve a crisis which, in this case, is the same (environmental) crisis to which the origin of EIA is linked.

The (broad) trajectory of the development of environmental ethics is then described in Chapter 3 in terms of the different themes of environmentalism (the crises of *participation* and *survival*, and the opportunity of *emancipation*) and the multiple theories of value that have emerged to support the agenda of the environmentalist movement. Similar to the approach used to describe the evolution of EIA, a temporal model that is loosely linked to the various decades since the late 1960s is used to define the different crises about which environmentalism has been concerned and which have created the perceived need for a supporting environmental ethic. This is based on a generational conceptualisation of the environmental problematic (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> generation environmental problems). The philosophical responses invoked by this need, which deal with the convictions that humans have concerning their own value

and that of the non-human natural world, will be shown to diverge into multiple arguments that have their grounding in appeals to either the instrumental or intrinsic value of the environment. In the case of value theories located towards the more political extreme of mainstream environmentalism, the appeal that is made is for a radical cultural transformation. Also through reference to Kuhnian theory (and the distorted use of the paradigm metaphor), the discussion of these various appeals to environmental value and transformation is structured in a way that deals separately with those that have a strong/entrenched paradigmatic character (eg. *resource conservation and development, resource preservation*) and those that represent what will be termed 'narcissistic new-paradigm claims' (eg. *deep ecology*).

A critique of theoretical *monism* - the search for a unified theory to support moral judgment in every situation pertaining to the environment - is presented in Chapter 3 to create a context for the alternative that is described as *theoretical (ethical) pluralism*. At this point in the chapter a strong preference emerges for Bryan Norton's theory of weak anthropocentrism (*enlightened anthropocentrism*)<sup>33</sup> as a more defensible philosophy of environmental value than any of the divergent extremes that are described in the preceding discussion (Norton, 1984a). This preference is carried through to the discussion in Chapters 4 and 5 of the dissertation where it will be argued that ethical pluralism provides the only workable (pragmatic) platform from which to achieve the policy aims of sustainable development - which the new generation tools for environmental assessment and management are capable of realizing/promoting. In contrast to the many monological ethical claims arising from within the discipline of environmental ethics, which serve to increase the dissociation of the human value spheres rather than promote their integration, the accommodation of theoretical pluralism is shown to be a pre-requisite for an effective environmental ethics.

In order to create a context for the interpretation of Norton's pluralistic philosophy on enlightened anthropocentrism, Chapter 3 provides a review of Aldo Leopold's *land ethic*, which appeals to Norton due to the framework that it provides for human

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<sup>33</sup> Although Norton refers to his philosophy as *weak anthropocentrism*, the negative connotation that this implies (eg. it is weak, ineffective) makes the term '*enlightened anthropocentrism*' a more attractive descriptor to use here.

response to and location within their environment. Its influence on Norton's philosophy of enlightened anthropocentrism lies in the dialogical opportunity that it promotes (i.e. it encourages dialogue) between holders of divergent value positions, in contrast to the demand for allegiance to ethical monism (which, by definition, would seem to preclude dialogue). Particular attention is directed at these dialogical principles and the non-individualistic value system that constitutes Norton's enlightened anthropocentrism, since they are used in Chapter 4 as a point of departure to reveal a dialectical relationship between environmental ethics and environmental assessment.

Chapter 4 presents an analysis of the dialectical relationships that have influenced the co-evolutionary trajectories of key developments within the discipline of environmental ethics and the practice of environmental assessment. The central structure of the analysis is provided by the evolutionary course of development in environmentalism, with the responses that this has triggered in the evolution of environmental assessment and environmental ethics respectively comprising the supporting structure of the analysis. In a sense, the trajectory of environmentalism is depicted as an independent variable that has mediated the co-evolution of the two dependent variables of environmental ethics and environmental assessment. In the model that is used to define the structure of this relationship, reference is made to external catalytic forces - 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> generation environmental problems - that have contributed to the emergence and directional shifts in environmentalism over the past three decades. The same forces, or causal influences, are also used in the model to explain the emergence and development of EIA and environmental ethics.

In the evolution of EIA, its paradigmatic qualities will be shown to have enabled it to respond to the agenda of environmentalism only to the extent that its "governing rules" (see Section 1.4 above) have permitted such response, either within or outside the expectations of environmentalism. These "governing rules" will be shown to include values, principles and "language" (see Section 1.3) held in common between environmentalism and the practice of environmental assessment, which define the points of contact and dialogue in their evolutionary trajectories. Although not governed by paradigmatic "rules", the response within the discipline of environmental ethics to the

agenda of environmentalism, will also be shown as having been determined by common values, principles and “language” of discourse. Interpretation of the commonalities and differences in evolutionary relationship between environmentalism and environmental assessment on the one hand, and environmental ethics on the other, is used to reveal the co-evolutionary dialectical relationship between the two disciplines.

In the concluding chapter of the dissertation (Chapter 5) it will be proposed that there is potential for new generation tools for environmental assessment - specifically, Strategic Environmental Assessment (SEA) - to transcend the barriers created as a result of the dissociation of the human cultural value spheres through the promotion of greater *subjective dialogue* in the assessment process. The proposal is based on the introduction of a pragmatic ethical platform into SEA, which is described by Norton (1984a) as weak (or enlightened) anthropocentrism. SEA will be shown to provide an opportunity to deal with the pathology in the human-environment relationship through both its capacity to integrate both the subjective and objective aspects of worldviews that humans subscribe to (*vide* Wilber, 1998: 202) and its focus on the correct scale of intervention. This scale will be shown to exceed, for example, the atomism of project-specific EIA and the associated limitations that such a method has in terms of its dominant recourse to objective method. Compared to SEA, the narrow objectivity of EIA will be shown to be an inadequate response to the demands articulated in the form of multiple objective and subjective human preferences. In this respect, the visioning component of SEA (i.e. the attention that is given to the dialogue of *I-* and, more importantly, *we-language*), the incorporation of sustainability principles into the assessment process, and also the retention of scientific method to quantify and track movement within agreed environmental thresholds will be shown to be a tool that can effectively advance us towards arresting pathology and moving us away from unsustainable development. Underpinned by practical environmental ethics, which is accommodating of moral pluralism, the new generation approaches to environmental assessment will be shown to have close alignment with the principles of Leopold’s *land ethic*, which, as discussed in the introduction of this chapter, seek to promote both human well-being and the integrity of the biotic community into the indefinite future. It

will be argued that these are necessary conditions if the aims of sustainable development are to be achieved.

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*Chapter 2 :*

**THE EVOLUTION OF  
ENVIRONMENTAL ASSESSMENT**

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## 2.1 INTRODUCTION

It is claimed that environmental impact assessment (EIA) is one of the most successful policy innovations of the 20<sup>th</sup> century (Bartlett, 1988: 73-74; Weaver *et al.*, 1999: 1).<sup>34</sup> From its origins in the US following the enactment in 1969 of the *National Environmental Protection Act* (NEPA), which is the most significant policy instrument that has served as a catalyst for the emergence of EIA, the practice of environmental assessment has found application throughout the world. In more than 100 countries it has become successfully institutionalised either in national policy or in the policies of funding and international agencies, such as the World Bank, to which many countries are variously committed (Sadler, 1996: 25). Matching the scale of its global diffusion, environmental assessment has also become vastly elaborated since its originary form, thereby ensuring the effectiveness with which it is widely credited (Wood, 1995: 4).

The forces that have created EIA and steered its global diffusion and evolutionary advancement can only be explained through reference to a *revolution*.<sup>35</sup> As introduced in Chapter 1 the model that Kuhn (1970a) uses to explain the structure of *scientific revolutions* is, therefore, applied in this chapter as a convenient conceptual framework to describe the evolution of EIA.

Whether the genesis and emergence of EIA is viewed as a science *per se*, or whether the discipline is viewed as a process constructed from fragments of different sciences, is a debate which does not have to be resolved here in order to legitimise the

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<sup>34</sup> As stated, for example, by Dalal-Clayton and Sadler (1998b: 3) and World Commission on Environment and Development [WCED] (1987) EIA has the potential to direct environmentally sustainable development; i.e. to shift development away from its currently unsustainable track (see the key principles of the Rio Declaration on Environment and Development).

<sup>35</sup> NEPA's revolutionary qualities have been variously expressed, but not in the same context that is used here. For example, Milledge and Gallop (1978: 71) describe the act as revolutionary because it deals with problems on a preventative and anticipatory basis - rather than attempting to reclaim resources from past excesses and abuse; Thompson (1978: 14) uses the revolution analogy to characterise the roles of different parties in EIA (environmentalist patriots, extremists, guerillas, the EIA practitioner), etc. The new paradigm of environmental assessment and management that has been introduced by NEPA transcends these definitions through its switched focus toward a new emphasis on long-term maintenance of environmental quality - away from narrow economic determinism.

applicability of Kuhn's model.<sup>36</sup> In this respect, many supporters of the thesis that Kuhn posits as explanation for scientific revolutions find value in the model, not so much in its illumination of science than its explanation of developments in other fields (Kuhn, 1970a: 208).<sup>37</sup> Oldroyd (1986:320, 323), Drengson (1980: 224) and others also make reference to several precedents where Kuhnian theory has been used as an explanatory medium in fields of enquiry other than science; eg. political science, economics, education, theology, art.

The following interpretation of how the structure of scientific revolutions applies to the evolutionary history of EIA begins with a characterisation of what Kuhn describes as *anomaly* and *crisis*, as these emerge as constraints to the practice and advancement of 'normal science', and typically serve as precursors to the radical re-gearing which occurs through scientific revolution. The discussion includes an analysis of the *resistance to revolution* that often emerges at the point where an irreversible shift is demanded in terms of allegiance to a new guiding paradigm (i.e. one which deals more effectively with anomaly and crisis than a preceding one). This is followed by a review of the consolidation in the *normal* practice of environmental assessment and the articulation of the new paradigm in environmental policy that has occurred during the post-revolutionary era.

## **2.2 ANOMALY AND CRISIS: PRECURSORS TO THE REVOLUTIONARY IMPACT OF NEPA AND ITS CATALYZING INFLUENCE ON ENVIRONMENTAL ASSESSMENT**

The origin of NEPA has a history which is grounded in the philosophies first articulated by American environmentalists in the 18<sup>th</sup> century (including Thomas Jefferson, for

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<sup>36</sup> For example, Beattie (1995: 110) argues that environmental impact assessment is not science - in the sense that it is not typically based on studies involving observation, experimentation and hypothesizing to test and refine explanations of studied phenomena. However, it can also be argued that EIA often exposes areas of scientific uncertainty and does in fact cause the construction of hypotheses that focus on reducing uncertainty (thereby contributing to the scientific knowledge base).

<sup>37</sup> Feyerabend (1970: 198) is critical, for example, of social scientists who, through recourse to Kuhn's definition of normal science, justify their definition of sociology as being a science which is reducible to a paradigmatic form.

example) who were familiar with the observations and writings of scholars of the Enlightenment, such as Locke, Descartes, Newton and Linnaeus (Clark, 1997: 16; Smythe, 1997: 4). These articulations recognised the existence of natural laws governing the universe, and a belief emerged at this time that there were natural rights that should be respected by humans. This philosophy was expanded in the 19<sup>th</sup> century in the writings and activities of environmental philosophers such as Emerson and Thoreau, who found deep spiritual value in nature and who emphasised the incompatibilities they observed between the environmental values to which they believed humans should subscribe and the trends in commerce and technology at the time (Smythe, 1997: 5). Although the evolution of these preservationist views was clearly developing, they were poorly accommodated in American policy of the 19<sup>th</sup> century, which remained firmly aligned with economic expansionism.

The inertia in policy development changed toward the end of the 19<sup>th</sup> century and during the early part of the 20<sup>th</sup> century when the respective conservationist and preservationist efforts of Gifford Pinchot and John Muir shifted the *status quo*.<sup>38</sup> As will be discussed later in Chapter 3 (Section 3.2.1), the *anomaly* which prompted a policy response at this time was the realisation that as the frontiers of colonial expansionism closed, and it was recognised that the supply of natural resources was not infinite, the American economy would be faced with constraints to growth which would contradict the prevailing policy of economic expansionism. To deal with this anomaly the US Congress proclaimed a number of forest reserves and by 1897 these were being formally managed according to Pinchot's utilitarian conservation philosophy (Nash, 1973: 137). Early in the 20<sup>th</sup> century, the campaign led by Muir, whose aim was to secure the designation of national parks within which consumptive exploitation would be prohibited, resulted in an act of Congress in 1916 which established the US National Park Service - an act which created the counterweight to Pinchot's utilitarian conservation policies (Smythe, 1997: 7).

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<sup>38</sup> The conservation and preservation strategies of Pinchot and Muir are discussed in Section 3.2.1

In addition to the initiatives of Pinchot and Muir, various humanitarian, utilitarian and scientific factions campaigned for the protection of wildlife outside forest reserves and national parks (Fox, 1981: 152). Amongst other environmental laws, this resulted in the US federal government enacting the *Fish and Wildlife Conservation Act of 1934* - a statute that became the principal federal interagency planning requirement prior to the passage of NEPA (Smythe, 1997: 8). Around the time of these initiatives in environmental legislation, an *anomaly* was emerging in the failure of Pinchot's conservation policy to deliver the sustainable production of commodities based on the principles of economic resource management (see Section 3.2.1). To deal with this failure, Aldo Leopold, who was employed by the US Forest Service during the first half of the 20<sup>th</sup> century introduced the concept of ecology into the philosophy of environmental management and used this emerging science as a rational platform onto which to extend ethical concepts into policy deliberations.<sup>39</sup> Aligned once again with the *normal* practice of policy development, which is designed to respond to *anomaly*, one of the first pieces of federal legislation which was grounded in the non-utilitarian philosophies of Thoreau and Muir, and in the ethical utilitarianism of Leopold, was the *Wilderness Act of 1964* - a statute which signaled a preservationist victory with respect to the grounding ideals which it espoused (Fox, 1981: 289).

The 1950s and 1960s heralded a time when the further emergence of *anomaly* in the adequacy of environmental policy became increasingly pronounced and the beginning of a *crisis* in the policy arena was reflected in the unforeseen adverse effects of pollution and other impacts generated in this period of unprecedented technological innovation.<sup>40</sup> In a developed country such as the US, the new technologies of the 20<sup>th</sup> century had certainly contributed to health, material welfare and high standards of living to the

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<sup>39</sup> Aldo Leopold's *land ethic* is discussed in Section 3.4.2 It is suggested that at the time of its formulation, the *land ethic* represented an embryonic form of the current paradigm out of which new generation approaches to environmental assessment and management (eg. Strategic Environmental Assessment) have evolved. Kuhn (1970a: 86) argues that this is often the case with scientific revolutions - whereby the solution to a crisis exists (but is often not recognised) before a crisis has developed far or has been explicitly recognised. Similarly, Weston (1996: 146) suggests that, for example, visionary ethical ideas may be available for adoption, but may not be recognizable or understood given the practices, experiences and other issues alongside of which they have to be placed.

<sup>40</sup> The 2<sup>nd</sup> generation environmental problems that arose as a consequence of the unrestrained post-war economic boom beginning in the late 1940s are discussed in Section 3.2.2

benefit of a broad sector of society.<sup>41</sup> However, such advancement was also accompanied by mounting environmental and human costs, and a sense that technology had progressed beyond human control (Graham Smith, 1993: 4), particularly with respect to large-scale technologies that accelerated the concentration of economic and political power. The environmental problems associated with this situation highlighted the prevailing level of scientific ignorance, the high decision costs of technology - which were typically informed simply by questions of feasibility, financial viability and legal permissibility (Graham Smith, 1993: 4) - and the reality that the time and space scales of anthropogenic environmental change were beginning to transcend those of most institutions expected to manage the situation (Clark, 1986: 5; Angermeier, 2000: 375). It is, therefore, not surprising that the technological goal of narrowly defined efficiency that had pervaded industrial society increasingly came under attack (Barbour, 1980: 35).

Extending the tradition of *normal* practice, the policy response to the crisis was the introduction of several bills and environmental laws directed at the protection of single species and discrete environmental elements rather than the management of the full spectrum of bio-diversity and ecosystem functioning.<sup>42</sup> This pattern of response proliferation is described by Kuhn (1970a: 71) as a manifestation of insecurity caused by the inability of a paradigm to direct an adequate solution to *anomaly* and *crisis*. In the areas of serious environmental concern, the policies which emerged were often a compromise position forced by local governments and polluting industries opposed to the cost implications of such legislation (Caldwell, 1998: 9). Alternatively, benefit-cost analysis was applied as an economic response - one which appealed to decision-makers because of the tangible measure of optimised social utility and the quantitative indices which the technique could derive in terms of fiscal benefit and cost efficiency (Graham Smith, 1993: 7).

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<sup>41</sup> Angermeier (2000: 375) argues that technology is no longer just a means to address essential needs (food, shelter), but that technology acquisition (vehicles, gadgets) has become an end in itself.

<sup>42</sup> In the 1950s a series of bills were introduced in the US Congress to reduce waste and abuse of natural resources and to control air and water pollution. Examples of subsequent legislation include the *Land and Water Conservation Fund Act of 1965*; the *Endangered Species Act of 1966*; the *Wild and Scenic Rivers Act of 1968*; and the *National Trails Act of 1968*.

The result of the above policy initiatives and a persistent reliance on economic reductionism in decision-making presented itself as an un-cohesive and inadequate reaction to the arguments presented by notable champions for the environment such as Rachel Carson and Stewart Udall (eg. Carson, 1962; Udall, 1963).<sup>43</sup> The reaction also failed to neutralise the pressures exerted by environmentalist factions that, in the style of the civil rights and anti-war movements of the 1960s, were becoming a popular political force (Barbour, 1980: 121; Caldwell, 1997: 27).<sup>44</sup> It did not effectively address the repercussions of major development schemes insofar as these affected ecological and community impacts, particularly with respect to the social fairness of resource allocations, which were the pressing issues of environmental concern (O’Riordan and Sewell, 1981; Caldwell, 1988).<sup>45</sup> Smythe (1997: 11) summarises the following deficiencies in environmental policy which were articulated at the time, which constituted an inventory of the developing *crisis in environmental policy*:

- A propensity to emphasise and value quantitative measures of growth over qualitative measures of well-being.
- A failure of economic theory to internalise social and environmental costs in benefit-cost analyses.<sup>46</sup>
- The inadequacy of government institutions in dealing with problems that cut across political boundaries.

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<sup>43</sup> Rachel Carson exposed the destruction of wildlife resulting from the use of pesticides and succeeded in creating a broad public awareness of the environment, leading to changes in US government policy.

<sup>44</sup> Barrow (1997: 167) suggests that the media and information revolution, which was underway by the late 1950s, played a significant part in galvanizing environmentalist action.

<sup>45</sup> Using many examples extracted from the history of science, Kuhn (1970a: 52-91) argues that scientific revolutions rarely occur without the pre-emergence of a particularly pressing anomaly (or combination of anomalies) which gives rise to persistent crisis that cannot be resolved in the course of what he describes as the ‘puzzle-solving of normal science’.

<sup>46</sup> Benefit-cost analysis frequently failed to consider fundamentally different alternatives, tended to focus on easily quantifiable benefits and costs (ignoring less easily quantifiable parameters), and dealt inadequately with temporal variations in interest rates and discount rates - resulting in manipulated accounting (Graham Smith, 1993: 7). Benefit-cost analyses that were initially used to establish the balance between the monetary costs of a project and its anticipated benefits were, therefore, easy to skew toward a politically preferred ratio (Caldwell, 1998: 9). However, as an aggregative technique, possibly its greatest failure was the inability of benefit-cost analysis to account for ethical distributional aspects of costs and benefits (Carley and Bustelo, 1984: 139-149).

- A lack of understanding of the fundamental interdependence of human populations and their environment.
- A failure of both governmental and private institutions to take environmental factors into account as an essential part of planning and decision-making.
- A recognition that the US government's narrow, mission-oriented approach to programmes and projects and the lack of consideration given by federal agencies to environmentally preferable alternatives were contributing to these problems.

In effect, the above indictment of failure in environmental policy exposed the practice of policy development to the threat of disintegration. The elevated position of this crisis clearly highlighted the severe inadequacies of policy against the background of the entrenched paradigm of narrow economic determinism that had strongly influenced the 'normal' evolution of environmental policy development up to that point. This provided the catalyst for 'abnormal' policy intervention to deal with the crisis, and the expectations and rules of conventional approaches to policy development were loosened to ensure a resolution to the situation;<sup>47</sup> i.e. a route was opened for a new candidate paradigm for environmental policy to emerge.<sup>48</sup>

Cognizance of the deficiencies in environmental policy was taken by the US Congress in committee hearings held in the course of 1968 and 1969, the purpose of which were to develop a strategy to reform agency decision-making and to influence the private sector, with the hope of transforming and re-orientating environmental values (Barrow, 1997: 168) and to ensure that balanced decision-making would occur in the total public

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<sup>47</sup> According to Kuhn, as an anomaly becomes more generally recognised by the scientific profession, and the integrity of normal science becomes exposed to the threat of disintegration, more and more attention is focused on its resolution. Such attention tends to result in a loosening of the rules of normal puzzle-solving, and begins to fracture the value of an existing paradigm within the scientific community (Kuhn, 1970a: 84). It is within an environment of uncharacteristically loosened rules and paradigm fracture that a route is opened for a new candidate paradigm to emerge (Kuhn, 1970a: 80, 83, 86).

<sup>48</sup> In Kuhn's view, the situation of an anomaly which begins to constitute a crisis gives rise to 'abnormal science', which inevitably violates the paradigm-induced expectations governing normal science (Kuhn, 1970a: 90). More importantly, it is the dramatically constructive nature of revolutions driven by such abnormal science that resolves anomalies and opens a different understanding of nature (Kuhn, 1970a: 85). This new understanding draws the scientific community toward a switch of allegiance to new paradigms and requires the concomitant rejection of the obsolete.

interest (Canter, 1977: 1). The outcome of these hearings, which represented the culmination of a decade of proposals, debate and refinement on principles and institutional arrangements, was the US *National Environmental Policy Act* (NEPA) which was designed to integrate environmental, economic and social policy (Caldwell, 1997: 31).<sup>49</sup> With the enactment of NEPA, the 1970s were proclaimed the 'environmental decade' (Carpenter, 1981: 175).

The *National Environmental Policy Act* is constructed upon three main pillars, which include: a constituted *Council on Environmental Quality* (CEQ) commissioned to ensure continuity and capability in managing NEPA's complexity and to report annually on the state of the nation's environment to the Executive Office of the US President; a bill containing a declarative statement on national environmental policy; and a supporting 'action-forcing' provision compelling agencies to document their efforts to comply with such policy.<sup>50</sup> The action-forcing provision of NEPA, which fitted in well with the American tradition of rational planning (Sadler, 1996: 26), established the framework for environmental impact assessment as it has evolved and is practiced today (Clark, 1997: 17), and is considered to be the most influential and widely emulated feature of the act (Caldwell, 1997: 31). The constitution of the CEQ and the policy and action provisions of the bill were formally combined into the *National Environmental Policy Act of 1969*, which was signed into effect on 1 January 1970.<sup>51</sup>

The enactment of NEPA is viewed both as a response to the shift in societal values toward a greater concern with the environmental consequences of human actions (Graham Smith, 1993: 8; Lawrence, 1997: 79) and a critical response to American perspectives toward utilitarian and economic efficiency as these have evolved toward

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<sup>49</sup> Kuhn suggests that the resolution of anomaly and crisis is seldom attributable to a moment in time. Revolutionary change is typically an extended process of conceptual assimilation, during which the perception of anomaly does not necessarily present an expectation of the revolution that its potential resolution promises (Kuhn, 1970a: 55-56).

<sup>50</sup> The US *Environmental Protection Agency* was constituted in 1970 to oversee the impact assessment process (Gilpin, 1995: 115-119).

<sup>51</sup> Canter (1977: 4) describes the controversy generated by the provisions for EIA which were incorporated into NEPA just prior to its enactment - a suggestion that parties who may on the surface have accepted the rhetoric of the NEPA principles, deeply rejected the mechanism for their realisation.

the end of the 20<sup>th</sup> century (Smythe, 1997: 12; Clark, 1997: 17). NEPA was the first time that US law allowed for development to be delayed or abandoned for the long-term good of the environment. It represented an irreversible revolution in values in the US (Barrow, 1997: 169), and signaled a *broadening* focus of the historic dedication only to economic growth and development (Barbour, 1980: 189).

Extending Kuhn's theory of scientific revolution, the emergence of the new paradigm in environmental policy in no way reflected a cumulative pattern of policy development based on the re-articulation or extension of an historical paradigm structured around economic expansionism (Kuhn, 1970a: 85). The change in worldview which NEPA introduced presented a policy reconstructed from new fundamentals, which brought with it changes in some of the most elementary theoretical generalisations which had previously been accommodated in policy.<sup>52</sup> It required decisive differences in the methods of solution to environmental, economic and social issues, which transformed the goals within the arena of economic and environmental policy implementation. As in the case of scientific revolution, the final stage of policy transformation that NEPA introduced was sudden and irreversible since the traditional rules of the pre-revolutionary era could no longer define a playable game and the rules of the new paradigm that replaced them became immediately applicable (*vide* Kuhn, 1970a: 90). The goals which are declared in NEPA, and which capture the theme of the new policy paradigm, are to:

- Fulfill the responsibilities of each generation as a trustee of the environment for succeeding generations;
- Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;

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<sup>52</sup> Questioning whether NEPA presented a policy reconstructed from new fundamentals, Caldwell (1997: 28) suggests that the congressional votes that passed NEPA were cast under the misconception that the act related essentially to pollution control insofar as this could benefit the human environment; i.e. a view that fundamentally entrenched, and narrowly interpreted, anthropocentric values, rather than broader environmental values, swung the vote.

- Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
- Preserve important historical, cultural, and natural aspects of American national heritage and maintain, where possible, an environment that supports diversity and variety of individual choice;
- Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
- Enhance the quality of renewable resources and approach the maximum attainable re-cycling of depletable resources.<sup>53</sup>

In essence, NEPA's declared goals imply that economic and environmental quality should be compatible and that the fulfillment of social, economic and other requirements of present and future generations must permit humans and nature to exist in harmony. In the US, the absence of any equivalent sentiment in the Constitution, which has a strong anthropocentric emphasis toward property and civil rights, made this central ideal of NEPA extremely significant (Caldwell, 1997: 32).

The demand for a dramatic switch in paradigm allegiance, which was attached to the acceptance of NEPA and the concomitant rejection of narrow economic determinism, brought with it an inevitable uncertainty or skepticism amongst many key stakeholders required to make this switch.<sup>54</sup> For example, President Nixon had opposed the legislation leading up to NEPA but signed its enactment and lent his support to it for a while as its popularity became evident (Barbour, 1980: 189). Political support for NEPA might also have been considered prudent in the initial years following its enactment due to the unprecedented interest in the environment which led to the United Nations' *Conference on the Human Environment* in Stockholm in 1972 (Wood, 1995: 3).

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<sup>53</sup> This summary of the national goals of NEPA is extracted from Canter (1977: 3).

<sup>54</sup> In the case of scientific revolution, the acceptance of new theory demands large-scale paradigm destruction and major shifts in the problems and techniques of normal science. The extended process of assimilating new theory tends to place the scientific community in a position of insecurity - a position which is aggravated by persistent past failure to solve the puzzles of normal science through application of the accepted and governing scientific rules (Kuhn, 1970a: 68). Extending this analogy to the political arena, hesitancy to switch allegiance to the new paradigm in environmental policy that NEPA introduced is perhaps understandable.

NEPA had little influence at first on federal agency decisions due to an inherent bureaucratic resistance to change (Barbour, 1980: 189). The action-forcing provisions of NEPA were initially not seriously embraced by these agencies and a weak compliance tactic employed by officials was to submit either superficial or incomprehensible, and often irrelevant, supporting information to defend development decisions which had *already been taken*; i.e. the provisions were not employed to *inform* decision-making. However, these tactics were generally unsuccessful and the deficiencies in legal compliance resulted in many public enquiries and/or litigation actions filed against the affected agencies.<sup>55</sup> Sadler (1996: 27) considers the legal process and public enquiries, which were features of this era, as having assisted with the constructive development of EIA. This supports the views of Taylor (1984) who suggests that the effectiveness of NEPA has been derived from the experience of initial resistance to EIA and learning from the consequent litigation - an action that fractured the previously closed process of intra/inter-agency decision-making. Although it might have been anticipated that EIA would become less effective in terms of achieving the ultimate goals of environmental policy - as agencies and the courts have respectively adapted to and approached the limits of legal intervention - this has not materialised. Thus, the indication is that a firm base of allegiance now exists within the new paradigm of environmental policy which NEPA has introduced.<sup>56</sup>

The extent to which political support for NEPA has persisted since its enactment in the US is questionable and the evidence suggests that there is good cause for skepticism in this respect (Caldwell, 1997: 39; Clark *et al.*, 1980: 1). However, whatever deficiencies might exist in political leadership in the arena of environmental policy, the action-forcing mechanism of NEPA, which is EIA, has endured for three decades as an extremely

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<sup>55</sup> Criticism of an apparently narrow judicial interpretation of the act that such litigation actions invoked is contested by Caldwell (1997: 25) who re-directs such criticism toward those authorities who failed in their responsibilities to support the declared intent of NEPA.

<sup>56</sup> Acknowledging the redundancy of litigation as a key forcing process of NEPA (a situation which typically applies in most non-litigative countries, such as South Africa), Taylor (1984: 270) attributes the successful institutionalisation of environmental values in federal bureaucracies as having emerged from a structure of behavioral incentives arising within a competitive "market" of multiple and overlapping centres of power. According to Taylor, this "market" is created by the equal access to the knowledge generated by EIA that is enjoyed by the external agency critics and the federal agencies. This promotes *competitive analysis* of such knowledge and thereby, the achievement of decision-making which is aligned with environmental policy goals.

relevant policy instrument. In the following sections the focus shifts to the development history of EIA, both in the US and worldwide, and it is intended that this will provide an insight into what has been achieved through the NEPA revolution. This historical analysis is also designed to provide a basis for establishing the co-evolutionary links between EIA and environmental ethics, which are described in Chapter 4.

### **2.3 ARTICULATING A NEW PARADIGM: THE POST-REVOLUTIONARY DEVELOPMENT OF ENVIRONMENTAL ASSESSMENT**

Although the emergence of a new paradigm proves essential to deal with crisis, this in no way implies that once established, it immediately meets the requirements and satisfies the interests of the community that it affects. To this end, the new paradigm becomes an object for further articulation under new and often increasingly more stringent conditions (Kuhn, 1970a: 23). In the case of EIA, these would manifest as a demand (based on a strengthening participatory democracy) for resolution of the deepening environmental crisis.

This section presents an interpretation of the process of paradigm articulation that has assisted the realisation of some of the goals of NEPA (and equivalent environmental policy beyond the US) through the continued development of the practice of environmental assessment. The post-revolution, cumulative pattern in this evolutionary history, which emerges in the following discussion, is typical of the development process of all normal science following the establishment of a new theoretical grounding (Kuhn, 1970a: 85, 139).

Of the many priorities that the practice of environmental assessment has addressed, one of the first has been to clarify the newly accepted paradigm into a more coherent version than that provided by NEPA. This section therefore opens with an analysis of some of the *clarification and re-formulation* initiatives that characterised the first decade of the practice of EIA. This is followed by a discussion of some of the initiatives that were aimed at *consolidating and extending the new paradigm* during its second decade. The chapter concludes with a discussion of the evolution of environmental assessment

during its third decade of practice, which is characterised by a number of initiatives designed to *maintain the validity* of the paradigm of environmental policy under increasingly more stringent conditions.

### ***2.3.1 Clarification and reformulation of a new paradigm: the first decade in the evolutionary development of environmental assessment***

Kuhn (1970a: 33) concludes that the initial focus of normal science following a scientific revolution is typically one which aims to *clarify* a newly accepted paradigm through its reformulation, using formal inductive principles, into a logically more coherent and precise version than the original from which investigation initially proceeds.<sup>57</sup> Although the goals of NEPA are relatively explicit (see Section 2.2 above), they do not clearly articulate how they are to be achieved and, as anticipated by Kuhn, an initiative that characterised the beginning of the era heralded by NEPA was the formulation of guidelines and directives for EIA that aimed to clarify the new paradigm. In the US these were published by the CEQ to assist federal agencies to meet NEPA's legal requirements and they came into effect as regulations in 1979.<sup>58</sup> According to Canter (1977: 4-6) the NEPA directives, upon which the EIA regulations are based, specified the following:

- That a systematic, interdisciplinary approach should be used to ensure the integrated use of the natural and social sciences and environmental design arts in planning and in decision-making that may have an impact on the human environment;

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<sup>57</sup> Kuhn's interpretation of the actions of intellectual consolidation which occur within the bounds of a new paradigm are differently described by Toulmin (1972: 122) as the units of intellectual variation which represent either *tentative* conceptual variants or units of *effective modification* which occur within a discipline.

<sup>58</sup> Many parties, including environmental groups, industry and agency officials welcomed the regulations (Carter, 1979: 345) and according to Clark (1997: 20) their effectiveness can be judged by the substantial decline in the number of NEPA lawsuits filed subsequent to their promulgation. However, an additional explanation is also offered by Clark (1997: 21) for the decreasing trend in EIA litigation actions. Rather than ascribing this (only) to the effectiveness of the NEPA guidelines and regulations, he cites the *reduced exposure* of agencies to litigation as possible explanation. In this context, there is currently a greater reliance by agencies on less rigorous (and less public) environmental assessments, which has reduced the number of Environmental Impact Statements submitted by federal authorities for public scrutiny.

- Methods and procedures should be identified and developed that will ensure that unquantified environmental amenities and values may be given appropriate consideration in decision-making along with technical and economic considerations; and
- The need to prepare environmental statements structured to include certain basic items, in particular a detailed statement covering five major areas: (i) the environmental impact (positive and negative; primary and secondary) of the proposed action; (ii) any adverse environmental effects that cannot be avoided should the proposal be implemented; (iii) alternatives to the proposed action; (iv) the relationship between local short-term uses of the human environment and the maintenance and enhancement of long-term productivity; and (v) any irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented.

Although a paradigm provides assurance in terms of resolving problems which are undertaken in the course of normal science, Kuhn (1970a: 38, 42) argues that puzzle-solving nevertheless requires rules - or access to *shared examples* which can serve the same cognitive function as rules (Kuhn, 1977: 319) - that limit both the nature of acceptable solutions and the steps by which they are to be obtained. Within the NEPA framework, the directives pertaining to EIA fulfilled this function by providing the discipline with a solid understanding and confirmation of the changed view that economic development and environmental quality had to be harmonised. This allowed the focus of EIA to be directed at bringing the residual puzzles that this paradigm presented to their various solutions.

In the mid to late 1970s, the above initiatives were supplemented with the publication of the first EIA textbooks, which according to Kuhn (1970a: 137; 1977: 228) fulfilled a typical function of recording the stable outcome of a scientific revolution. More importantly, these texts provided further articulation (clarification, reformulation) of the new paradigm as it was first tested in practice, and documented the early evolutionary development of the discipline in order to confirm the points of contact between paradigm theory and the real world within which its post-revolutionary validity had to be

expanded. Since a scientific community's identity within a paradigm is typically revealed in its textbooks (Kuhn, 1970a: 43, 46), these assumed a particularly significant role during the originary stage of EIA. By studying textbooks and the solutions to puzzles which they documented, entrants into the functions of EIA research and practice were introduced to a broad common grounding in the discipline (*vide* the previous reference to the role of rules and *shared examples*); i.e. the *tacit* knowledge which a paradigm provides (Oldroyd, 1986: 321; Chalmers, 1982: 93). Importantly, the textbooks on EIA captured the progress of puzzle-solving, which as described in Section 1.4, is the central challenge of all normal science (Kuhn, 1970a: 37). In this respect, the confidence to solve the EIA puzzles of the 1970s was derived largely from the paradigm itself, which provided the discipline with the criterion to select puzzles which could be assumed to have solutions.<sup>59</sup>

Solutions to some of the most pressing puzzles, arising from impact prediction in the context of environmental complexity, with which the discipline was presented rapidly emerged in the form of well defined methods for EIA, which were typically substantiated through reference to case studies.<sup>60</sup> Whilst environmental complexity was clearly acknowledged in the solutions that these methods offered, especially that created by humans acting within a dynamic enviroing context (Munn, 1975: 15-16), they are also notable for their pragmatism. Successful puzzle-solving was approached primarily through reducing complexity.<sup>61</sup> One way in which this was achieved was to fragment the

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<sup>59</sup> Kuhn (1970a: 37) argues that the scientific community acquires with a paradigm a criterion for choosing problems that can be assumed to have solutions. Other extra-paradigmatic ways of regarding problems are, therefore, typically not sought out (Kuhn, 1977: 229). Extending this argument into the domain of EIA, the NEPA paradigm states, for example, that "*important historical, cultural, and natural aspects of national heritage should be preserved and maintained*" (see Section 2.2); i.e. it thus becomes entirely feasible to design and develop solutions which have the achievement of this goal fixed as an end-point. However, without the guarantee provided by such a criterion, a solution is unlikely to be sought for such a puzzle.

<sup>60</sup> According to Kuhn (1970a: 46), theory is never learnt in isolation from its application. Examples of applications, therefore, always accompany theory into the textbooks from which the future practitioner of a particular field of science will learn the trade. The process of learning a theory depends largely upon the study of applications, which explain and provide practice for problem-solving.

<sup>61</sup> In the late 1970s EIAs were designed as brief summaries of environmental information - sufficient only to the extent that a project decision could be made (Bendix and Graham, 1978: vii); i.e. this pragmatic approach was designed to simplify complexity. This form of reductionism should not be confused with Wilson's (1998: 58) interpretation of the approach to good science, which is to break apart nature into its natural constituents in order to find points of entry into otherwise impenetrably complex systems.

environment into discrete components in order to analyze specific environmental impacts of actions (Weaver *et al.*, 1999: 7). Thus, the air environment was distinguished from the water environment, which was distinguished from the biological and socio-economic environments, etc. [for example, see Canter (1977: Ch 4-9)]. The methods also aimed to reduce complexity through the distillation of the practice of EIA into two main elements: a standardised *process*; and an array of *methods* of impact analysis. These in effect became an extension of the initial rules which first directed the discipline's course of evolution and, with some modification, have largely influenced its development up to the present.

Toward the end of the first decade in the history of EIA, a *process* for best practice in environmental assessment began to emerge. This provided a logical structure for the introduction of a variety of EIA methods to supplement and replace traditional approaches to project appraisal, which had previously focused only on analysis of technical/engineering issues and the economic values attached to project alternatives, for example using benefit-cost analysis (Heer and Hagerty, 1977: 150; Sadler, 1996: 27). The emerging methods were either developed for specific application to EIA, or were adopted and adapted to make them suitable for environmental assessment and impact prediction (Heer and Hagerty, 1977: 144).<sup>62</sup> Whilst it is not the purpose of this chapter to comprehensively describe EIA methods, a brief review of methodology is necessary in order to define the route taken in the evolutionary development of EIA. The following discussion is based largely on the review of EIA methods of the 1970s presented by Canter and Sadler (1997: 11-12).

*Check-lists (simple and decision-focused)* were one of the first tools to be applied in EIA and were generally designed to provide an extensive listing of possible areas of project impact on listed attributes of the environment (air, water, land, socio-economic characteristics of the environment etc.); i.e. the function of simple checklists was

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<sup>62</sup> McHarg (1969) advocated the value of proactive and systematic consideration of environmental limits, development impacts and alternatives, i.e. an approach which is considered to have been the forerunner of EIA (Barrow, 1997: 167). EIA methodology that was *adopted* from McHarg's planning discipline includes for example, the technique of graphic overlay of development opportunities and constraints.

primarily to prevent issues from being overlooked in the assessment process. Some of the checklist methods were also extremely comprehensive, in the sense that they provided a high level of descriptive information characterizing the various environmental attributes which could be exposed to project impacts (Heer and Hagerty, 1997: 160). Within the checklist category, decision-focused methods, such as scaling and scaling-weighting checklists [for example, the *Batelle environmental evaluation system* (Dee *et al.*, 1973)] evolved as procedures for synthesizing information from impact studies and were used mainly for trade-off analysis with the ultimate purpose of comparing project alternatives (Canter and Sadler, 1997: 7). These methods incorporated quantitative indices into the assessment techniques, which were often computer-aided. Examples of EIA checklist methodologies applied in the 1970s are described by Jain *et al.* (1977: 78-91) and Canter (1977: 199-216).

*Inventories and mass-balance calculations* of environmental conditions were often used to support EIA in order to compare anticipated changes resulting from proposed actions. Inventories were typically used in the context of air and water pollutant emissions, and solid and hazardous waste generation (Canter and Sadler, 1997: 9). Anticipated environmental response relative to a quantified baseline condition was expressed as a percentage change (increase, decrease) or a mass-balance shift within the resource inventory as this was calculated or expected to materialise as a result of project actions.

*Interaction matrix* methodologies also characterised the early evolutionary phase of EIA. These matrix approaches were generally modeled around the method developed by Leopold *et al.* (1971). The methodologies which have been employed since the early 1970s are designed to use matrices created by project actions and environmental characteristics, which are listed down and across the matrix axes. A mechanism is thereby created to identify impacts in a cause-effect relationship between actions and environmental items (Munn, 1975: 53). The impacts are typically scored using a scalar system (numerical and other category units) to assign ratings of impact magnitude, importance, probability of occurrence, potential reversibility, etc. Project phasing, as well as temporal and spatial variations that might characterise different impacts are

accommodated in more sophisticated matrix methodologies (Canter and Sadler, 1997: 41-44). *Network methods* evolved together with matrices and were applied to delineate connections or relationships between project actions and resultant impacts in a manner which could illustrate primary, secondary and tertiary impact relationships (Canter, 1977: 196; Canter and Sadler, 1997: 10; Clark *et al.*, 1980: 18-19). These relationships were depicted as impact trees, impact chains, cause-effect diagrams etc.

Since impact analysis comprises an anticipatory procedure, *qualitative or conceptual modeling* was used as a method for EIA during the 1970s to project simplified representations of an anticipated project reality (Munn, 1975: 68). However, environmental data deficiencies in the 1970s tended to constrain qualitative modeling attempts to address the linkages between various actions and resultant changes in environmental components, and modeling methods were really an extension of the network methods just described. Although the modeling design was largely based on the portrayal of linear cause-effect relationships, the challenge which was recognised at the time was to develop models for EIA which could ultimately better explain the complex non-linear and dynamic relationships which more realistically defined the environmental cause-effects responses to project actions (Munn, 1975: 68).

If the evolution of EIA during its first decade of practice projects a distinguishable pattern in the direction which it has taken - using the above analysis of methods as a gauge - this is perhaps best described as one which has permitted the discipline to derive solutions to the most immediate challenge which it has faced. This challenge was to *begin* the reversal of a deeply institutionalised practice of narrow economic determinism in decision-making (Sagoff, 1988: 148).<sup>63</sup> The pattern which is projected is one which characterises the attempts which have been made to reduce the complexity of the immediate challenge of EIA firstly, through *simplification* of the process and

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<sup>63</sup> Toward the end of the 1970s, some criticism was directed at the failure of EIA because of the excessive paperwork it entailed and the concomitant inefficiency and delays that it introduced to project decision-making (Cronin and Mylroie, 1978: 231). However, Clark (1997: 22), in his analysis of the accomplishments of NEPA, concludes that EIA revolutionised the consideration by government agencies of the environmental effects of projects and programmes and that it modified many proposed actions in ways that have reduced or avoided environmental impacts.

methods of impact analysis, and secondly, through *fragmentation* of the environment into discrete components for the purpose of modeling and communicating a first understanding of cause-effect relationships.<sup>64</sup> This does not imply that the deficiencies that these approaches introduced into impact analysis were not anticipated; however, solutions to the puzzles of complexity were not considered to be immediately derivable and attention was directed at their further articulation, rather than solution.<sup>65</sup>

Perhaps the most important puzzle - which is ultimately fundamental to the successful implementation of environmental policy - was neither resolved nor well articulated during the 1970s. The EIA process and methodologies that were developed at the time did not elevate the serious consideration of the role of social values (eg. pertaining to intragenerational environmental justice issues around participation in decision-making and equal access to resources) and conscious or subconscious commitments to the cost and benefits of environmental values. EIA at best was viewed as a practice which dealt thoughtfully, but dispassionately with the short- and long-term uses of natural and human resources (De Santo, 1978: 35, 36). A reluctance to embrace the *passionate* dimension of social values is explained by Kuhn (1970a: 37) as an aversion which normal science typically displays toward problems that do not seem to have solutions that are derivable within the discipline. Such problems are rejected for reasons such as their metaphysical nature, their location within the domain of another discipline, as being too problematic to be worth the time, or not reducible to a puzzle form because they cannot be stated in terms of the conceptual and instrumental tools which the paradigm supplies. Thus, the puzzle of *effectively* responding to social and ethical values, as a dimension of EIA, was not taken up seriously, and was left to be resolved

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<sup>64</sup> De Santo (1978: 36) and Gardiner (1980: 82) state that one view of EIA in the 1970s was that it represented a cookbook or statistical approach, which when followed, would state whether a project was good or bad. Whilst this perhaps exaggerates the simplification through which EIA dealt with environmental complexity, it is accurate in the sense that pragmatism in methodology was perceived to be the best way of implementing a policy mandate in a situation of acknowledged environmental ignorance.

<sup>65</sup> Some of the complex issues with which the discipline of EIA is currently making progress were first articulated in the early textbooks on environmental impact assessment. For example, Munn (1975: 165) touches on the topical fields of both Cumulative Effects Assessment and Strategic Environmental Assessment, by highlighting the problems of project-level impact assessment that cannot portray the combined effects of a number of projects which may individually be deemed acceptable.

in the decades which followed under more stringent conditions than those which defined the first era of EIA practice (Manheim, 1981: 312; Suskind, 1982: 7).

### ***2.3.2 Paradigm consolidation and extension: the second decade in the evolutionary development of environmental assessment***

In many respects, EIA was considered to be a mature discipline toward the end of the 1970s (Bendix and Graham, 1978). With maturity came the confidence provided by a strong foundation of growing paradigm allegiance which removed the pre-condition for new developments and new concepts within the field of practice to be continually defended from first principles (Kuhn, 1970a: 19-20). During the 1980s EIA could, therefore, proceed ever more efficiently, from a grounding which enabled its global scope of application to increase dramatically. These developments of the 1980s are discussed in the sections that follow.

#### **2.3.2.1 Paradigm consolidation: enhancing the social dimension of environmental assessment**

The record of innovation in impact assessment beyond the 1970s was no longer limited to the domain of textbooks, but appeared in a form which clearly identified the practice of EIA as a mature discipline - one in which communication between peers was achieved through professional and scientific journals (*vide* Kuhn's (1970a: 20) views on the importance of exemplars in directing post-revolutionary normal science). In 1980, the first journal of environmental assessment was published, and it is through such a medium that the research and development priorities of the 1980s emerged. Significantly, a trend that would provide the impetus for an important area of innovation in the development of EIA during this period was defined in the first journal issue, which alerted the discipline to the priority of integrating social issues into EIA.

At the beginning of the second decade of EIA, Nicholson (1980: 5) argued that the role of public participation in environmental protection would become increasingly more strongly linked to the pattern of decentralisation of authority and a shift from representative democracy toward participatory democracy. The attractive force that this

political shift exercised over environmental decision-making became inevitable as it was increasingly recognised that the qualities of nonhuman natural environmental systems and the character of economic and human community systems were inseparable. The trend toward participatory democracy introduced the expectation of society that citizens should be consulted frequently on issues that impact their lives (Susskind, 1982: 7; Paehlke, 1988: 298). In this respect, the power of EIA to inform environmental decision-making, and its effectiveness in terms of communicating scientific information of increasing levels of complexity and perceived significance in terms of human well-being, made it inevitable that participatory democracy would become infused into EIA. The cue was thus given for social values to be taken up seriously within the domain of EIA.

Public participation was not a new concept for EIA in the 1980s and had been identified in the preceding decade as an important element of environmental assessment. Canter (1977: 222), for example, defined the objectives of public participation as being central to the securement of the following: information exchange and stakeholder education; the identification of problems, needs and important values; idea generation and problem-solving; reaction and feed-back on proposals; evaluation of alternatives; and conflict resolution. As elaborated by Canter (1996: 587-622), the objectives of public participation in environmental decision-making have remained fundamentally important to EIA up to the present. However, taking into account the number of EIA litigation actions which were issued against federal authorities during the 1970s, it is clear that these objectives had not been achieved - a situation which Caldwell (1997: 25) attributes to a lack of commitment to the process of EIA, which was intended to embrace public participation as a key requirement. Susskind (1982: 7) and Graham Smith (1993: 8) also note that the early development of EIA took place in an era dominated by a technocratic perspective on problem-solving and with an emphasis on bio-physical impacts; i.e. a situation in which the social dimension of impact assessment was regarded as external to the EIA process.

Considering the imbalance in ability to debate complex technical issues which existed between private individuals on the one hand and the concentrated political and economic power of industry and government on the other (Barbour, 1980: 117-118), an

ineffectual process of public participation in EIA during its early stage of development might have been anticipated. In the US, public involvement in EIA during the 1970s had become adversarial, rather than participatory, which resulted in the obfuscation of the key environmental issues central to project decision-making (Canter, 1997: 2-1). Guidelines and regulations were therefore issued by the CEQ that introduced the concept of *scoping* in order to address this deficiency and to streamline the approach to EIA (Council on Environmental Quality, 1978; Carpenter, 1981: 185).

Scoping is defined as a process which distills from the broad range of potential problems which might be identified at the initial stage of an EIA, the priority issues to be addressed; i.e. it is designed to focus an environmental assessment on a manageable number of important questions upon which decision-making is expected to turn (Beanlands, 1988: 33; Wathern, 1988: 9). The analytical process through which issues are prioritised in the course of scoping, is described by Canter (1997), who defines the value of professional judgment in this respect and the more structured process of qualitative review, through which criteria are introduced into the prioritisation process. Criteria which are used to evaluate issues include questions such as: considerations pertaining to human health; environmental vulnerability; likelihood of secondary and cumulative impacts; duration of impact; institutional definition of impact significance; level of public concern, etc. Scoping is, therefore, designed to set the terms of reference for an EIA through the identification and clarification of project alternatives and the definition of the associated direct, indirect and cumulative impacts (Tomlinson, 1984: 186). Central to this process, is the opportunity which scoping provides for public involvement in the translation of environmental policy into tangible specifications for individual EIAs; i.e. scoping extracts social values (Canter, 1996: 588) in order to formulate technical questions to be resolved through scientific enquiry (Beanlands, 1988: 34, 37).

Barbour (1980: 118-121) defines two kinds of special interest groups which are represented in the politics within which a process such as scoping operates. He defines these as *industry and private interest groups* on the one hand and *citizens and public interest groups* on the other. *Industry and private interest groups* tend to operate from a

position of economic power that secures them a positive affiliation with government mainly due to the direct impact that their interests have on the economy. In closed or low visibility situations of decision-making the power of these highly organised private interests is typically maximised (Andrews, 1980: 228). Such groups are, however, also exposed to the immediate economic costs of environmental constraints that might be imposed on them through EIA. *Citizens and public interest groups* represent the interests of the wider public, which are mainly non-economic and generally relate to concerns for environmental quality, and defend values that tend to be neglected by private interest groups. Since project costs and benefits are not equally distributed across a community, it became the task of scoping to capture the issues which are significant to both the potential losers and winners of affected communities. This required a commitment to procedural and distributive justice in order to maintain the integrity of the EIA process (Barrett and Grizzle, 1999: 29). However, as Burdge and Vanclay (1995: 47) explain, this presents environmental assessment with one of its most complex dilemmas: Since communities are rarely static, the values, beliefs and behaviours of members tend to shift continually as there is change and turnover in populations.<sup>66</sup> It is therefore difficult to establish whose views are entitled to be established and which community views (many of which may not be clearly articulated) are most legitimate. Since sustainability is a key element of the new paradigm in environmental policy, the question also arises as to how to gauge the values of future communities, who might not share project benefits but could inherit the costs nevertheless (Burdge and Vanclay, 1995: 49).<sup>67</sup>

Methodological innovation in EIA acknowledged that social values are as diverse as the individuals who constitute society, and recognised the major dichotomy between private and public interests that need to be balanced in environmental decision-making.

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<sup>66</sup> Even within 'stable homogenous communities' differences in values and perceptions of community impact differ between gender and race (Ross, 1985: 179).

<sup>67</sup> In their interpretation of sustainability as non-declining welfare, Holland *et al.* (1996: 42-43) note that actual welfare or happiness of a population is a function of a number of circumstances which cannot realistically be anticipated or provided for; i.e. individual psychological disposition, cultural circumstances etc. The authors conclude that these difficulties are serious when the welfare of the current generation is considered, but that they become compounded when an attempt is made to provide for the welfare of future people.

Recognizing the dilemma of understanding the definition of community in EIA, various scoping techniques were developed in a pragmatic attempt to stratify the broad public into interest groups and to extract the values and concerns articulated by such groups.<sup>68</sup> An approach to define the sphere of public involvement in EIA is described by Creighton (1981: 201-202), for example, who suggests the following criteria to objectively define the boundaries of a public participation programme: geographical proximity (to an action of concern); economic winners (those who stand to gain from an action); users of the resource/s (which might be affected by an action); winners and losers in a social context;<sup>69</sup> and value advocates, who may be geographically distant from the proposed action. Examples of other definitions of public groups are provided by Wood (1978: 206), who introduces the concept of citizens' committees and neighbourhood populations, and Canter (1996: 596-598), who identifies labour unions, sporting groups, business and industrial groups, professional organisations, civic and non-governmental organisations as some examples of the many public groupings.

The *fragmentation* of the social environment into discrete components for the purpose of extracting diverse social values had a domino-effect on the development and application of compatible impact evaluation methods. The aggregative techniques of the 1970s became less appropriate for impact assessment since they could not reveal to the public and decision-makers the rationale and judgments upon which they were based (Bisset, 1980; Hollick, 1981; Lee, 1982). One of the major constraints of aggregation relates to the attachment of significance to impacts, which presupposes both scientific consensus on theory and political consensus on value - neither of which are readily available (Elliott, 1981: 16). In particular, aggregative techniques could not analyze the distributional and equity effects of proposed actions on affected

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<sup>68</sup> Burdge and Vanclay (1995: 56) argue that a failing of the logical-positivist model of EIA is the assumption that the social concerns of interested and affected parties who might be consulted in the course of scoping are derived from a common perspective and common goals. It is suggested that this approach does not accommodate the diverse social concerns (cultural issues, for example) that are not reducible to a form that is entirely suitable for scientific enquiry or trade-off analysis in considering alternatives in impact evaluation. Assuming that scoping is effective in terms of articulating and successfully prioritizing the values of different interest groups, EIA is then exposed to one of its greatest dilemmas - which centres on the question of how to employ science to address social values using the tools with which the discipline has equipped itself. This issue was raised in Chapter 1.

<sup>69</sup> Holmes Rolston (1994: 218) argues that win-lose solutions become redundant as the concept of sustainable development is embraced; i.e. that economic growth and environmental protection should go hand-in-hand.

communities (Westman, 1985: 162; Bacow, 1980: 121). With the infusion of public participation into EIA, and the introduction of scoping as a key element of the assessment process, evaluation techniques emerged which disaggregated public values by indicating how various groups would benefit or lose as a result of the assessed actions. Examples of such techniques include *goals-achievement matrices*, which exposed the benefits and costs of impacts to various stakeholders in a disaggregated form (McAllister, 1980: 164) and *simple trade-off matrices*, which employed physical, monetary and qualitative evaluation units to assist the comparative analysis of impacts affecting various public groups (Westman, 1985: 159).

The shift in emphasis toward disaggregating public values in impact analysis also served to raise the level of methodological enquiry in EIA into the interpretation of *impact significance*. As Westman (1985: 14) and Elliott (1981: 16) observe, the problem with arriving at an objective definition of significance is that it is a *normative* term which depends on the human values which are both applied and considered in its judgment in various contexts. However, contrary to the positivist orientation with which EIA has been labeled (Burdge and Vanclay 1995: 56), the assignment of impact significance has been retained *within* the domain of EIA as a key criterion of impact analysis (Beanlands and Duinker, 1982) and value judgements have not been assumed to be purely political and external to the EIA process (Westman 1985: 15). For example, within the field of ecology - as it is applied in EIA - ecological science was appreciated as an EIA tool through which society can be assisted in appreciating the environment (ecosystems), not only in terms of utility value, but (indirectly) intrinsic value as well - through its employment to establish how ecosystem processes function and maintain system integrity (Sagoff, 1985: 100).

Initially, the interpretation of NEPA was considered to apply only to physical, biological and economic concerns; i.e. impacts on human populations were not seriously considered to be a part of the environment (Burdge *et al.*, 1994: 77; Barrow, 1997: 169). However, quality of the *human environment* was incorporated as a NEPA provision in the CEQ regulations that were published subsequent to NEPA's enactment, and this ultimately led to the introduction of the formalised procedure of Social Impact

Assessment (SIA). As Kuhn (1970a: 37, 50) would argue, the new environmental paradigm which NEPA introduced was able to simultaneously determine more than one tradition of normal science; i.e. whilst EIA was not able to fully reduce the analysis of social impacts to a puzzle form that could be stated in terms of the discipline's tools, an alternative location for solving the puzzle had been found within the domain of SIA. Social Impact Assessment therefore grew out of a requirement to apply sociology and related social sciences in an attempt to predict the social effects or consequences of environmental alterations resulting from policy actions or development projects (Burdge and Vanclay, 1995: 32, 34).<sup>70</sup>

In EIA, the disaggregation of the social environment from its greater enviroining context had arisen in response to what Burdge and Vanclay (1995: 46, 55) describe as the asocietal mentality of politicians, officials, physical scientists, engineers and many economists and planners. These authors argue that the mindset derived from this mentality is the antithesis of the social processes and social scientific theories and methodologies which differ from the more familiar approaches adopted in the physical sciences. This could be anticipated, since the history of EIA had presented the discipline as one constructed upon a logical-positivist model of environmental analysis, and the analytical reductionism that this introduces was well aligned with traditional approaches to planning and policy development. This alignment contrasted with social theory that is able to deal with cultural issues, such as the metaphysical dimension of spirituality for example, which EIA could not address effectively with the methodology that the discipline had accumulated along its evolutionary course. As a result of ideological resistance, SIA tended to be excluded from EIA, which was considered to

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<sup>70</sup> The social consequences of policy actions and development projects include, for example, impacts which cause changes to populations, individuals and families, community and institutional structures, community resources, and political and social resources (Interorganisational Committee, 1994: 23). Other categories of social impacts include: indicators of individual and community well-being (Branch *et al.*, 1984); and lifestyles, attitudes beliefs and values, and social organisation (Taylor *et al.*, 1990). A range of SIA methods are applied to predict the social consequences of development and policy change - for example: the use of *Quality of Social Life Indicators* (Olsen *et al.*, 1981); and *comparative modeling*, which extends historical evidence of social response to anticipated situations (Burdge and Johnson, 1994). A review of some of SIA methods is provided (*inter alia*) by Finsterbusch (1981) and Burdge and Vanclay (1995).

adequately address social issues.<sup>71</sup> However, these were addressed only in a very narrowly reduced form, where the focus was mainly on the analysis of anticipated demographic changes and economic consequences of proposed developments on affected communities (Burdge and Vanclay, 1995: 55).<sup>72</sup>

Failure to accept the need for SIA, and a tendency to reject or not take seriously the results of such assessments, to a large extent marginalised the discipline from mainstream environmental assessment, at least during the 1970s. However, as the evolution of EIA entered its second decade, this trend was reversed and efforts were initiated to begin the consolidation of social issues within a broader definition of the environment and within a more holistic context of environmental issues addressed in EIA (Sadler, 1996: 27). An important platform that assisted this process was the founding of the *International Association for Impact Assessment* (IAIA) in 1981, which provided an international forum for communication in the areas of research and practice of EIA, SIA and other types of assessments (Burdge, 1994: 4).<sup>73</sup> Following this, progress in the development and application of SIA methodology appeared in the environmental assessment textbooks of the 1980s, published alongside the record of equivalent developments in EIA (for example: Boskma, 1986; Peters, 1986; Muth and Lee, 1986 published in Becker and Porter, 1986). Research publications on SIA also appeared in a similar context within the professional journals on environmental assessment (for example: Branch, 1981; Ross, 1985; Gondolf and Wells, 1986; Burdge, 1987; Armour, 1988).

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<sup>71</sup> The general exclusion of SIA from the formalised procedure of EIA does not imply that social impacts of development projects were ignored in all instances. There are several examples where high profile enquiries were conducted into the social consequences of development projects. For example, Burdge (1994: 4) reviews the case of the Canadian Mackenzie Valley pipeline project in which serious consideration was given to the social impacts on native populations affected by this development.

<sup>72</sup> This focus on economic issues was a natural tendency for impact assessment since they are easy to quantify and tend to display visible rapid changes (Olshansky, 1981: 6).

<sup>73</sup> Caldwell (2000: i) observes that the establishment of the IAIA in 1981 represents an extraordinarily rapid professionalisation of impact assessment (and the incorporation of social assessment into the process) of world-wide dimensions.

Since the 1980s, the contribution that SIA could make to environmental assessment began to receive acknowledgment and a widespread consensus emerged that human or social impacts should be considered as part of the environment. Thus, SIA started to become fully integrated into the EIA process and into the greater planning and political process as well (Burdge and Vanclay, 1995: 60-61). Although EIA and SIA research during the 1970s had been individually guided by the new environmental paradigm without reduction to a common set of rules (*vide* Kuhn, 1970a: 43, 44), research output within the arena of environmental assessment during the 1980s revealed that what had been abstracted from the global paradigm did in fact translate into common rules. These rules demanded greater attention to be directed at environmental consolidation with a greater focus on the social dimension in EIA.<sup>74</sup> In making this complex transition, there was also the recognition that an equally complex challenge also had to be resolved, which was the application of impact assessment at the level of ecosystemic wholes.

### **2.3.2.2 Paradigm consolidation: the re-aggregation of ecosystemic wholes**

Environmental consolidation during the 1980s was not limited only to the social dimension of EIA, but is also reflected in ecosystem and landscape level approaches to environmental assessment (Sadler, 1996: 27). *Ecological impact assessment* originated as a specialist field of EIA in response to global concerns pertaining to the risk of irreversible damage to ecosystem functions that could be essential to human well-being (Treweek, 1995: 171). The catalyst for such concern at this time was the developing debate concerning biodiversity conservation and the principles of sustainable development (International Union for the Conservation of Nature and Natural Resources (IUCN), 1980; World Commission on Environment and Development (WCED), 1987).

Whilst the challenge of dealing with environmental complexity remained formidable, EIA during the 1980s shifted toward a broader, more integrative approach that extended

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<sup>74</sup> The procedural steps in the Social Impact Assessment model, which are outlined by Burdge and Vanclay (1995: 41-42), are the same as those that are broadly accepted for EIA; i.e. the incorporation of the social dimension into the definition of environment has introduced a commonality in the *rules* for environmental assessment.

beyond institutional and legal parameters of environmental protection, such as adherence to environmental standards for example. Attention was directed at the effects of human activities on the *overall* composition, structure and functioning of natural ecosystems and at analyzing the consequences of human actions on ecosystem integrity and productivity (Westman, 1985: 4). Although this might also have been an objective of EIA during the 1970s, its achievement was constrained by the extension of a largely descriptive ecological literature into the predictive mode required of EIA (Westman, 1985: 3); i.e. ecology as a component of EIA could not be employed to withstand rigorous scientific testing (Bisset, 1988: 59). This deficiency was partly resolved through the development of several major ecological theories and analytical techniques just prior to and during the 1970s that began to find application in EIA in the following decades. Some examples of these developments include: the theory of island biogeography developed by MacArthur and Wilson (1967) and others; the emergence of conservation biology as a defined field of ecology; and, as described by Norton (1984b), ecological systems analysis, which was developed as a predictive tool for modelling the functioning of ecosystems.

Ecological impact assessment is described as the formal process of defining, quantifying and evaluating the potential impacts of defined actions on natural ecosystems, as these exist and are influenced by humans (Treweek, 1995: 172). Such assessment is contingent upon an understanding of ecosystem *composition* and *structure* and the *functional processes* which link ecosystem components (habitat relationships, nutrient cycling, energy flow etc.). The baseline situation upon which the impacts of proposed actions can be superimposed and evaluated is assessed by means of habitat surveys, taxonomic classifications etc., which are used to inventorise ecosystem composition. Structural attributes of ecosystems that might be quantified in baseline analyses could include variables such as species richness and diversity, whilst analysis of functional attributes could include productivity, rates of colonisation and

extinction etc. (Noss, 1990).<sup>75</sup> Quantification of ecosystem functioning is a complex task which is rarely achieved in EIA, although modelling can be applied in data-rich and well researched environments, from which inferential rules can be derived for selected application elsewhere.

Various analysis techniques are employed in ecological impact assessment. For example, remotely sensed resource information has been processed using Geographical Information Systems (GISs) to create overlay series that highlight areas where the anticipated risk of ecological impact is likely to be greatest, or cumulative impacts are likely to arise (Fuller and Parcel, 1990).<sup>76</sup> GIS is also useful for determining quantitative indices based on spatial attributes which might be related to functional aspects of landscape ecology, including: fragmentation indices, which are important in terms of species dispersal distances; patch size analyses; and edge:interior ratio calculations (Treweek, 1995: 177). Flowcharts and network methods of impact prediction are commonly used to identify chains and webs of impact and illustrate knock-on effects from primary impacts (Morris, 1995: 215). In situations where ecosystem functioning is well understood, modelling techniques have been used to describe relationships between ecosystem components, processes and impact cause-effects relationships, which permit the focus of impact analysis to be directed at impact-ecosystem linkages which are of greatest consequence (Shopley *et al.*, 1990).

Impact prediction in ecological assessment is generally determined by means of comparison between an anticipated impacted state (or measured state in the case of monitoring) and reference standards, such as existing background states or the threshold states at which species or ecosystem functioning are expected to be jeopardised (Treweek, 1995: 179). Beyond this *positive* application of scientific theory

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<sup>75</sup> A typical failing of ecological baseline assessments in EIA is to define conditions that capture the inherent temporal and spatial variability of natural systems (Beanlands and Duinker, 1983). Baseline conditions are never static and change seasonally and in response to natural processes such as ecological succession (Morris, 1995: 211). Snapshot surveys, which compromise the accuracy of ecological assessments, are often employed in EIA due to schedule and budget constraints (Morris, 1995: 198, 208)

<sup>76</sup> Constraint mapping is a baseline survey technique used to identify all known ecological constraints within a selected area of search, often using GIS (Morris, 1995: 223).

and analytical methodology, the assignment of *impact significance* enters the *normative* dimension of ecology, through which moral value judgments determine which, and at what level of integrity, ecosystem attributes 'ought' to be maintained (Norton, 1984b: 233).<sup>77</sup> This subjective and inherently *political* process tends to be grounded in policy-aims, national legislation or international conventions (Morris, 1995: 200); alternatively, it might be influenced by socio-economic considerations, or simply reflect the opinion of the impact assessor (Gilpin, 1995: 7).<sup>78</sup>

The use of impact analysis methods which can satisfy statistically valid interpretations of impact significance is generally not possible in EIA due to the lack of scope for sample randomisation, replication and control surveys (Eberhardt, 1976; Smith *et al.*, 1993). However, provided analysis limitations are made explicit (Culhane *et al.*, 1987), quantified time-series impact predictions can be derived and expressed as hypotheses which can be tested using monitoring data (Duinker, 1987; Buckley, 1991).<sup>79</sup> *Environmental quality models*, which use community species composition as a sensitive indicator of environmental stress (Cairns and Niederlehner, 1993), *indices of biotic integrity* (Karr, 1991), *habitat suitability indices*, and *limits of acceptable change* are examples of approaches used in various applications of ecological impact assessment.

Whilst ecological impact assessment is rarely employed to full effect at the project level of environmental assessment, typically due to the constraints of assessing cumulative

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<sup>77</sup> Although ultimately normative in the sense that humans attach values of significance to ecological impacts at a first order level of assessment, a second order level of objectivity is introduced into the assessment process through the use of various ecological evaluation methods such as *priority ranking* and *composite indices* (Spellerberg, 1992).

<sup>78</sup> Ultimately, the assessment of ecological impact significance is derived from trade-offs between human preferences. The normative dimension of ecology derives from its power to inform the selection of particular ecological outcomes as these may be affected by human actions; eg. the selection of different project alternatives and impact mitigation options. The fluidity between the positive and normative dimensions of ecology introduces the greatest source of inconsistency in the application and effectiveness of ecological impact assessment (Pritchard, 1993). Even where the aim of ecological evaluation is to identify the intrinsic value of nature (Gilpin, 1995: 42), it is argued that there can be no value without a valuer (Callicott, 1996); i.e. which introduces the normative dimension of ecological assessment.

<sup>79</sup> Hypothesis generation, testing and re-formulation (insofar as this relates to ecological impact analysis) are consistent with the approach adopted in Environmental Management Systems (ISO 14001, for example), which aims to achieve continual improvement in environmental management performance. A management system approach permits the re-formulation and re-testing of hypotheses that are found to be invalid on the basis of monitoring data (Buckley, 1991); i.e. remedial action can be employed to mitigate impacts where circumstances permit.

or long-term effects, it is in the arena of higher order policy and planning initiatives that this tool for environmental assessment has most potential to inform decision-making. At the level of regional planning for example, integrated modeling of development impacts becomes possible, which can take into account the full sphere of development patterns, cumulative and interactive effects and ecosystem responses (Contant and Wiggins, 1991). Only at such a scale is predictive analysis possible, which can place the impacts of alternative planning scenarios in the context of existing or expected environmental conditions, and simultaneously provide a rational basis for translating principles of biodiversity conservation, for example, into measurable ecological attributes, such as carrying capacity, minimum viable population sizes, etc. (Treweek, 1995: 186). In this respect, recent developments in environmental assessment, such as the introduction of Strategic Environmental Assessment (discussed later), provide greater opportunity for the more effective application of ecological impact assessment.

### **2.3.2.3 Paradigm extension through its global diffusion**

The anomaly and crisis in environmental policy that triggered the introduction of NEPA in the US existed at the same time in most Western countries (Sadler, 1996: 26). The exponential rate of growth in technology and the dominance of narrow economic determinism within the developed world had created environmental problems of such magnitude that their resolution was impossible within the bounds of existing policy mechanisms, and the environment, therefore, became a globally important political issue (Carpenter, 1981: 176). In the tradition of scientific revolution, since traditional rules could no longer define a playable game (Kuhn, 1970a: 76, 90), a new paradigm that proved capable of solving the problems it defined was quickly embraced, and the tools that it offered (i.e. EIA methodology) were employed with little hesitation as allegiance to the new paradigm was secured.<sup>80</sup> Kuhn (1970a: 168) argues that such allegiance provides an essential confirmation of the status of a new paradigm, since the

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<sup>80</sup> Although NEPA served as the most important catalyst and template for the introduction of EIA in countries outside the US (Manheim, 1994: 43; Barrow, 1997: 170), several other initiatives accelerated its global institutionalisation. The first of these, which endorsed a number of principles pertaining to EIA, was the 1972 *United Nations Conference on the Human Environment* in Stockholm (Gilpin, 1995: 9). Other initiatives launched during the 1980s, which promoted NEPA's central theme of sustainable development, included the IUCN's *World Conservation Strategy* and the *United Nations Environment Program* (UNEP).

solutions that it offers must be accepted as solutions by many. EIA, which promised to become an effective action-forcing mechanism of the new environmental paradigm in the US, diffused rapidly into the environmental policies and institutions of the developed world and significantly extended the paradigm's sphere of impact (Wandesforde-Smith, 1980: 53).<sup>81</sup>

EIA was first applied on a test basis in Canada at about the same time as NEPA's enactment, and it is now considered to have the most advanced application in this country (Barrow, 1997: 170, 174).<sup>82</sup> At about the same time in Europe (the most industrialised centre beyond North America) it was recognised that environmental concerns were inseparable from most other policy areas, and consequently, the *European Economic Community* formulated a series of agreements pertaining to environmental protection (Gilpin, 1995: 74).<sup>83</sup> These agreements emphasised preventive action, particularly about pollution, land misuse and the production of waste, and by 1977 investigations were initiated into how appropriate environmental impact procedures might be introduced into the *European Community (EC)* (Gilpin, 1995: 74). In 1985 the concept of environmental impact statements was proposed for consideration by EC members in cases pertaining projects that could cause significant effects on the environment, and by 1989 the proposal became a requirement for inclusion in national legislation of member countries (Burdge, 1994: 4).<sup>84</sup> In the UK, the

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<sup>81</sup> The political systems within which EIA has been taken up varies between countries. Some are in the form of mandatory and enforceable regulations, acts or statutes; others require EIA at the discretion of administering agencies; and yet others incorporate EIA as unenforceable guidelines, with some form of obligation imposed on the administering agencies (Glasson *et al.*, 1994: 34). According to Partidário and Clark (2000: 3) more than 80 countries have passed legislation that requires a full accounting of the likely impacts of development decisions.

<sup>82</sup> Other countries of similar status to Canada in terms of the advanced application of environmental assessment include Australia and the Netherlands, whilst Sweden and Norway are also considered to be progressive users of EIA (Barrow, 1997: 170).

<sup>83</sup> Similar initiatives were adopted by the *Council of Nordic Ministers*. In 1990, for example, the Council initiated a review of EIA procedures in order to introduce analysis and assessment of environmental impacts as a natural element in all sectoral planning and in decision-making at all levels (Gilpin, 1995: 76).

<sup>84</sup> A flaw in the *European Community* directive pertaining to EIA is the recognition that there are certain classes of exemption; for example, projects that are adopted by specific Acts of legislation, and projects serving national defence purposes. The directive is also confined to projects and is not extended to programmes and policies; however, at the 1992 UN *Conference on Environment and Development*, the *European Commission* stated the necessity to extend the EIA principle upstream to the policy-making and planning stages of development (Gilpin, 1995: 76).

formal adoption of environmental impact analysis was initially viewed as an unnecessary and/or bureaucratic supplement to existing land-use planning systems, and was seen to present a risk of retarding development if implemented on a broad scale.<sup>85</sup> A strategy was, therefore, adopted to first assess the success of environmental assessment initiatives in other European countries (Breakell and Glasson, 1981: 15). However, EIA became legally entrenched in the UK following the publication of the EC directive, which led to the 1992 enactment of the *Environmental Protection Act of 1990* (Wood and Jones, 1992: 115).

National principles for EIA that have been developed in countries such as Canada and Australia capture the most important elements of the evolutionary advancement in EIA, in particular an increased emphasis on public participation (Gilpin, 1995: 10). In contrast, the application of EIA in some countries, such as the UK, carries certain deficiencies in this respect, particularly relating to the incorporation of public participation late in the process of environmental appraisal (O’Riordan, 1981: 99; Barrow, 1997: 182). Similar deficiencies apply in other developed countries beyond Europe. For example, in Japan effective public involvement is constrained by autocratic decision-making and the lack of serious enforcement of principles for environmental assessment due to the precedence of economic growth over concern for environmental quality (Gilpin, 1995: 134-136; Barrow, 1997: 177; Barrett and Therivel, 1989).

Beyond the developed world, growth in foreign investment and development increased rapidly during the 1970s and 1980s as developing countries in emerging areas of Asia, Latin America and, to a lesser extent Africa, exploited their resources and environment to achieve economic growth (Carpenter, 1981: 187). However, as the undesirable environmental consequences associated with this development became apparent, the complicity of multilateral finance institutions, which were involved in various levels of support underlying this growth, came under the scrutiny of non-governmental organisations and other concerned parties (Kotvis, 1997: 3). Extending Kuhn’s theory

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<sup>85</sup> O’Riordan (1981b: 90) explains the delayed statutory entrenchment of EIA in the UK as an endemic political trait through which affairs are dealt with in a co-operative manner, which accommodates flexibility and due regard to the relative merits of each circumstance.

pertaining to the role of normal science in puzzle-solving, failure in investment policy to achieve the intended aims of investment in these countries could be largely attributed to a disregard for the rules introduced by the new global paradigm in environmental policy, which disqualified the finance institutions from deriving solutions which the paradigm could provide (Kuhn, 1970a: 38).

Although the world's dominant multilateral lending institution, the World Bank, had looked peripherally at the environmental impact of development in the early 1970s, and had issued internal guidelines for environmental appraisal of projects (World Bank, 1974), the introduction of EIA into the early phase of project planning had been difficult to achieve (Barrow, 1997: 204). As a consequence, many Bank-funded projects failed due to environmental problems, caused in many instances by incongruencies between the development rationale and the social and cultural traditions of affected communities. This failure led to accusations that the Bank had neglected its original mission of alleviating poverty, and that it had demonstrated a disregard for the environmental impacts of development-funded projects (Gilpin, 1995: 84).<sup>86</sup>

During the mid-1970s, US aid agencies were forced to apply environmental impact assessment procedures to their foreign activities, largely as a result of citizen protest and in response to legal actions which were instituted against them (Carpenter, 1981: 177). In this context, an executive order issued by the CEQ in 1979 required environmental assessments to inform decision-making pertaining to actions associated with US aid which could affect (*inter alia*) the global environmental commons and the natural or ecological resources of the participating nations, which might be considered to be of global importance (Carpenter, 1981: 178, 179; Barrow, 1997: 170; Gilpin, 1995: 118). In 1974, the *Organisation for Economic Co-operation and Development* (OECD)

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<sup>86</sup> The World Bank is a lead agency of the United Nations. It is comprised of the International Bank for Reconstruction and Development (IBRD) and its affiliates, the International Development Association (IDA), the International Finance Corporation (IFC) and the Multilateral Investment Guarantee Agency (MIGA). These institutions have a common objective which is to raise the standards of living in developing countries by channeling financial resources, in a wide range of financing techniques, from the more developed countries to the developing world (Gilpin, 1995: 84). The IBRD was created by agreements negotiated at an international monetary conference held at Breton Woods, New Hampshire in July 1944, a year before the San Francisco conference creating the United Nations (Kotvis, 1997: 5).

investigated the application of environmental impact assessment procedures on a global scale for bilateral aid projects initiated by member governments, and EIA guidelines were later issued to this effect (Kennedy, 1985: 285; Barrow, 1997: 205; OECD, 1979, 1991).<sup>87</sup> Partly as a consequence of this initiative, the World Bank had, by the end of the 1980s, formalised a policy of *early* incorporation of environmental considerations into the project cycle for funding applications and many of its projects were re-designed or canceled as a result of the more effective application of EIA (Gilpin, 1995: 84; Barrow, 1997: 204). Taking their cue from the World Bank's public commitment to apply EIA in project appraisal, other lending institutions such as the Asian Development Bank, also began to incorporate environmental and social impact assessment more effectively into their appraisal procedures (Burdge, 1994: 5; Barrow, 1997: 204; Gilpin, 1995: 84; Biswas and Agarwala, 1992: 178-183).

In the absence of political systems in developing countries equivalent to those which served as the catalyst for the introduction of NEPA in the US, for example, the forces of participatory democracy and freedom of information laws (Barrow, 1997: 206), change in environmental policy in these countries was largely effected via international financing and donor activities (Barrow, 1997: 171).<sup>88</sup> However, this process was also assisted by initiatives such as UNEP's extension programmes in environmental assessment (Horberry, 1983: 98; 1985: 210; Gilpin, 1995: 82-83), which enabled EIA to be widely promoted by international agencies in their various global activities (Gilpin, 1995: 8; Biswas and Agarwala, 1992: 168-177). From a situation during the 1970s where only nine governments of developing countries had formally accommodated environmental assessment into their policies and governing institutions, virtually all governments of developing countries have now done so (Barrow, 1997: 206), either through the

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<sup>87</sup> The OECD succeeded the *Organisation for European Economic Cooperation*, which was set up in 1948 to allocate aid received under the *European Recovery Programme*. The objectives of the OECD are to: achieve the highest sustainable growth in member countries and thus contribute to the development of the world economy; contribute to sound economic expansion in member, as well as non-member, countries; and contribute to the expansion of world trade on a multilateral, non-discriminating basis (Gilpin, 1995: 78).

<sup>88</sup> The requirement of environmental impact assessment by donor agencies is generally viewed as an interim option for dealing with the environmental issues facing developing countries. For example, Hartje (1985) argues that these countries need to develop their own integrated assessment systems.

introduction of new legislation or by strengthening elements of existing practices and legislation (*vide* Brown *et al.*, 1991: 146-149).

Based on the preceding discussion, the distinguishable pattern in the evolution of EIA during its second decade is one of *consolidation*, both in terms of methodology and its global application. In the most significant area of consolidation, EIA ceased to be merely environmental in the bio-physical sense of definition, but began to address the social context necessary for holistically informed decision-making. In addition, the impact of human development on ecosystemic *wholes* began to receive attention as the interconnectedness between the bio-physical dimensions of the environment became increasingly recognised - not only nationally, but globally. During the 1980s, solutions to scientific inadequacies in EIA were addressed through the introduction of emerging principles and methods, particularly those derived within the discipline of ecology. Although not discussed in this section, the attention to scientific method was also matched by refinement and innovation in the technical aspects of EIA, as evidenced through the proliferation of impact assessment derivatives, such as risk analysis and technology assessment, to name but two examples (Graham Smith, 1993: 10-11).

Although the many developments in EIA may be considered as having advanced its effectiveness during the 1980s, improvement in the science and global application of impact assessment did little to reform the political processes of resource management that govern how the information derived from EIA was utilised (Graham Smith, 1993: 11). However, this situation was to change during the 1990s as the global implications of unsustainable development on human well-being in both developed and undeveloped countries became apparent, and attention was increasingly focused on the opportunity to develop new tools and approaches to environmental assessment and management to reverse this situation.

### ***2.3.3 Maintaining paradigm validity under the increasingly stringent requirements of sustainable development: the third decade in the evolutionary development of environmental assessment***

The previous section concluded with a discussion of the global diffusion and replication of established EIA process and methodology that occurred during the 1980s largely in response to the actions of *individual* governments and the *individual* activities of finance and aid institutions operating in developing countries. According to Kuhn (1970a: 23-25) a paradigm is rarely an object for such simple replication. Rather, it becomes an object for further articulation and specification under new and more stringent conditions that arise as the paradigm is required to resolve problems with a greater degree of precision and in an increasingly wider scope of situations.

The period extending from the late 1980s into the early 1990s introduced two initiatives of *global* significance in the policy arena, which presented the more stringent context that would determine the evolution of EIA during its third decade. The first of these initiatives was a report prepared for the UN by the *World Commission on Environment and Development*, which was titled *Our common future* (WCED, 1987); and the second initiative was the 1992 *UN Conference on Environment and Development* (the *Earth Summit*).<sup>89</sup> This section opens with a review of the impact which these initiatives have had in terms of promoting a global partnership between the developed and developing worlds in terms of allegiance to the new paradigm of integrating environmental, economic and social policy. This is followed by a review of some of the most important developments in environmental assessment which are associated with the new concept of *sustainable development* as it has been promoted during the 1990s.

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<sup>89</sup> These initiatives were preceded by the much lower profile *World Conservation Strategy* initiated by the IUCN in 1980, which advanced sustainability as a strategic approach to the integration of conservation and development in order to achieve: ecosystem maintenance; the preservation of genetic diversity; and the sustainable utilisation of resources.

### 2.3.3.1 Global allegiance to the concept of sustainable development

The ideal of sustainable development has long existed as a grounding principle supporting the paradigm in environmental policy first introduced in the US through NEPA and later extended through programmes such as the IUCN's *World Conservation Strategy* and the *United Nations Environment Programme* (UNEP). However, as a global concept, it was pushed into centre stage in 1987 in response to the publication of *Our common future*, which concluded that a rapid deterioration of the global environment was threatening life on earth and that decisive political action was needed to ensure human survival (WCED, 1987).<sup>90</sup> In this respect, the core ideas of sustainable development radically challenge the dominant paradigm in terms of which the world's economy, patterns of production, consumption and distribution are organised (Hattingh, 2000: 15). The central objective that is proposed in *Our common future* is the reversal in environmental deterioration and a sustained increase in the global level of human welfare - which requires political transformation aimed at the achievement of sustainable development (Gilpin, 1995: 10). This is defined as "*development that meets the needs of the present without compromising the ability of future generations to meet their needs*" (WCED, 1987: 43).<sup>91</sup>

Viewed in the light of predicted growth in global population, Brown and Lemons (1995: 1) summarise the following trends in environmental deterioration which *Our common future* identifies: the desertification of productive land; global warming caused by an increase in greenhouse gases; loss of the protective ozone layer due to the effect of gaseous industrial emissions; and pollution of freshwater resources.<sup>92</sup> As important as

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<sup>90</sup> As noted by Gilpin (1995: 9), the possibility of natural resource constraints to human development and population growth dates to at least the emergence of Malthusian theory. Contained within this theory is the observation that a geometric relationship explains global population increase whereas the means of subsistence only increases according to an arithmetic relationship; i.e. population dynamics outstrip the means of feeding capability if not constrained by vice, misery or self-restraint. Examples of the interventionary models proposed by Hardin (1968) and Heilbroner (1974), which are aligned with the Malthusian self restraint option, are discussed in Chapter 3 (Section 3.2.2).

<sup>91</sup> Although Callicott *et al.* (2000: 28) suggest that this definition does not differentiate between genuine human needs and superfluous wants, in essence the concept of sustainable development is generally viewed as highlighting the need to provide for basic human needs and advocating inter-generational equity as an overriding ethic (Dovers, 1990: 299)

<sup>92</sup> Modern technology is considered to lie at the root of the problems of unsustainable development, insofar as it is causal

the scientific evidence upon which the trends in environmental degradation are based, is the emphasis articulated in *Our common future* on the *interrelatedness* of the problems of population growth, industrial and social development, poverty and the depletion of natural resources;<sup>93</sup> i.e. it is this interrelatedness of environmental issues which has raised sustainable development to a position of political priority throughout the world (Brown and Lemons, 1995: 2).

Since environmental and economic problems are a function of social and political factors which extend between nations, unilateral solutions which are of an *ad hoc* and technical nature cannot be effective (Graham Smith, 1993: 4-5); i.e. sustainability is a global concept which touches and binds all countries and levels of society which may individually be intent on achieving internal sustainability (Attfeld, 1999: 1, 2, 10). The philosophy of sustainable development therefore calls for a change in the course of development, aligned with cross-cutting development programmes built upon the achievement of integrated environmental, economic and social objectives in an unprecedented global partnership between the developed and developing worlds (Brown and Lemons, 1995: 4).<sup>94</sup> This will need to occur against the backdrop of existing uneven patterns in the distribution of resources, industrial power and technology, which divides the two worlds and will need to shift current trends in development practice which give rise to economic and social division. It also requires allegiance to a concept quite foreign to the present growth-acclimated world (Meadows *et al.*, 1992: 10). The urgency of such change is stressed by Daly (1990: 5) who argues that “*as growth in the*

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to the explosion in world population, urbanisation, industrialisation and economies, and to the parallel increase in pollution and famine (Graham Smith, 1993: 4). The environmental issues and trends in environmental degradation identified in *Our common future* are also described in Section 3.2 as *3<sup>rd</sup> generation environmental problems*.

<sup>93</sup> The global ramifications of poverty, for example, begin with the local overexploitation and depletion of resources as a course of necessity for the affected communities of poor countries. As these resources are exhausted, a reliance develops on resource exports which creates a dependency on the developed world markets (WCED, 1987: 67-89). This occurs in a spiral of resource depletion that - since all communities share the same earth - ultimately affects the future of the whole world (Graham Smith, 1993: 4). In his advocacy of a *lifeboat ethics*, Hardin (1974) warns of the spiral of resource depletion that accompanies external dependencies to which poverty gives rise. Hardin's description of the *tragedy of the commons* is discussed in Section 3.2.

<sup>94</sup> In supporting a tri-axial model of sustainability constructed upon *social, economic and environmental* objectives, Goodland and Daly (1995: 307) suggest that enabling conditions such as democracy, human resource development, empowerment of women and much more investment in human capital will be essential if sustainable development is to be achieved.

*physical dimensions of the human economy pushes beyond the optimal scale relative to the biosphere, [this] in fact makes us [all] poorer”.*<sup>95</sup>

Although the central theme of sustainable development is commonly understood to imply that environmental protection and continuing economic growth have to be viewed as mutually compatible rather than conflicting objectives (Jacobs, 1999: 21; Turner, 1988: 5), considerable divergency exists with respect to what the concept of sustainability involves in practice (Graham Smith, 1993: 3). *Our common future* provides no prescriptive rules of action when there are conflicts among environmental, economic and social goals - a deficiency which Brown and Lemons (1995:5) illustrate when they query what is to be sustained under the concept of sustainable development: animals? ecosystems? people? jobs? cultures? ways of life?

Sustainable development is a term that has been used to mean different things and thus any broadly acceptable definition will always remain elusive (Barrow, 1997: 7; Barrett and Grizzle, 1999: 25). As a consequence, this has spawned much debate and a proliferation of theory within and between the disciplines and interest groups who are party to its implementation. Much of the dialogue on sustainable development is concerned with distinctions between, for example, different forms of *sustainability*, *sustainable utilisation*, *sustainable growth* etc. However, Shearman (1990: 1-3) argues that it is the implied meaning of the concept of sustainability for any given context within which it is applied which is important, and that debate needs to be focused on the issues implied by sustainability rather than the issue of sustainability itself. For example, a concept such as sustainable yield has long been applied in the area of renewable biological resources, where *sustainability* implies using the incremental increase without reducing the total physical stock. In this context, *sustainable yield* aims to maintain essential ecological processes, to preserve genetic diversity and to maintain and

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<sup>95</sup> Present levels of *per capita* resource consumption in developed countries are judged to exceed the bounds of bio-physical possibility and cannot be extended to all people of current (and future) generations without liquidating the capital on which future economic activity depends (Goodland and Daly, 1995: 303); i.e. continuation of present development and economic policies will both destroy ecosystems and increase poverty and disparities between the rich and poor (Brown and Lemons, 1995: 4). In contrast, sustainable societies and processes are capable of being maintained indefinitely and undermine neither themselves, nor the segments of nature on which societies depend, nor a potentially sustainable world system (Attfield, 1999: 1).

enhance environmental qualities relevant to productivity (Gilpin, 1995: 9).<sup>96</sup> In an economic context, positions of *strong sustainability* regard human-made and natural capital as complementary in most production functions and imply the need to maintain the two forms of capital *intact separately* (Goodland and Daly, 1995: 305).<sup>97</sup> Further discussion of the internal tensions within the concept of sustainable development/sustainability will be provided in Chapter 5.

The extent to which the recent evolutionary development of environmental assessment has been able to respond to the imperative of sustainable development can be judged by considering some examples of developments in the practice of environmental assessment since the beginning of the 1990s.

### **2.3.3.2 Evolutionary response to the concept of sustainable development**

The present scale and rate of global environmental deterioration are explained by Dalal-Clayton and Sadler (1998a: 31; 1998b: 3) as the key vectors which have directed the evolutionary shift in environmental assessment towards a position of greater influence in terms of integrating an *ecological dimension* into plans, programmes and policies and elevating this on a par with social and economic considerations; i.e. to strengthen the role of ecological issues in strategic decision-making (Sadler and Baxter, 1997; Tonk and Verheem, 1998: 1). Impact assessment has always been viewed as a promising tool to support sustainable development (Barrow, 1997: 6); however, the need has arisen for the expansion of the scope of traditional approaches to impact assessment from project scale to policy, plans and programmes, including regional and sector-based scales of assessment (CSIR, 2001: 2). In this respect, one of the most significant developments to the global imperative of sustainable development has been the emergence of Strategic Environmental Assessment (Van der Vorst *et al.*, 1999;

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<sup>96</sup> In a somewhat different explanation of the concept of sustainable yield, Jacobs (1999: 32) suggests that it is related to the non-environmental idea of 'sustainable income'.

<sup>97</sup> The economic position of strong sustainability contrasts that adopted by proponents of technology as the panacea of human welfare who subscribe to *weak sustainability*, where the focus is on the maintenance of *total capital* with an emphasis on the *substitutability* of its constituent components of human-made and natural capital (Goodland and Daly, 1995: 305).

Devuyt, 2000).<sup>98</sup> The appeal of the strategic character of SEA is defined by its potential *upstream impact* in terms of promoting sustainable development in decision-making hierarchies and cycles (Brown and Thérivel, 1998: 1; Eggenberger, 1998: 1, 3).<sup>99</sup> SEA is proactive in its purpose of *informing* policies, plans and programmes, unlike project EIA which is essentially reactive to development proposals (Wiseman, 2000: 164; Rossouw *et al.*, 2000; CSIR, 1999; Thérivel *et al.*, 1992: 23).

SEA provides a mechanism for integrating environmental goals and principles into the plans, programmes and policies that might shape a multitude of overlapping and subordinate initiatives (Thérivel and Partidário, 1996: 5). In this respect, SEA is able to address the cumulative effects that result from multiple actions and stresses cutting across policy and ecological boundaries. It is also a mechanism for addressing higher-order questions and testing alternatives such as whether, where and what type of sectoral or regional development should be promoted given an understanding of the opportunities and constraints which the social, economic and ecological elements of the environment impose on development (Dalal-Clayton and Sadler, 1998a: 34; CSIR, 1999; Wiseman, 1997).<sup>100</sup>

A set of SEA principles has emerged to capture its essential consistency in purpose whilst dealing with its diversity of application and thus the need for flexibility in methodology; i.e. the principles focus more on the goals to be achieved via the assessment process than any specified requirements pertaining to methodology (Tonk and Verheem, 1998: 3). It is recognised that to be effective SEA methodologies have to be integrated with, set in the context of and add value to existing planning (particularly

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<sup>98</sup> Sadler (personal communication, October 2001) explains that SEA emerged from its *formative* stage during the 1970s and 1980s and entered a formalisation stage during the 1990s. It is currently in an expansion phase.

<sup>99</sup> In practice, SEA has been applied most effectively at the level of programmes and plans but has yet to be seriously applied at the higher level of national policy development. Dalal-Clayton and Sadler (1998a: 39) attribute this to an inherent political and bureaucratic reluctance to embrace a process that has the potential to constrain opportunism in political decision-making.

<sup>100</sup> Although the implementation of SEA is gaining momentum globally, this has not been without problems. In this respect, Partidário and Clark (2000: 4) refer to the search by practitioners for indisputable justification arguments for SEA where its scope of application is currently rather undefined and conflicting with other evaluation procedures such as EIA.

spatial planning), policy, institutional and organisational processes (Brown and Thérivel, 1998: 5; Eggenberger, 1998: 7). Whilst there is no single methodology that can be applied to achieve this, a general principle that characterises environmental assessment at the strategic level requires the identification of sustainability or environmental objectives/targets (Thérivel and Partidário, 1996: 30). These tend to be broad and cross-cutting objectives which extend beyond the traditional subject focus of particular plans, programmes and policies and emerge as new or substitute options which expose conflicts and clarify interlinkages between objectives (Brown and Thérivel, 1998: 3).<sup>101</sup> In this respect, SEA objectives typically define chosen levels of environmental quality or limits of acceptable change (CSIR, 1999).<sup>102</sup> Once identified, the objectives are linked through the SEA process to indicators that are used to test their attainment, describe the baseline environment, make impact predictions and monitor the effect and effectiveness of the plan, programme or policy. Within the framework of this general approach, it is widely recognised that different SEA methodologies are required for different situations. This is particularly relevant to policy assessment where an understanding of the key leverage points in the policy-making cycle and the specific politics of decision-making is fundamentally important to the effectiveness of SEA (Dalal-Clayton and Sadler, 1998a: 39; Brown and Thérivel, 1998: 3).

Sustainability Assessment is another development in the field of environmental assessment that has emerged in reaction to the global allegiance to the concept of sustainable development. Like SEA, it is an approach to environmental assessment that recognises the need for new ways of dealing with sustainability issues - issues that are beyond the scope of delivery that traditional EIA can offer.

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<sup>101</sup> Although it is an essential element of SEA, setting environmental objectives or targets is problematic for a number of reasons. These include the frequent lack of baseline information to which objectives must ultimately be linked and the impact of external factors which are either beyond the sphere of influence of a policy, plan or programme or which can only be accommodated through complex political and economic trade-offs (Thérivel and Partidário, 1996: 32).

<sup>102</sup> Whilst it is the aim of SEA to define levels of environmental quality and limits of acceptable change, this presupposes a level of substantiation and predictive certainty that seldom exists (CSIR, 1999).

A definition of Sustainability Assessment is provided by Devuyst (2000) who describes it as an approach to identifying, predicting and evaluating potential impacts of an initiative and its alternatives on the sustainable development of society. Unlike SEA, which is currently practiced as a method that has found its place of application through testing and practice, no firm method of Sustainability Assessment has yet been developed and become established. In this respect, it is not yet employed, in the formal sense, as a tool for environmental assessment in the same way that SEA is applied. An approach to operationalise the concept of Sustainability Assessment is proposed by CSIR (2001: 9) and if adopted, this could result in its elevation to the status of a tool of preference for guiding the achievement of sustainable development in South Africa. The proposed approach draws on the Bellagio Principles [Stirling (1999) after Hardi and Zdan (1997)], and focuses on the following aspects: the appraisal of sustainability is seen as a social process, not an analytical act; recognition of the intrinsic subjectivity involved in prioritizing the dimensions of sustainability; acknowledgment of the predictive looseness that uncertainty and ignorance will always introduce into sustainability assessment; acknowledgment of the multiple aspects of sustainability; the assignation of priority to societal participation; and, attention directed at portfolios of options rather than the quest for a best option.

An important trend in the environmental sustainability discourse of the 1980s, which expanded in significance during the 1990s to influence the evolutionary development of environmental assessment, was a shift in focus to the issue of environmental civil rights. Hartley (1995: 277) traces the emergence of environmental justice onto the platform of US environmental policy debate to the early 1980s when enquiry was first triggered into the environmental discrimination suffered by racial minorities (environmental racism) as well as low-income communities (United Church of Christ, 1987).<sup>103</sup>

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<sup>103</sup> The 1982 catalyst incident described by Hartley (1995: 277-279), which resulted in the emergence of environmental justice as a significant determinant of US environmental policy, was the large scale community mobilisation in Warren County, North Carolina which challenged an environmentally racist decision to locate a hazardous waste site in close proximity to a socio-economically disadvantaged community.

Hartley (1995: 282) attributes the origin of environmental discrimination in society to the influence of hedonistic utilitarianism and the imbalance that this creates between utility and justice. According to utilitarian principles decisions must favour those options that will benefit society to the extent that perceived gains outweigh anticipated losses. However, this neoclassical economic calculus, which focuses largely on the achievement of *aggregate* gain, places little emphasis on distributional issues and mitigatory processes whereby the winners favoured by such aggregation might compensate the losers. Compensation rarely occurs in practice (Freeman, 1986: 218), and the issue of preference substitutability that can theoretically be brokered through compensation mechanisms (eg. economic upliftment traded-off against increased health risk), remains a flawed concept (Hartley, 1995: 283). As a consequence, externality costs tend not to be fully covered, and socially inefficient decision-making results in discrimination against disenfranchised parties (Sagoff, 1988: 56; Barrett and Grizzle, 1999: 27); i.e. the pursuit of economic objectives fails to meet the aims of sustainable development in that basic human needs and environmental protection are not adequately ensured.<sup>104</sup>

It is generally understood that environmental justice captures the concern for fair or equitable distribution of environmental goods, services and resources (Warren, 1999: 151). Aligned with this definition, Wenz (1988: 4) perceives environmental justice to be the distribution of benefits and burdens among all of those affected by environmentally related decisions and actions whilst Hartley (1995: 287) describes this justice issue as the fair distribution of environmental quality.

In 1990 the US EPA initiated steps to address the problems of environmental injustice and proposed recommendations that environmental equity issues should be taken into account in rule-making processes and agency permit, grant and compliance monitoring and enforcement procedures (EPA, 1992). In 1994 these were translated into an EPA

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<sup>104</sup> Environmental injustice results not only from the pursuit of economic objectives. For example, Barrett and Grizzle (1999: 27) refer to environmental protection initiatives (wildlife sanctuaries - which are insensitive to the resource needs of neighbouring communities), which disenfranchise communities in terms of foregone economic growth and depressed standards of living.

Executive Order whereby US Federal agencies are required to identify and address disproportionately high and adverse human health or environmental effects of their programmes on the historically disadvantaged communities (Council on Environmental Quality, 1997: 1).

## **2.4 CONCLUSION**

The discussion presented in this chapter has been structured around the revolutionary origin and subsequent development of environmental assessment, and its status as an action forcing provision of the new paradigm in environmental policy that was introduced in the US following the enactment of NEPA. In making the association between NEPA as a new paradigm and the revolutionary attributes of this new policy, reference has been made to Thomas Kuhn's explanation of the discontinuous process through which major advancements in human understanding of the world have occurred. Reference has also been made to Kuhn's explanation of the post-revolutionary, or normal, accumulation of knowledge - which takes place within the framework provided by a new paradigm - to describe and explain the incremental development of environmental assessment over the past three decades.

It is argued that the emergence of the practice of environmental assessment represented a major non-cumulative break in past tradition, following many unsuccessful previous attempts to resolve the environmental crisis as this has developed over time. The global switch in allegiance from the paradigm of narrow economic determinism, which NEPA and similar policies in other countries have displaced, to the promise offered by the new fundamentals of (new) environmental policy, has been described. Essentially, these fundamentals require that economic and environmental quality should be compatible and that the fulfillment of social, economic and other requirements of present and future generations must permit humans and nature to live in harmony. The allegiance to the new NEPA paradigm is attributed to the confidence placed in these principles and provisions to effectively deal with environmental crisis. Environmental assessment, in its policy context, is thus described

as presenting a fresh opportunity to accomplish what previous policy initiatives have failed to do. The question posed in this concluding section of the chapter is: how well has it performed in this regard?

It is clear from the discussion presented in the chapter that in spite of its promise of dealing with the environmental crisis, environmental assessment, as in the case of any new paradigm, did not immediately fully meet the requirements of its constituency of allegiants. It has had to become progressively more clearly articulated than at the time of its initial introduction; it has had to be made practically implementable through the development of 'rules' that define the scope of application of the new paradigm (i.e. methods of practice, etc.); and it has had to continually adapt to increasingly more stringent conditions under which it is applied, as the environmental crisis has deepened and the expectations of environmentalism have changed accordingly.

Importantly, where process and methodological deficiencies in environmental assessment have emerged over time, these have been addressed. For example, environmental assessment it has had to advance from its initial employment of simple reductionistic methods dealing with individual environmental attributes, to approaches that recognise the functioning of ecosystemic wholes and global environmental systems. It has also had to develop approaches that integrate humans, and their social and economic traits, into the definition of environment. In response to its initial failure to effectively accommodate stakeholder participation in its processes, environmental assessment has had to adapt to prove capable of engaging the multiple subjective *I-languages* of interested and affected parties and to forge a workable dialogue with the objectivity of *it-language* employed in its traditional scientific methods. This has been achieved most effectively through the emergence of new generation approaches to environmental assessment, which employ *we-language* in order to secure broad agreement on shared ideals around sustainable development, which can be articulated in spite of divergent justification of these ideals. It is this development that perhaps captures the most significant evolutionary advancement in the practice of environmental assessment, and which makes it truly capable of contributing to the arrest in the pathology in the human-environment relationship. In this respect, it has promoted the

essential integration of the dissociated *subjective* and *objective* human cultural value spheres through practically implementable method. Through developments such as these, and others described in the chapter, it is concluded that the responsiveness of environmental assessment to forcing factors, such as the issues arising from environmentalism, has permitted it to perform well. It has generally met the expectations demanded of it - most notably via its new generation methods, such as SEA.

An understanding of the above evolutionary development of environmental assessment is necessary for the later advancement of the dissertation's central research intent, which is to investigate the dialectical relationship between its evolutionary trajectory and that of environmental ethics. Following a similar approach used in this chapter, the focus of Chapter 3 will now shift to a discussion of the origin and evolutionary trajectory of environmental ethics.

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*Chapter 3 :*

**THE EVOLUTION OF  
ENVIRONMENTAL ETHICS**

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### 3.1 INTRODUCTION

In the previous chapter, Kuhnian theory is used to explain the origin and advancement of the practice of environmental assessment. However, as an analytical model, this approach is less useful in terms of explaining the evolution of environmental ethics due to the discipline's weak paradigmatic character, which is exemplified by its failure thus far to deliver a novel, viable ethical basis for informing environmental policy and decision-making. In this chapter it will be shown that a state of polarisation exists between arguments defined by anthropocentric (weak, strong) and nonanthropocentric appeals to environmental value - a situation aggravated by competing theories based on monism and pluralism, respectively. Other dichotomies that compound the lack of consensus within the discipline also exist, including calls for a radical cultural and institutional transformation as a response to the prevailing environmental crisis.

Weston (1996: 148) suggests that the above situation is typical of the co-evolutionary relationships that develop between both competing philosophies and philosophy and practice, when fairly incompatible *initial theories* are developed and a wide range of attempts to articulate their practical implications emerge as the cultural process of working through new sets of possibilities runs its course. According to Weston (1996: 147), environmental ethics is still at an ordinary stage, where new values pertaining to the environment are just *beginning* to be culturally constituted and consolidated. Through reference to the evolution of human ethics, Weston explains that the emergence of new ethical ideas does not manifest as simple one-way linkages between causes and effects, but can be expected to occur through a complex, evolving, systemic process. It is this inherent slowness of ethical deliberation to establish closure and finality on final moral foundations, which is a key enabling attribute of modern philosophical ethics. Thus, the present era of uncertainty and experimentation (i.e. the process of exploration and generation of metaphor, rather than the derivation of analytically concretised ethical categories), which Weston believes characterises the situation in environmental ethics, ought to be anticipated and welcomed (Weston, 1996: 139). This uncohesive state, in which there is a divergency in views as to what should

constitute an environmental ethic, closely resembles what Kuhn (1970a: 91) would describe as a pre-paradigm situation, where multiple views and competing schools of thought are offered to resolve anomaly and crisis without reference to any accepted plan or emergent theoretical structure (Oldroyd, 1986: 320).

As will become apparent from the narrative in this chapter, rhetorical argument and a challenge of tradition - which opens up new possibilities rather than narrows the debate towards a single theory of value - is a reasonable expectation as the discipline of environmental ethics evolves through multiple and often incompatible values and practices. This is predictable in terms of Kuhnian theory as the effects of unresolved environmental crisis, which are described in the early sections of the chapter in terms of three generations of environmental problems that are unfolding, triggers a proliferation of different theories and versions of theory that are intended to resolve the crisis (*vide* Kuhn, 1970a: 71). It is a response that can be anticipated, as insecurity develops within a prevailing paradigm's community of allegiance. In the context of this study, the outcome of this insecurity is described as the different themes of environmentalism that have evolved, and the multiple theories of environmental value that have emerged to support the practical agenda of these movements (Hattingh, 1999: 68). As a consequence of these developments, the character of the governing paradigms (eg. utilitarianism, deontological value theory) can be expected to begin to lose their clarity of support for decision-making, and an unstructured, competitive situation - such as exists within the discipline of environmental ethics - may be expected to arise between different schools of thought about dealing with the crisis at hand.

Ultimately, a set of values and first principles for a unifying environmental ethic might emerge and become culturally consolidated; however, evolutionary change towards this situation is likely to be a protracted process (Weston, 1996: 151; Hattingh, 1999: 68).<sup>105</sup> In the interim, environmental management practice and policy development require

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<sup>105</sup> Some philosophers (Hargrove, 1989: 8) argue strongly against the ideal of finding a single set of coherent principles that should inform our decision-making. Value monism, they argue, displays various problems, one of which is that it does not correspond to the way in which we make moral decisions. Instead of using a single principle (value monism), they argue, we should rather use a variety of values relevant to the context within which we have to resolve moral problems (value pluralism).

support in terms of recourse to a pool of value theories and philosophical principles that can inform decision-making. Not all of the value theories that have emerged from within the discipline of environmental ethics appear to have such practical application at present, and in this context, some of these will be described as 'new-paradigm claims'. Such claims, it will be argued, distort Kuhn's understanding of paradigms, since paradigms assume their validity through a grounding in acknowledged laws, sets of established principles, etc., while the 'new-paradigm claims' are culturally constructed in an arbitrary manner through social negotiation. Cast in a more practical mold, and where the validity of the proffered value theory has a relatively strong paradigmatic character, *enlightened anthropocentrism* will be described towards the conclusion of the chapter. It will be argued that this currently provides a more defensible and useful basis for informing management and policy decisions than, for example, the nonanthropocentric appeals to environmental value and the radical forms of environmental philosophy that are discussed in the mid-sections of the chapter. However, before the dissertation turns to these issues, it is necessary to further elaborate on the originary stage of environmental ethics by contrasting its development with the conventional paradigm of human ethics as it is found in utilitarian and deontological value theories.

## **3.2 THE EMERGENCE OF ENVIRONMENTAL ETHICS AS A RESPONSE TO CRISIS IN THE PARADIGM OF HUMAN ETHICS**

### ***3.2.1 Value theory in the tradition of human ethics***

Ethics is defined as the domain of enquiry that is directed at attempting to answer the questions: *'What is right? What is good? What deserves respect?'* in a context that transcends relative cultural and individual positions (Brown, 1995: 39). Over time, many theories and systems have been proposed to provide different premises in ethical reasoning around these fundamental questions and, in the tradition of most Western philosophical systems, human interests - also in relation to their environment - have served as the dominant measure of value in ethical deliberation. In this respect, traditional value theory and a rational social order founded on science and technology

are perceived to have effectively served the interests of humanity in terms of the ethical and political ideal of individual human freedom which they have promoted [most significantly, since the social-religious suppression of the 16<sup>th</sup> and 17<sup>th</sup> centuries (Leiss, 1972: 45-71)].

*Utilitarianism* currently serves as the dominant ethical basis to free-market and welfare economics theory. Given the global positions of dominance that these politico-cultural and economic paradigms enjoy, it also typically provides the philosophical grounding for environmental policy considerations, including those pertaining to sustainable development.<sup>106</sup> Citing Sher's (1979: 7) reference to J.S. Mill's definition of 'utility' or 'the greatest happiness principle', Pierce and VanDeVeer (1995: 19) describe utilitarian theory as a prescription that 'what is right, is to act so as to bring about the greatest possible balance of good consequences over bad consequences for all concerned'. The right act is that which brings the greatest utility compared with any other alternative and, expressed in this way, utilitarianism as a philosophical system may be perceived as the democratisation of ethical values (Hargrove, 1989: 208). Since policy is typically based on considerations of costs versus benefits in terms of human preferences, its development in practice tends to be grounded in *rule utilitarianism*, which holds that those rules should be followed that bring about the greatest good for all concerned.

A second commonly encountered ethical justification entrenched in the dominant politico-cultural paradigm is the belief that certain actions are intrinsically right or wrong. Here it is assumed that rightness/wrongness is determined by higher standards than the consequences of a particular action and that these standards either assign rights to individuals to take certain actions or specify the duties of individuals (eg. with regard to future generations in the case of sustainability arguments) to refrain from particular actions. These are defined as *natural rights and duties* (or deontological) theories and are encountered in policy discourse in reaction to the limits of utilitarian theory (Brown, 1995: 43). According to traditional Western philosophy, only humans have natural

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<sup>106</sup> Sustainable development is discussed further in Chapter 5 as a 'contested concept', where the tension in practical interpretation of the concept will be shown to exist between its grounding in different perceptions of utilitarianism - 'strong' versus 'weak', 'conservative' versus 'radical' etc.

rights, distinguished as they are, according to the philosopher Immanuel Kant, from 'things' on the basis of the ability to reason and a capability to pursue conceptions of the good. According to this argument, persons have rights because of their worth as rational beings, whereas the worth of 'things' is relative only to the ends of persons (Pierce and VanDeVeer, 1995: 17); i.e. 'things' do not have rights and accordingly, do not require moral consideration. According to Kant's argument, humans can derive absolute rules of morality - for example, with respect to duties that take cognizance of others in society - based on reasoning alone, and that by following the rules that everyone is bound by, humans act morally. It also follows from the above that non-human 'things' have no intrinsic value; they only have instrumental value in so far as they relate to human interests. Accordingly, it is only on the basis of the instrumental value of the non-human natural environment that natural rights theory can assign duties to humans not to destroy the usefulness of the environment for humans (Infield, 1979: 241). In this context, Kantian philosophy is evident, for example, in the Bill of Rights of the South African Constitution, which defines the duties of government *inter alia* to ensure that the environment is not harmful to a person's health or well-being, to secure ecologically sustainable development and use of natural resources.

Reference is also commonly made within conventional ethical approaches to *justice theory*, mainly with respect to distributive aspects pertaining to environmental goods and services (Brown, 1995: 44). Since policy decisions are based largely on some form of benefit-cost analysis, which is typically an aggregative process that rarely identifies losers and winners, this deficiency is often resolved through recourse to distributive and other theories of justice (exchange, social, restitutive justice).

*Religion* has also provided a traditional ethical basis for policy and provides normative rules that define relationships between humans. In the case of, for example, Judeo-Christian morality, religious relationships are also defined in terms of humans and their environment - notably, with respect to their God-appointed dominion over the earth. Whilst open to radical interpretation (eg. that humans may do whatever they want with the non-human natural environment), the more reasonable understanding of such dominion is one of a duty to benign stewardship (Fox, 1995: 6), whereby humans, in

utilizing the environment for different ends, are commanded to care for it, and ensure its sustainability, since it belongs to God. An important aspect of such morality is the understanding that stewardship is not based on the attribution of intrinsic value to the environment, but is determined by the acknowledgment that the environment is God's property (Pierce and VanDeVeer, 1995: 16). Other religious traditions (eg. Buddhism, Taoism, Hinduism) also present ethical bases for debates around environmentally sustainable development and have attracted considerable attention with respect to their strengths and weaknesses in this respect.<sup>107</sup>

In spite of the depth of tradition through which the above paradigms in human ethics have been worked out, an increasing awareness of the environmental consequences resulting from the consumption and production effects of human use of the earth's natural resource base has increasingly led to calls for a reformulation of the foundations of value theory. The inability of human ethics to deal with the situation of environmental crisis will now be described through reference to the various conceptualisations of environmental problems that have emerged since the mid 19<sup>th</sup> century and, more specifically, in the course of the last thirty years since the emergence of environmental ethics. A *generational* conceptualisation of the environmental problematic described by Norton (1991a: 62, 207, 213), which is incorporated into the discussion, defines the temporal development of the environmental crisis with which environmentalists have been concerned in terms of their 1<sup>st</sup>, 2<sup>nd</sup> or 3<sup>rd</sup> *generation* character. The discussion is also based on Robyn Eckersley's analysis of modern ecopolitical thought since the 1960s, which she structures around three progressively integrated *themes* described as the crisis of *participation* and *survival* respectively, and the opportunity of *emancipation* - which have a loose temporal association with the last two or three decades (Eckersley, 1992: 7-31). Whilst the generational conceptualisation remains largely anthropocentric in its grounding, Eckersley's thematic analysis evolves from an early anthropocentric

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<sup>107</sup> Arguments promoting environmental stewardship, but which are cast in a secular, as opposed to religious context, are offered (*inter alia*) by Attfield (1983), who shows that stewardship does not imply human domination over nature. However, utilitarianism is an adequate ethical theory provided it is perceived as being nonanthropocentric, whereby the aim should be to maximise the satisfaction of interests of all living individuals; i.e. an emphasis on interspecific justice.

grounding in conventional human ethics towards a biospherical egalitarianism calling for a radical cultural transformation in human society.

### **3.2.2 Environmental crisis as a challenge to human ethics**

#### **3.2.2.1 First generation environmental problems**

The environmental problems that were recognised since the mid 19<sup>th</sup> century up to the middle of the 20<sup>th</sup> century are captured under the definition of *1<sup>st</sup> generation problems* and essentially relate to the human *use* of the earth's resources, depletion of non-renewable resources and specific threats to particular species or spectacular natural areas (Norton, 1991a: 213). Their conceptualisation is founded upon concerns which arose from exploitationist colonialism in north America and the careless attitude which prevailed at the time towards the use and wastage of resources, particularly as the frontiers of expansionism closed and this brought with it a realisation that the supply of environmental resources was not infinite.

A belief in the God-appointed dominion of man over nature and the Lockean view of man's relationship with the state of nature (and how this relates to property rights etc.) explains much of the colonialist attitude to the American wilderness to which they had access. Since raw natural resources were viewed as uncontrolled by man and valueless until human labour was mixed with them, the wilderness was conquered in an atmosphere of opportunity and expectation (Callicott, 1994: 60; Norton, 1991a: 77). All scarcity that existed at the time was scarcity of humanly useful goods and services. Raw materials were not scarce and the process of physically transforming these materials for human use was generally not perceived to be excessive or wasteful.

As the frontiers of expansionism closed, a realisation emerged that the social trend of exploitation and the pursuit of individual profit would leave the nation in a degraded state and would constrain sustainable economic growth. It was at this time, towards the end of the 19<sup>th</sup> century, that Gifford Pinchot emerged as a central figure in American environmental politics. Pinchot realised that economic growth could no longer be

supported through the exploitation of resources at its frontiers. His political tactic to protect renewable natural resources, such as timber, was to lobby for and secure the retention of forest reserves in public ownership - a move which appealed to and received support for its populist egalitarianism (Norton, 1991a: 79); i.e. the aim was to keep the playing fields level for all economic participants, not only for a few powerful players. The essence of Pinchot's environmental management policy, which was derived from this appeal, was termed "conservation" and its aim was to maximise "... *the use of natural resources for the greatest good of the greatest number for the longest time*" (Pinchot, 1987 cited in Norton, 1991a: 23).

Pinchot's conservationist views were derived from a strong utilitarian perspective of the environment's instrumental value for humans and were firmly grounded in the ideals of economic aggregationism. They were based on the premise that to be practicable, environmental management had to yield economic rewards (Callicott, 1994: 62; Norton, 1991a: 23-24). Accordingly, the environmental policy which he introduced was aimed at the sustainable *production* of commodities derived from renewable natural resources, based on principles of economic and ecological resource management (Sagoff, 1985: 99). According to Sagoff (1988: 154) there is strong political support for such conservationist policy among utilitarian liberals who perceive the value of environmental resources in the context of their worth to humans.

Conservation policy failed in practise due largely to its ecological naivety and was flawed by a lack of understanding of the limitations of the environment's capacity to deliver to a growing population the sustainable opportunity of production that it promised. Failure to recognise the environment's limitations in this respect resulted from an atomistic, scientific management approach that focused on the conservation of single species, for example, rather than on the holistic management of ecological systems. In its political context, Pinchot's conservation policy was also logically flawed. In this respect, the logical impossibility is exposed of achieving both Pinchot's moral goal of egalitarianism, which is "to maximise equality in the assignment of basic rights and duties" *and* his moral goal of utilitarianism, which is "to maximise the good for the

majority of mankind". The two independent variables of *total number benefited* (the greatest number) and *utility* (the greatest good) cannot be maximised simultaneously.<sup>108</sup>

During the early part of the 20<sup>th</sup> century, the failure of conservation to adequately address *1<sup>st</sup> generation environmental problems* was strongly criticised by the preservationist movement championed by John Muir.<sup>109</sup> This movement acknowledged the need for humans to exploit nature but criticised the extent of exploitation and the degree to which nature's instrumental value for human utility was promoted by conservation policy. In particular, there was concern about exploitation that encroached into areas or affected particular species that were perceived to be of special significance. Preservationists like John Muir also popularised a pantheist theology derived from philosophies such as those developed by Spinoza, Thoreau and Emerson.<sup>110</sup> Muir's pantheism perceives the existence of God in nature and attributes the non-human world with a spiritual quality deserving of human respect and offering a utility to humans in terms of their need for spiritual fulfilment. This call by preservationists for higher human consciousness and the valuation of nature according to enlightened utilitarianism, spiritual instrumentalism and metaphysical qualities extending beyond human valuation, however, had little impact in terms of influencing environmental policy in the course of the first half of the 20<sup>th</sup> century. Nevertheless, coordinated protest by environmentalists did achieve occasional success in terms of halting development and this served to secure the appeal offered by this faction of environmentalism to a broadening constituency aligned with the fundamental axioms of preservationism.

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<sup>108</sup> Herfindahl (1972: 172) presents a similar critique of the aims of Pinchotist conservation by questioning the logical impossibility of simultaneously maximizing its three defining variables, which are: the *greatest good*, the *greatest number* and the *longest time*. Focusing on the limitations of predictive capability when dealing with complex natural systems, Ehrenfeld (1978), citing an example of fisheries management, points to the variety of unexpected (usually devastating) consequences that flow from 'maximum sustainable yield' management policies.

<sup>109</sup> John Muir and a number of his associates founded the Sierra Club in 1892 and the movement has persisted since that time (Devall, 1991: 247).

<sup>110</sup> Muir rejected monotheistic religion and the idea of human dominion over nature (Norton, 1991a: 19). In the tradition of Spinoza, Thoreau and Emerson, he attributed value to the nonhuman natural world in terms of its spiritual utility to humans.

### 3.2.2.2 Second generation environmental problems

The post-war economic boom beginning in the late 1940s and the unrestrained Keynesian economic growth of the 1950s pushed environmental concerns off the political agenda over this period (Norton, 1991a: 61; Martinez-Alier cited in Ravaioli, 1995: 57; Durning, 1992: 30). However, the affluence in some sectors of society resulting from the economic boom initiated a social process through which public interest became increasingly focused on quality of life. Earlier conservationist concerns about efficient development and use of material resources, which were linked to the production of goods and the supply of services, were replaced by concerns about *consumption*-related impacts affecting human health and quality of life (Hays, 1987: 3-4, 22-26). In the developed countries of the West, the concerns of environmentalists were triggered during the 1960s by the explosive growth of the human population, deforestation practises and public perceptions of the environmental effects and risks associated with careless practises of waste disposal (causing air and water pollution, for example), pesticide usage and nuclear power generation (Devall, 1991: 247). Concern also arose not only for individual species and particular areas, but also for entire ecosystems. For example, environmental risks associated with pesticides were viewed in the context of their impact on ecological systems, via trophic links; the impact of waste disposal into streams was viewed in the context of the environmental consequences for entire catchments etc.

The publication of *Silent spring*, authored by Rachel Carson in 1962, was a landmark event in terms of its catalyzing effect in developing public expression to a previously sensed unease about the delayed and subtle character of so-called *2<sup>nd</sup> generation environmental problems* (Carson, 1962; Mitchell, 1985 cited in Norton 1991a: 62). Publications, such as Barry Commoner's *The closing circle* (Commoner, 1971) provided further impetus to the upsurge in environmentalism and this culminated in *Earth Day 1970* - an occasion which marked a peak of public concern for environmental issues in the modern era and one which achieved considerable political impact (Norton, 1991a: 63).

The somewhat obtuse and largely unchallenged definition of the theme of the environmental problematic during the 1960s and early 1970s, which was provided by American political theorists and policy-makers, was one of a *crisis of participation* (Eckersley, 1992 : 8-11). Rodman (1980: 65) ascribes this to a perception that environmentalism was *collectively* linked to the civil rights movement's concern for grassroots democratic participation in societal decision-making around issues pertaining to equitable access to environmental goods (urban amenity, for example) and protection from environmental harm, such as the effects of pollution (Paehlke, 1988: 292, 304; Marietta, 1982: 153).<sup>111</sup> Environmental laws drafted during the late 1960s and early 1970s did not reflect an acknowledgement that there could be ecological limits to the Western vision of post-war economic growth but were designed to address environmental problems through improved planning and technological solutions to deal with the voiced environmental crisis. The interpretation by political commentators that environmental protest of the 1960s was associated with New Left participative politics was limited only to the social context of the protest. Whilst the agenda of the New Left was concerned with environmental quality in so far as this related to decentralisation and self-management of power and resources, this was not closely aligned with the concerns of the 'true' environmentalist movement that had its roots in the preservationism of John Muir, for example. Labour, socialist and liberal welfare activists by and large rejected environmentalism due to the socially regressive consequences of legislation arising from the movement's protests, which included high commodity prices and unemployment resulting from the regulation and closure of polluting industries.<sup>112</sup>

There were few major theoretical innovations in social and political thought in the 1960s and early 1970s that arose specifically as a response to an understanding of the concerns of environmentalists. Rather, the tendency was to accept these concerns as

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<sup>111</sup> The inequities in environmental protection that were first identified by academic and civil rights communities in the 1970s only fully emerged onto the platform of broad public discourse in the 1980s (Hartley, 1995: 277). An overview of the history of the environmental justice movement is presented in Chapter 2 (Section 2.3.3.2).

<sup>112</sup> The tension between demands for environmental reform on the one hand and for distributive justice and economic security on the other has persisted since the late 1960s and is one of the social dichotomies which exists between the middle class champions of environmentalism and the industrial working class who exist in an awkward alliance of dependency with the investors of capital in industry.

aspects of the wider pursuit of distributive justice and democratic planning. Certain elements of the 1960s participative politics were, however, embraced by factions of the environmentalist movement. In this respect, a notable influence was the socialist theorizing of Herbert Marcuse, who traced the problems of industrial society to the dominance of instrumental or technocratic rationality. Although the emphasis of his socialist theory relates to anthropocentric human liberatory ideals, Marcuse's criticism of industrialism was adopted, for example, by theorists such as Murray Bookchin who expanded this to emphasise the importance of consciousness change and the adoption of alternative worldviews to the prevailing neo-classical economic paradigm. In addition to such calls for a consciousness change, the general response by environmentalists to the 2<sup>nd</sup> *generation environmental problems* was one which abandoned Pinchotist ecological reductionism and which increasingly drew upon systematic ecological contextualism (Norton, 1991a:213). The ecology movement that arose around this time presented a fundamental challenge to conservationist policies and to the prevailing utilitarian philosophy by defending a non-utilitarian conception of humanity's relationship with nature (Sagoff, 1988:154).

Although pertinent in the sense of social environmentalism, the theme of *participation* in societal decision-making and an emphasis on anthropocentric environmental equity presented a generally misconstrued character to the main concerns of environmentalists during the 1960s and early 1970s. Consequently, this obscured the problem of ecological limits to growth. However, the significance of this was to recede in the course of the following decade (mid 1970s into the 1980s) when the conceptualisation of environmental issues emerged as one in which the problems facing humanity were perceived as constituting a *crisis of survival*. As described by Eckersley (1992: 11-17) this perception was widespread following the publication in the early 1970s of the Club of Rome's (1972) the *Limits to growth* and *Ecologist* magazine's

*Blueprint for survival* (Goldsmith *et al.*, 1972).<sup>113</sup> These publications drew attention to the global scale of environmental degradation resulting from population growth and excessive resource consumption and emphasised the tenuous link between the fate of humanity and the increasingly evident fragility of the enviroing conditions for survival created by the earth's biological support systems.<sup>114, 115</sup>

Although the oil crisis of 1973-74 raised awareness in industrialised countries of the very real constraints on economic activity posed by a diminished supply of an 'essential' natural resource, the neo-classical economic response to the general environmental situation did not acknowledge this as being symptomatic of a crisis of survival. Environmentalist's concerns relating to 'limits to growth' were dismissed as being excessively alarmist and, in response, industry simply offered technology and pricing solutions as mechanisms for alleviating the environmental externalities of economic growth - a response grounded in what Ehrenfeld (1978: vii) describes as humanistic faith in the "omnipotence of our species". These solutions were opposed by environmentalist factions who shared a common scepticism towards economic self-regulation and a reliance on technology to solve environmental problems; however, the

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<sup>113</sup> The *Club of Rome* comprised a group of distinguished industrialists, scientists, economists, sociologists and government officials from 25 countries. In a study co-ordinated by the *Massachusetts Institute of Technology*, the group was tasked with the development of a model to forecast a future economic and environmental scenario for the earth. *The Limits to growth*, which was published in 1972, contained a synthesis of the study findings (Club of Rome, 1972). These suggested that with the world population growing at a rate of about 2 percent per year and industrial output rising by 7 percent annually, the world's physical resources would be exhausted in the next few decades. As a consequence of this, a predicted crash in the human population was expected to result by the year 2100.

<sup>114</sup> Almost 30 years following the publication of *The limits to growth*, and with the GNP of the world economy higher than it has ever been before (Holland *et al.*, 1996: 49), economists would argue that history contradicts much of the study prediction. For example, *supply technology* has greatly increased access to crude oil reserves that have been found to be considerably greater than originally estimated. *Use technology* has also increased the energy conversion efficiency for crude oil, which has resulted in: (i) a decrease in absolute oil consumption in the US, for example, by 15 percent in the 15 years following the 1973 oil crisis; and (ii) a dramatic decrease in oil price. These trends for crude oil (and the reserves of other physical resources) lend support to the conclusion that technology has strongly influenced the supply-demand relationship to the extent that crisis has been avoided (Pilzer, 1990: 33-37). From an economic perspective, natural capital does not consist of actual physical stocks, but the realised or realisable value of such stocks (Holland *et al.*, 1996: 48). Since more value is realisable from less physical stock due to technological innovation, the economic argument is invoked that levels of natural capital can be maintained at non-diminishing levels (Holland *et al.*, 1996: 48-49).

<sup>115</sup> Ruse (1994: 7) suggests that the global attention which *The limits to growth* attracted had more to do with an interest in the refutation of its predictions than an acknowledgement of their validity.

factions differed with respect to their views on the nature of intervention and control that was called for.

One interventionary model is described by Garrett Hardin in his essay *Tragedy of the commons* (Hardin, 1968 in Pierce and VanDeVeer, 1995: 330-338). Part of Hardin's thesis is one in which the finiteness of the earth's resources is recognised as a constraint to the exponential rate of human population growth. Hardin suggests that a legitimate authority can legislate to promote temperance with respect to human response within recognised boundaries of a finite enviroing context (Hardin, 1968 in Pierce and VanDeVeer, 1995: 334). In his view, this holds greater potential in terms of its likely effectiveness than an appeal to human conscience and responsibility for such temperance. The concept of *coercion* is introduced by Hardin as an alternative to the *prohibition* of actions and behaviours that contribute to the environmental crisis.<sup>116</sup> Provided such coercion is "mutually agreed upon by the majority of the affected people", Hardin believes that the case which liberal politics might have against the introduction of such control diminishes (Hardin, 1968 in Pierce and VanDeVeer, 1995: 337); i.e. rational human beings will consider some injustice or loss of certain previously enjoyed privileges, liberties and freedoms to be preferable to environmental ruin and the concomitant risks which this poses for humanity. The argument used here is similar to that invoked by Attfield (1999: 3, 8) in his analysis of the acceptance he anticipates in liberal democracies for the *persuasive* curtailment (rather than *coercion*) of harmful freedoms (eg. restrictions on the freedom to emit greenhouse gases or to have large families) which might be tolerated in order to enhance other more valued freedoms -

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<sup>116</sup> A reluctance to embrace the concept of prohibition or temperance might be anticipated within the context of liberal politics due to the fascist implications suggested by such authoritarianism. In this respect, Sagoff (1988: 150-151) describes the role of the liberalist state - which is to protect the rights of individuals within civil society - not to *impose* moral goals or ethical views. Hardin's concept also conflicts with the views, for example, of biocentric ethicists and deep ecologists whose supporting philosophy is the antithesis of the dominant social paradigm. Taylor (1981 in VanDeVeer & Pierce, 1994: 127) in his analysis of biocentric ethics describes the desired change in human consciousness as one that should be guided by an attitude of respect for nature, not coercion. The actions of deep ecologists are guided neither by calls for (or coerced) temperance nor by dutiful intentions to follow moral laws. Quoting Arne Naess, Seed *et al.* (1988 in VanDeVeer and Pierce, 1994: 226) suggest that they are guided by the ultimate norm of *self realisation* and a source of joy and sensitivity towards the richness and diversity of all life.

such as access to a healthy environment and the benefits this introduces in terms of quality of life.<sup>117</sup>

Although Hardin's philosophy is criticised for the authoritarian intervention which it advocates, it is perhaps more controversial for its neo-Malthusian social injustice which it is perceived to espouse - specifically discrimination against poor nations and their denial of access to resources which the rich are encouraged to 'selfishly' enjoy.<sup>118</sup> To counter this sense of injustice that his call for temperance invokes, Hardin (1974: 561-568) uses the metaphor of a 'lifeboat' to illustrate the choices facing humanity with respect to the distribution of the earth's resources. He argues that, similar to a lifeboat, the earth has a capacity to ensure the survival of a maximum number of people; if this limit is exceeded, 'the boat sinks' and all perish. In Hardin's view, nations have no automatic right of shared access to resources. The right of access has to be earned through temperance in areas such as population growth, closure of the environmental commons to uncontrolled abuse and the sustainable use of resources. Contrary to humanitarian impulses, Hardin's 'lifeboat ethics' argues against hand-outs by rich nations to support poor nations in their environmental crisis. He illustrates how this form of assistance perpetuates intemperant behaviour by the assisted, which promotes the ruin of the global commons and ultimately places the survival of humanity as a whole at risk. Nations which are successfully managing their way out of their own crisis of survival are advised to govern their actions by the ethics of a functioning lifeboat by not inviting on board the ruin which accompanies the equitable, but undeserved sharing of resources.

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<sup>117</sup> Attfield (1999: 3) notes that whilst liberal societies are supposedly neutral between ideas of the good, freedoms - which are integral concepts of the good - often conflict with one another thereby invoking favour of particular ideas of the good over others.

<sup>118</sup> Thomas Malthus argued that the human population increases exponentially whereas the capacity to increase food supply increases only arithmetically. Environmental checks, such as disease and famine keep down the rate of increase, whilst human rationality which education promotes (i.e. restricted to the social upper classes who see benefit in having small families) provides the alternative check on population growth. The extension of the Malthusian argument is that social welfare encourages the maintenance of low standards of living and a high rate of reproduction amongst the poor (Merchant, 1992: 32).

A tougher model of intervention than the 'mutual coercion' advocated by Garret Hardin is proposed by Robert Heilbroner in his publication *An inquiry into the human prospect*. This inquiry addresses the fundamental issue of human survival in the context of having to establish a steady state society [and economy (cf. Meadows *et al.*, 1992; Daly, 1990)] through a reduction in the size of the human community and the institution of a monastic organisation of society (Heilbroner, 1974: 161). Whilst Heilbroner is an advocate of democracy and individual liberty, the imposition of external constraints on human behaviour by a centralised, authoritarian government is reluctantly viewed by him as an essential requirement to enable the transition towards the desired steady state society. Heilbroner concludes that people do not willingly give up enjoyed privileges, even though these might be in conflict with the interests of the larger social and biotic community to which they belong; this therefore requires political intervention of the kind which he proposes.

Some critics of the interventionist models of Hardin and Heilbroner question whether the required sacrifice (for example, foreclosed privileges and erosion of the democratic principles of liberal politics) brings with it a price that is too high (eg. Sagoff, 1988: 150). Altruistic criticism centres on the insensitivity that the models show towards resolving classic societal injustices (discrimination against the poor), which would persist without resolution along the routes to 'survival' that the models advocate (eg. Barnett, 1980: 297-298, 302). Critics also question the capabilities of centralised government to enforce the kind of constraints on human behaviour that would seem to be required to resolve the environmental crisis (Eckersley, 1992: 24). Given the recent collapse of the Marxist institutions of control and authority, such criticism is not without justification. Alternative models of *decentralised* institutional authority, supported by stronger, not weaker, democratic principles are offered by these critics as options which hold greater promise in terms their potential effectiveness to achieve the same goals as the interventionist models (Paehlke, 1988: 305, 308).

### 3.2.2.3 Third generation environmental problems

The perception of the current environmental crisis is discussed by Norton (1991a: 207-214), who expands his description of the shifting patterns of problems with which environmentalists have been faced over time to one which captures the growing significance of the threats which modern industrial societies pose to *future generations*. Norton defines the current human actions and decisions which constitute these threats as *3<sup>rd</sup> generation environmental problems* and describes the incremental development in their scale of effect from the relatively indeterminate consequences to which they have given rise thus far to the geographically widespread catastrophic effects on a multitude of human beings, which are anticipated once critical environmental thresholds are exceeded (Norton 1991a: 207-214).<sup>119</sup> He refers to several examples of *3<sup>rd</sup> generation environmental problems* (ozone depletion, acid rain, etc.) but focuses on the effect on global warming, arising from the combustion of fossil fuels, to illustrate the inter-generational character of this class of environmental problem. Norton's views on these emerging environmental problems are substantiated by commentaries such as the UN Global Environmental Outlook (GEO, 2000) which describes the threats to human (and other) life as a result of, for example, the increased severity of natural disasters and the destabilisation of the global nitrogen balance caused by agriculture and the combustion of fossil fuels, which could make freshwater supplies unfit for human consumption (UN, 1999).

The accelerated loss of biological diversity resulting from present decisions and actions [most notably attributable to the effects of human technology (Angermeier, 2000: 375)] is expected to have irreversible and detrimental consequences for future generations. As described by Wilson (1992: 248) there have been at least six periods in palaeo-history when massive species extinction have occurred in response to natural climatic change associated with the terminations of glacial cycles; eg. some 73 percent of the

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<sup>119</sup> A contrasting view on *3<sup>rd</sup> generation environmental problems* is provided by Simon in Myers and Simon (1994: 55) who argues that such concerns are likely to be transient issues in the environmental debate that will be "barely worthy of consideration 10 years from now". Pillars to Simon's argument include the proven failure of the *Limits to growth* scenario to materialise - which points to the potential of human ingenuity to mitigate environmental problems, for example, through economic and technical adjustment (Myers and Simon, 1994: 59).

genera of large mammals and birds that lived in the late Pleistocene are now extinct. Although this episode of biodiversity collapse is attributable in part to natural climatic warming, a compelling explanation of the scale of recent collapse in biodiversity is linked to the impact of global human dispersal beginning some 12 000 to 11 000 years ago when Palaeo-Indians colonised America, Polynesians the Pacific, Indonesians Madagascar and, in recent centuries, the colonisation of the New World by Europeans (Wilson, 1992: 247). The most significant contemporary human impacts which are causing biodiversity collapse at a previously unprecedented scale are attributable to the rate of technological evolution which is much more rapid than genetic evolution.<sup>120</sup> Angermeier (2000: 376) argues that this is causing the transformation of ecosystems at a rate that exceeds the adaptive capability of the affected biota.

Flyvbjerg (1993: 12) describes the effects of 3<sup>rd</sup> *generation environmental problems* as life-threatening to the extent that changes in the global ecology are happening as a consequence of a large number of small, incremental choices, and that future continuance of life is no longer a given but is subject to question. The effects that materialise in future are expected to harm large numbers of people over geographically broad areas and the ethical question of transferring inter-generational risk therefore becomes relevant. Norton (1995a: 50-53) introduces the concept of a diachronous ethical scale to analyse actions giving rise to inter-generational transfer of risk and argues that when the risks incurred in the present fall mainly upon future individuals (who do not share the present benefits), a *contextual* approach to decision-making must replace standard analytic methods which are typically used to inform decisions relating to *intra*-generational risk. The concept of contextual environmental management is essentially based on ensuring the health of the larger, autonomously functioning environmental context within which humans exist as one element of the greater biosphere.

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<sup>120</sup> Based on Holling's (1992) scalar and hierarchical interpretation of the organisation, controls and dynamics of ecosystems, Norton and Ulanowicz (1992: 244-249) and Norton (1995a: 51) describe the anomaly within hierarchy theory that is evident in the effects of human activity on their sustaining environment. According to these authors, "most applications of hierarchical organisational structures emphasise that control and constraints flow down spatiotemporal systems, with larger and slower-changing processes constraining the behaviour of individuals at lower levels". At present, however, it is human activity that drives changes in ecosystem states and not *vice versa*.

Although the authoritarian interventionist solutions proposed by Hardin and Heilbroner to the suite of 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> generation environmental problems were widely rejected, the process of rejection initiated a search by a growing number of environmentalists for an alternative *cultural transformation* in human society which could foster an effective response to the environmental crisis. The ecologically oriented theorists who support the current theme of an *emancipatory opportunity* in the environmental problematic consider the resolution of the crisis since the 1980s to be one which is fundamentally dependent upon this transformation (Eckersley, 1992: 17-21). Solutions that are promised by technology and institutional intervention are viewed by emancipatory theorists as cultural elements that bind rather than liberate humanity from its crisis. These theorists challenge the paradigms according to which society attributes value to technologies (and science) that ultimately threaten life and life-sustaining processes beyond the immediate and short-term gains that they offer. For example, Shrader-Frechette (1982: 37) argues that - in the context of environmental impact assessment - society's decisions and actions should be guided by *asking the right questions*. She illustrates her argument through reference to a frequent failing of EIA, where the process is based only on the consideration of *alternative technologies*. Her point is that the questions which must be posed should not relate only to choices of technology but should, preferentially, consider social and political options to address particular societal needs (Shrader-Frechette, 1982: 38).<sup>121</sup> The deep ecologist Arne Naess, responds to questions pertaining to society's current drive for economic growth and high levels of consumption by asking the counter-question whether this drive ultimately fulfils essential psychological human needs like, for example, security and love (Devall and Sessions, 1985 in VanDeVeer and Pierce, 1994: 220). Whilst acknowledging that destitution (the antithesis of consumer society) carries with it huge environmental risk, Durning (1992: 23, 36), like Naess, questions whether the comparative affluence of societies of the developed world brings with it a commensurable degree of happiness, suggesting that the relationship between growth in consumption and personal happiness is weak.

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<sup>121</sup> A similar point was made two decades earlier by Rachel Carson in her prophetic statements on the environmental risks of pesticide usage. She challenged the need for chemical technologies that were being developed at the time and proposed the use of non-technological biotic alternatives to chemical pesticides (Carson, 1999: 29, 226).

Importantly, emancipatory theorists shift the debate from the question of how human needs should be satisfied, to the process through which views of our needs are formed.

Cultural transformation that is advocated by emancipatory theorists requires the revitalisation of civil society and the institution of different political philosophies from those that have dominated in modern times. Emancipatory theorists consider the *liberalist* political ideal of democratic, individual freedom and the values which are derived from individual wants and preferences to be inconsistent with their advocacy of communitarianism, supported by shared public values providing definition to community identity, character and aspirations (Sagoff, 1988: 147). They are also critical of the questionable liberalist axioms of inalienable property rights and participation in the *laissez faire* economics of the free market system that they believe are causal to the environmental crisis (Leeson, 1979). It is their view that one of the main failures in the system of liberal politics was initiated with the ending of frontier expansionism, when the axiom of property rights (and the concentration of capital and power which this derives for a privileged few) rendered the co-axiomatic liberalist ideal of economic and political freedom largely illusory to the mass of ordinary working people (Eckersley, 1992: 24).<sup>122</sup> This situation was less critical during the era of frontier expansionism when expanding stocks of wealth provided more opportunity for distributive justice (albeit a modest form of justice) to prevail. However, since this time there has been an inevitable intensification of the gap between the rich and poor which now makes the creation of an

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<sup>122</sup> Shrader-Frechette (1985a) reviews Locke's labour theory of property in the context of the critique that is levelled against the liberalist axiom of property rights. She highlights a critical proviso that Locke makes, which is that the process of property appropriation should leave "as much and as good ... in common for others" (Shrader-Frechette, 1985b in VanDeVeer and Pierce, 1994: 434). Liberalist philosophy with respect to property rights, which has a Lockean justification, fails when it does not adequately deal with this proviso. Shrader-Frechette's point is that Lockean philosophy towards property rights is perhaps less flawed than the liberalist grounding in this philosophy, which ignores one of its key provisos.

The liberalist axiom of property rights is also debated by Goodin (1990) who focuses on the presumption that property rights must necessarily be at odds with preservationist duties. Goodin argues that property rights do not always prevail over these duties and that such rights are neither sacrosanct nor particularly strong in each and every case (Goodin, 1990: 435). Where a conflict does exist between the rights of property use and preservationist duties is the case involving goods that diminish with use and for which there are no close substitutes to internalise the cost of diminishment. Here, a trade-off between the values of use and preservation is necessary; however, Goodin argues that in such cases preservationist duties should have primacy and should be superceded only on the basis of convincing moral argument (Goodin, 1990: 441).

egalitarian society (a pre-requisite for emancipatory cultural transformation) a paradoxical impossibility for liberalism.

The egalitarian ideals of democratic *socialism*, which aim to limit the inequalities of wealth and power produced by liberalist free market forces are also not exempt from critique by emancipatory theorists. This critique centres on a concern that the socialist model of wealth redistribution brings the poor into the market only as passive consumers rather than self-determining producers (Eckersley, 1992: 24). In this area of criticism, there is probably some agreement with Garret Hardin's "lifeboat ethics" which emphasises the hazards of welfare politics (Hardin, 1974 in VanDeVeer and Pierce, 1994: 380-381). The critique which is levelled at the *Marxist* alternative to the distributive justice of democratic socialism is more severe - not in terms of the social ideals of this philosophy (which, as has already been stated, have collapsed in practise) but in terms of the pervasive and serious environmental impacts of industrialism that emancipatory theorists view as a failing which is common to both liberalist capitalism and Marxist 'state capitalism'. Above all, it is the position of human domination over nature and the transformative, instrumental value of the non-human world that is exploited for human utility that makes Marxism and the other dominant political philosophies incompatible with the ideals of emancipation.

The cultural and institutional transformation that emancipatory theorists call for requires the earth's advanced nations to suspend the rate of increase in standards of living according to present values and to forfeit many of the material comforts which are currently enjoyed (or envied by aspirant developing countries). It is argued that these comforts, and the values from which they are derived, are not only in excess of, but are often in opposition to basic biological needs (Stone, 1974 in Pierce and VanDeVeer, 1995: 120) and, according to Naess, they are contrary to human psychological needs as well (Devall and Sessions, 1985). Emancipatory theorists propose that new cultural paradigms must be fostered that will allow society to transcend the anthropocentrism of participatory politics and the liberalist acquisitive ideals of quantitative improvement of life *towards* a metaphysical reconstruction of relationships with the earth's broader community and the qualitative improvement and meaning to human life that this will

bring (Leiss, 1972; Castoriadis, 1981: 7-22). The drive for such transcendence, which is epitomised by the deep ecology of Arne Naess, proposes a new conception of humanity's relationship to the rest of nature and an associated change in human consciousness - a consciousness that will not only contribute to the solution of the material problems of the earth, but will liberate humanity from the controlling and stultifying effects of current attitudes towards property and nature (Stone, 1974 in Pierce and VanDeVeer, 1995: 120).

For emancipatory theorists, the desired political philosophy to support an ecologically sustainable post-liberal society stems from a 'discovery' of the human-ecological interconnectedness brought to public attention in the 1960s by Rachel Carson's publication *Silent spring* (Carson, 1962), but which did not gather momentum until late 1970s and early 1980s. This has set in train significant theoretical innovations and the political repercussions of these are only just being worked out (Weston, 1996: 147). The most significant of these has been the attempt by emancipatory theorists to revise and incorporate the principles of individual and community autonomy into a broader ecological framework. As will emerge from the discussion that follows, the metaphysical reconstruction which this requires of humanity remains somewhat of a narcissistic ideal, in that it has yet to attract a strong paradigmatic allegiance in Western politics and policy based on the promise it offers to resolve the environmental problematic (*vide* Section 1.4). Accordingly, emancipatory theory would seem to be somewhat removed from the immediate practical imperative of working *within* the prevailing cultural paradigm in order to address the pathology in the human-environment relationship as it exists now.

#### **3.2.2.4 Environmental crisis: A catalyst for the emergence of environmental ethics**

Clearly, the developing environmental crisis as described above, and the agenda of environmentalism, which is evolving in response to this crisis, has neither found resolution nor been adequately served through recourse to the paradigm of traditional human ethics. Whilst the environmental problematic might initially have been regarded as a mere anomaly in terms of the failure of 'normal' ethics to provide the conceptual

and instrumental tools appropriate for its resolution (*vide* Kuhn, 1970a: 77), the exhaustive, yet ineffective, application of these supporting theories and philosophies is beginning to place into question the promise offered by human ethics to resolve what is now perceived to be a crisis. Through application of Kuhnian theory to the situation of environmental crisis, the fundamentals of the prevailing paradigm of human ethics would seem to be open to question (*vide* Kuhn, 1970a: 6), and the possibility now exists for a break in the tradition-bound activity of problem resolution; i.e. the way has opened for new candidate paradigms to emerge and displace the prevailing ethical paradigms from their position of priority. Developments within environmental ethics are a manifestation of this possibility, which has been triggered by crisis.

Flowing from the developing environmental crisis there have been calls for a reformulation of the foundations of value theory, which range in degrees of movement away from the modernist view of progress, with its *conservative* 'business-as-usual' assumptions of scientism, technocratic managerialism and economic growth, towards the *radical* transformation of society and its current grounding in the liberal democratic understanding of the good life (Brown, 1995: 39; Marietta, 1982: 154). Essentially, these calls seek to replace traditional ethical arguments and the general recourse to the prevailing philosophical systems - eg. utilitarianism, theories pertaining to natural rights and duties, and justice theories - with a new *environmental* ethics.

In the early 1970s philosophers began a search for a moral theory that would ethically enfranchise non-human natural entities and nature as a whole. It was anticipated that such an environmental ethics would deal not with human *use* of the environment, but would represent a primary ethics *of* the environment; i.e. an ethics that would situate the environment as the object of moral concern rather than one of mere utility (Callicott, 1979: 71-81; Holmes Rolston, 1975: 93-109). The challenge that was taken up within the newly constituted discipline of environmental ethics was radical in its formulation and, as observed by Passmore (1974), it promised to be a major departure from, and would be inconsistent with, established Western philosophy and tradition (Hargrove,

1989: 3).<sup>123</sup> If successful in its intent in this respect, the discipline would deliver a new moral theory independent of the rules of governance affecting traditional human relations (Stone, 1988a: 139).

The trajectory in the evolution of environmental ethics will now be described through reference to the diverse paradigm claims that reflect the extent of testing and experimentation in the development of new theory within the discipline of environmental ethics. Some of these claims, which are perhaps inadequate in terms of their promise to resolve the environmental crisis, will be shown to be set quite clearly within the context of traditional value theory and are characterised by their advocacy of *evolutionary* change. Others will be shown to be somewhat narcissistic, in the sense that whilst they may ultimately offer some promise to resolve the environmental crisis through *revolution*, they have yet to confirm the validity of their underpinning fundamentals to the extent that they can secure widespread allegiance and find application, for example, in the current endeavours of environmental policy development.

### **3.3 ENVIRONMENTAL ETHICS: A DISCIPLINE OF DIVERSE PARADIGM-CLAIMS**

#### ***3.3.1 Paradigms: a dead metaphor for environmental ethics?***

The growing pool of value theory in environmental ethics is typically constructed around arguments supporting the various convictions that humans have pertaining to their own value and that of the nonhuman world. Sagoff (1991 in Pierce and VanDeVeer, 1995: 173) describes the dominant forms of argument as having either an instrumental (paradigmatically strong) or moral (often narcissistic) rationale or grounding.<sup>124</sup>

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<sup>123</sup> Passmore (1974: 186ff) argues that conventional morality is sufficient to justify ecological concern. What is required, he holds, is not so much a new ethic as a more general adherence to a familiar ethic; i.e. whereby damage to ecosystems should be interpreted as injury to persons - one of the primary moral offences in traditional moral teaching.

<sup>124</sup> In the *Land ethic*, Leopold (1991) characterises this dichotomy within the realm of the relationship between humans and the nonhuman world as the *A-B cleavage*, where *A* is associated with the valuation of land in terms of its anthropocentric human utility and *B* is associated with an understanding of the land as a biotic whole, possessing a value which exceeds anthropocentric utility (Leopold, 1991: 258-259). The discussion of Aldo

Instrumental arguments, that are usually labelled as being anthropocentric in character, are constructed around the deep-rooted tradition of assignment of value to the nonhuman world insofar as this satisfies human preferences [individual and social preference values (Holmes Rolston, 1988: 254-255)] and meets human needs. Criteria such as the special relationship between humans and God and a unique consciousness or rationality are typically offered as justification for the requisite status for the attribution of intrinsic value to humans, and that failure to meet the criteria extended in this argument relegates the nonhuman environment to the status of instrumental value only (Fox, 1995: 151). *Instrumental value theory* is, therefore, grounded in the axiom that humans are intrinsically valuable in and of themselves whilst the nonhuman world is valuable mainly insofar as it is of instrumental value for the achievement of human ends; i.e. the environment is perceived as merely a secular object, a pool of resources to be used to satisfy human needs and preferences (Drengson, 1980: 231). Moral arguments pertaining to the value of the nonhuman world capture the obligations that arise from a nonanthropocentric sense of reverence, affection and respect for nonhuman natural entities. Such arguments reject the axiom that the nonhuman world has value only insofar as it is of utility value to humans, and promote the attribution of intrinsic value to at least some members or aspects of the nonhuman world (Fox, 1995: 162). *Intrinsic nonhuman value theory* is, therefore, grounded in the axiom that nature itself is worthy of value and is not valuable merely because of the benefits it confers on humans.

The discipline of environmental ethics is quite predictably populated by a strong contingent of counterculture advocates of the postmodern paradigm in which intrinsic value theory and radical forms of environmental ethics find their context. In this respect, it is the counterculture view that conventional paradigms - the loci of instrumental value theory - are simply one of many possible interpretations of reality, and that they are no more binding than any other paradigm. Through a distorted interpretation of Kuhnian theory, the argument posited is that paradigms are culturally constructed, not discovered, and that the authority of the currently dominant paradigms pertaining to

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Leopold's *land ethic* (*vide* Section 3.4.2) refers to the opposing perceptions of man the conqueror *versus* man the member of the biotic community as one paradox that creates the *A-B cleavage*.

value theory are thereby severely diminished, leaving room for any number of valid 'new-paradigm' theories and positions - including those pertaining to environmental ethics - to emerge and command an allegiance. The prevailing rational worldview is thus considered to be arbitrary [supposedly based on theoretical speculation and guesswork (Wilson, 1998: 56)], relative, socially constructed, interpretive (it does not reveal anything fundamental about reality), power-laden, ideologically skewed, and non-progressive.

As stated by Cheney (1989: 118), truth according to the 'new-paradigm' argument is simply the result of social *negotiation*. Wilber (1998: 27-28) characterises this distortion of Kuhn's definition of paradigms - a mode of problem-solving that is *firmly structured* around acknowledged laws, sets of established first principles, standards and instrumental techniques - as the narcissistic view that *any theory* can represent a valid universe of perception and explanation from an *empirically independent* base - which, as a consequence, avoids exposure to testing of its merits. A 'new-paradigm' claim cannot be tested since the abstract theory remains divorced from evidence and is, therefore, placed in an incommensurable position relative to any other theory. The narcissistic view is that since 'new paradigms' are allegedly not required to be grounded in facts and evidence (they are created), they are not tied to the authority, for example, of the prevailing rational worldview (*vide* Paehlke, 1988: 291). Devall and Sessions (1985: 227) illustrate this narcissism through reference to Arne Naess' view on deep ecology, which he (Naess) states is 'only *his* version ... and that *many* versions need to be worked out'.

The traditional demand for validity claims, which has always provided the grounding for entrenched paradigms of environmental value, is not yet evident in these 'new-paradigm' theories. They represent what Wilber (1998: 33) defines as ideas - i.e. they are "creative affairs" [*vide* Drengron's (1980: 240) advocacy of deep ecology] - and demands for revolution that tend to be disconnected from the counter demand for evidence, truth and injunction. Alternatively, where they may warrant paradigm status, their promise of arresting the pathology in the human-environment relationship attracts only a narrow sphere of allegiance due, it will later be argued, to their reductionism and

monological moulding, which differs little, for example, from the reductionism of traditional economic theory, and, therefore, commands limited appeal.

The potential for tension within the discipline of environmental ethics is thus apparent from the divergence that has developed in value theory and, as a consequence, the quest for a unifying theory of environmental value is proving to be elusive. It can be argued that it will remain elusive for as long as there is the distortion of Kuhn's understanding of paradigms and the (perhaps unconscious) abuse of this metaphor by 'new-paradigm' claimants within the discipline. No unified theory of value will emerge for as long as competing paradigms are stated in terms of monistic claims, incommensurable with competing views, with no invitation for dialogue. In a situation where competing claims exist in a competitive, dissociated state, there is little scope for the essential integration of the dissociated human cultural value spheres, which, in many respects, find their loci in the diverse theories of environmental value that have been developed.

Based on the extent of distortion of the paradigm concept, its usefulness for application within the discipline of environmental ethics is diminished. Perhaps it is a dead metaphor in this context? Nevertheless, if it can be acknowledged that there are certain views of the world that are grounded in concrete injunctions and socially assimilated practice, and that these can be distinguished from the proliferation of views about which there is currently no clear consensus, it is possible to classify the pool of emerging theory within the discipline of environmental ethics according to a *paradigm/new-paradigm* differentiation. In the sections that follow, this classification is employed to differentiate between what may be termed *entrenched paradigms* of environmental value and '*narcissistic new-paradigm*' claims in this respect. This relates specifically to the previously described dichotomy between anthropocentric instrumental value theory and nonanthropocentric intrinsic value theory, which characterise the polar extremes of a wide spectrum of differing forms and combinations of value theory (Eckersley, 1992: 33). The discussion that follows briefly traverses this spectrum, beginning with the most extreme form of entrenched economic instrumental value theory and concluding with

an overview of the pool of 'narcissistic theory' located at the nonanthropocentric and radical extremes of the spectrum.<sup>125</sup>

### ***3.3.2 Entrenched paradigms of environmental value: Instrumental value theory***

The metaphysical qualities of humanity's relationship with God provide a questionable ethical basis to the argument that differentiates between the intrinsic and instrumental values of humans and the nonhuman world respectively. However, Baxter (1974, in Pierce and VanDeVeer, 1995: 382) suggests that in reality it is human rationality that defines the way people perceive their dominant position over the nonhuman world, the value of which has no normative definition except by reference to the needs and satisfactions of humans. In Baxter's view, the human dependency on the instrumental value of nature and the pursuance of self-interest through the efficient use of resources guarantees the existence of the nonhuman world in a variety of humanly optimal states (Baxter, 1974: 382). The managed states of the environment, and the goods and services which the environment provides in such states, therefore reflects the extent to which trade-offs are made by humans in satisfying preferences which are derived from the selective allocation of the earth's stock of resources to various end uses.

*Unrestrained exploitation and expansionism* is the archetypal form of entrenched economic instrumental value theory. It is based on the instrumental value of the nonhuman world that is derived from its physical transformation and it is measured primarily in terms of an economic currency (Fox, 1995: 152).<sup>126</sup> While expansionism remains possible within environmental frontiers that are perceived to be limitless, the physical transformation value of the environment is equated with economic growth which in turn, is considered to represent 'progress' (Daly, cited in Ravaioli, 1995: 58). This value theory is based on short-sighted economic determinism, has little synchrony

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<sup>125</sup> The term 'radical' is used to define movements such as deep ecology, ecofeminism, social ecology and bioregionalism, which share the assumption that mainstream environmentalism and environmental ethics are inadequate in the sense that they provide only superficial understanding of the causes and structure of environmental problems. They demand complete transformation, not only of human consciousness with respect to the environment, but also behaviour and societal structures (Hattingh, 1999: 70).

<sup>126</sup> Also described as frontier economics (eg. Boulding, 1966).

with any greater environmental context and does not take into account the interests of future generations.<sup>127</sup> Paradoxically, value is generated by creating scarcity; i.e. depleting and degrading resources increases their measured value - ultimately disabling humanity, the economy and the functionality of ecosystems on which they rest (Colby, 1989: 9). Human ingenuity and technological fixes are relied upon to deal with the longer-term environmental externality costs that accompany the perceived benefits of economic growth and progress.

One of the reactive, and by now well entrenched, positions in instrumental value theory, which arose in response to unrestrained exploitation and expansionism, is defined as *resource conservation and development*.<sup>128</sup> It is also based on the value which is derived from the physical transformation of the nonhuman world; however, it demonstrates a long term focus through its sensitivity to the limits that are set by the finiteness of the earth's natural resources and is grounded, therefore, in the dual axioms of management for maximum *sustainable* yield and *waste minimisation* (Fox, 1995: 153-154). Eckersley (1992: 35-36) explains the general acceptability of this value theory which arises from the fact that it has an anthropocentric grounding that seeks "the greatest good for the greatest number", including future generations. This is achieved, theoretically, by reducing waste and inefficiency in the exploitation and consumption of nonrenewable natural resources and ensuring a maximum sustainable yield in respect of renewable resources. The *efficient maximisation of yields* and the *sustainability* of resource use emerge from the *development* and *conservation* aspects that are respectively promoted by the theory (Fox, 1995: 154). Although certain of the incongruencies associated with Pinchotist conservation have already been discussed in Section 3.2.1, a criticism which many environmentalist factions reserve for this form of value theory is that it promotes a 'total-use' approach whereby nothing is left in its natural condition (Eckersley, 1992: 35).

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<sup>127</sup> Advocates of economic expansionism argue that depletion of natural resources is inevitable and that the economic growth that accompanies this is essential if there is to be an accumulation of human-made capital (substitutable for natural capital) which can benefit future generations (Barrett and Grizzle, 1999: 25).

<sup>128</sup> The popularisation of the modern doctrine of conservation and development can be traced to Gifford Pinchot's environmental management philosophy (*vide* Section 3.2.1).

A second - also now well entrenched - reactive position that arose in response to unrestrained exploitation and expansionism is captured by the definition of *resource preservation*, which Fox (1995: 154) describes as the third main form of instrumental value theory. Here, the axiological emphasis is on the *maintenance of patterns of existence* of species, systems and biophysical processes and on the *moral responsibility* to minimise the physical transformation of nature in order to assure its value for human utility. Although resource preservation is classified here as a form of instrumental value theory, Passmore (1974: 73, 111) regards it as axiomatic that true preservationist arguments rest upon attributions of intrinsic value to nonhuman nature; i.e. that preservation is about saving natural things for their own sakes and that preservationists who use anthropocentric arguments are not true preservationists. Whereas resource conservation, which is stated as the anthropocentric action of saving natural resources *for* consumption, Passmore interprets preservation as having a nonanthropocentric and non-utilitarian focus on saving such resources *from* damage and destruction. Norton (1986a: 212-213) is critical of the philosophical distinction that Passmore and others make between conservation and preservation based on anthropocentric versus nonanthropocentric *motives*, rather than acknowledging the important nuances of environmentalist *objectives*. Norton argues that the distinction between anthropocentric and nonanthropocentric motives loses importance as emphasis is placed on the longest term values humans place on the protection of biological diversity - irrespective of the different motives they have for such protection.

Several anthropocentric arguments have been presented for the preservation of the nonhuman natural world. For example, Godfrey-Smith (1979: 310) argues for the preservation of nature on the basis of its importance: as a stockpile of genetic diversity for agricultural, medical and other purposes; for scientific study; for recreation; and for aesthetic pleasure and spiritual inspiration. Sessions (1989) also describes the instrumental value of resource preservation in terms of the life support and psychogenetic functions which are derived from the nonhuman world, where: *life support functions* include the free goods and services which are essential for the healthy physical survival of humans (for example, clean air and protection from ultra-

violet radiation) and; *psychogenetic functions* relate to the values which humans derive from the range of contexts and experiences that the nonhuman world offers (eg. the importance of un-managed places as a refuge from the heavily managed aspects of human existence). Linked to these values is the symbolic instructional value (eg. the value of species in nature as examples of survival), which the natural world offers to humans (Norton, 1986b: 13; Ehrenfeld, 1978: 184). In this respect, it is argued that species that survive in living, un-managed natural systems ought to be preserved because they provide powerful symbols of human freedom. Other instructional values of natural systems include the models of efficiency, cooperation and harmony that they represent.

Early initiatives of American preservationists such as John Muir set a precedent for the reservation of wilderness areas to be excluded from development and conservation management (Section 3.2.1). Eckersley (1992: 39) suggests that the campaigns for wilderness preservation, more than any other environmental activism, have presented the greatest philosophical challenges to the dominant social paradigm of human domination over nature, thereby forcing theorists to confront the question of moral standing of the nonhuman natural world. In this respect, John Muir's pantheist worldview, around which he constructed his preservationist values, still persists to some extent within the metaphysical dimension of contemporary intrinsic value theory. However, the development of ecological knowledge since Muir's time has caused a shift in emphasis from the ecstatic pantheism which he associated with places and things of outstanding natural beauty to a more holistic pantheism which is sensitive to *all* of the richness of the nonhuman natural world; i.e. not only those elements which are apparently of direct psychogenetic value to humans. The ecological wisdom of this shift in emphasis is linked (*inter alia*) to the science of island biogeography, which demonstrates the futility of attempts to preserve biological diversity within small isolates or fragments of landscapes (wilderness areas, for example), which at some time might have been representative of previously expansive natural systems.<sup>129</sup> From an

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<sup>129</sup> The theory of island biogeography developed by MacArthur and Wilson (1967) states that the biological diversity comprising island ecosystems exists at equilibrium, where the total number of species is determined by the point at which the rate of species immigration equals the rate of extinction. Big islands contain more species than small islands and remote islands support fewer species than less remote islands. In a mainland situation, a

ecophilosophical perspective, Callicott (1991:14-15; 1994: 65-67) has also advocated that the preservationist emphasis on the ecstatic experiential value of *isolated* wilderness areas, which humans periodically seek from their position in the developed world, is less significant than the need for a shift in human appreciation of the integral symbiotic connectedness between humans and the *whole* nonhuman natural world [*vide* Leopold's views on organicism and human membership of the biotic community (Section 3.4.2)]. Such an appreciation might prevent the destiny of decay described by Rodman (1977: 112) whereby "the logic of preserving wilderness and wildlife on artificial islands surrounded by the sea of civilization seems to involve its own mode of destruction"; i.e. if the focus of preservationism is on wilderness and not on addressing issues such as overpopulation and pollution, the latter problems will sooner or later impact upon, if not destroy the wilderness (Eckersley, 1992: 41).<sup>130</sup>

### 3.3.3 *Narcissistic new-paradigm claims: Intrinsic and radical value theory*

As discussed in the introductory section to this chapter, much of the philosophical debate within the discipline of environmental ethics has centred on the problem of constructing an adequate theory of *intrinsic value* for nonhuman natural entities and for nature as a whole (Callicott, 1985: 257). This is reflected in the many forms of intrinsic value theory that have evolved subsequent to Aldo Leopold's exploratory development of an environmental philosophy extending beyond the instrumental value paradigm. Fox (1995: 162) classifies the various approaches to intrinsic value theory into four main

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sample area within a particular system (eg. a newly demarcated wilderness area) is not in *internal equilibrium* - it is in *equilibrium with areas across its boundaries* and will contain a diversity of species at levels that are maintained by individuals migrating in from the larger landscape. Take away the landscape (i.e. transform the *sample area* of wilderness into a *small island* distantly separated from other natural landscape) and the balance changes. Many biota, particularly rare species, cannot maintain themselves independently, and vanish from the isolate; i.e. biological diversity decreases and ecosystem decay sets in (Quammen, 1996: 443).

<sup>130</sup> Beck (1995: 36-38) asks what characteristics of the nonhuman natural world preservationists wish to preserve? He suggests that the process of human interaction with nature has consumed and transformed it into a meta-reality that can no longer rid itself of the attributes of human (co-) creation [see also Comer (1977) and Haila (1997)]. In Beck's view the irreversible artificiality of nature is confirmed by its conservation through ecological *intervention* and its construction according to ecological principles. The social consumption of nature (eg. by preservationists) renders philosophically invalid the concepts and theories that conceive of nature as the counter-image of human activity and power. In a similar query, Callicott (1994: 64-65) challenges the perceived dualism of modern man being apart from nature and refers to the extensive anthropomorphisation of both the old and new worlds long before the advent of modern man.

types, which he describes as: *Ethical Sentientism*; *Biological Ethics and Autopoietic Ethics*; *Ecosystem Ethics*; and *Cosmic Purpose Ethics*. There are also several politically more radical forms of environmentalism that have emerged, which include *Deep Ecology*, *Transpersonal Ecology*, *Ecofeminism*, *Social Ecology* and *Bioregionalism*, as well as other extremist movements that will not be described here.<sup>131</sup> The discussion that follows deals with these value theories as a group that may be termed *narcissistic 'new-paradigm' claims* since, as previously stated, they currently have a weak injunctive grounding in already established social practice that might otherwise warrant their classification as paradigms in the Kuhnian sense.

The first example of a *'narcissistic new-paradigm' claim* is described by Fox (1995) as *Ethical Sentientism*, or awareness-based ethics, and is derived from a rejection of criteria such as intelligence, autonomy and reason, which instrumental value theorists include as justification for limiting the attribution of intrinsic value to humans. The rationale for this rejection emerges from a logical conclusion to the argument that value is attributable only on the basis of such criteria, which is that many humans - infants and people who are comatose, for example - would not qualify as being intrinsically valuable. The untenable implications of this conclusion conflict with the moral norms of human society and, as Fox (1995: 163) observes, the standards for acceptance of all humans within the realm of moral considerability have, therefore, been adjusted to circumvent this dilemma. The philosophical basis upon which such adjustment in value paradigms might be extended to the nonhuman natural environment is commonly linked to the argument posited by Jeremy Bentham, that the call for racial equality amongst humans could equally apply beyond this domain to include animals (Singer, 1995 in Pierce and VanDeVeer, 1995: 52). In this respect, advocates of *ethical sentientism* argue that the adjustment of value criteria, through which human society is advantaged, can be extended to attribute intrinsic value to nonhuman natural entities, using *sentience* as a qualifying criterion. Peter Singer in his protest for animal liberation holds

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<sup>131</sup> Earth First! provides an example of a loosely organised extremist environmentalist movement whose mission is to save wilderness through sabotaging the 'machines' that are perceived to destroy it. Its methods include demonstrations, guerilla theatre, civil disobedience, and monkeywrenching. Significantly, there is an allegiance within the movement to the Malthusian view pertaining to human population control. Merchant (1992: 173-176) describes this and other radical positions in green politics.

the view that all biota that have a capacity for sense perception have interests (for example, higher order biota such as mammals, birds, fish and reptiles). He argues that, particularly in the case of animals, which can experience pain and suffering, there can be no moral justification for refusing to take that suffering into consideration and to count it equally with the like suffering of any other being (Singer, 1995: 52).<sup>132</sup>

Tom Regan's case for animal rights, which is also grounded in *ethical sentientism*, is based on his critical interrogation of contractarianism/utilitarianism as a value system (Regan, 1985 in Pierce and VanDeVeer, 1995: 73). According to Regan, contractarianism - which centres on the idea that morality consists of a set of rules that a constituent of individuals voluntarily *agree* to abide by - fails in human society due to the moral dilemma that arises when it cannot deal with injustices affecting 'non-signatories' of such contract rules. Since the moral norms of society cannot deny human justice in such situations, there is no rational case for denying justice in the case of 'non-signatory' *animals* (Regan, 1985 in Pierce and VanDeVeer, 1995: 74). Utilitarianism - which is based on the principles of universal equality and the achievement of the best aggregative balance of satisfaction of human interests - fails on account of its moral focus firstly, on the satisfaction of an individuals' *interests*, not on the *individual* whose interests they are and secondly, on the achievement of the best *aggregative consequences* for everyone concerned, which are not necessarily the best for each *individual* (Regan, 1985 in Pierce and VanDeVeer, 1995: 76). Regan, therefore, proposes a *rights view* which respects the equal inherent value of all individuals and extends the scope of moral consideration beyond human intrinsic value to include all entities which are *subjects of a life* and which have some level of perceptual capability and psychophysical identity.

*Biological Ethics and Autopoietic Ethics* advance the concept of the intrinsic value of entities which are subjects of a life, by discarding the criterion which requires such

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<sup>132</sup> Animal liberationists use the term *speciesism* to describe the belief that humans are entitled to treat members of other species in a way that would be wrong to treat humans, and regard it as a form of prejudice no less objectionable than racism or sexism. Such liberationists believe that a transcendence of speciesism will require greater altruism on the part of mankind than any other liberation movement, since animals are incapable of demanding it for themselves (Singer, 1995 in Pierce and VanDeVeer, 1995: 59).

entities to be *aware* of their interests. It is argued that if interests are worthy of moral consideration, then to add the pre-condition that an entity has to be aware of its interests before these warrant moral consideration amounts to sentience chauvinism; i.e. discrimination which relegates all of the non-sentient biological world to an irrelevant moral status (Fox, 1995: 166, 168). Once the criterion of sentiency is discarded, this immediately extends the realm of moral considerability to all animate subjects which have nonsentient interests in maintaining their life and health (primitive biota, all plants and animals); i.e. the condition of *being alive* is the central qualifying criterion for the attribution of intrinsic value (Goodpaster, 1978: 319). The most significant end to which living things continually strive is to produce and sustain their own internal organisational activity and structure through regenerative processes - a property which Varela *et al.* (1974) term *autopoiesis*. Capra (1983: 271-272) distinguishes autopoietic processes from those associated with inanimate self-organizing systems by their qualities that permit the overall pattern of an organism (or living system) to be preserved and maintained under a variety of environmental conditions. Such processes account for the relative stability of individuals, taxa and systems, despite the fact that they might change over time - for example, through evolution and ecological succession. The criterion of autopoiesis, therefore, advances the concept of respect for the intrinsic value of individual subjects of a life to include as living systems *all process-structures* that continuously strive to regenerate their own organisational activity and structure; i.e. autopoietic ethics acknowledges the moral considerability of ecosystems, the ecosphere and, conceivably, more abstract kinds of entities such as species and gene pools (Fox, 1995: 172; Goodpaster, 1978: 323).<sup>133</sup>

*Ecosystem Ethics* and *Ecosphere* (or *Gaian*) *Ethics* represent a subsystem of autopoietic ethics and are an extension of Leopold's *land ethic* (Section 3.4.2), which is captured in his focus on the *biotic community* [or *ecosystem*] (Leopold, 1991: 262).<sup>134</sup>

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<sup>133</sup> Taylor (1986: 119-129), who supports the concept of a life-based ethics, provides a somewhat contrary view to Goodpaster by acknowledging the intrinsic value of living *individuals* (biological ethics), not *systems* (autopoietic ethics). This raises the question as to how the interests of individual elements of systems (ecosystems, for example) can be defended without defending the interests of the whole system - the functioning of which is not reducible to the separate functioning of its individual components.

<sup>134</sup> Heffernan (1982: 247) has reformulated this central definition of the *land ethic* by replacing the term 'biotic

James Lovelock, for example, extends the concept of an ecosystem ethics to include the autopoietic ecosphere as a whole, which he terms *Gaia* after the Greek goddess of the earth (Lovelock, 1979).<sup>135</sup> Although this line of environmental ethics focuses on the moral considerability of self-regenerating systems, this is not taken to the extent of environmental fascism where the interests of individuals might be considered important *only* insofar as they contribute to the integrity of systemic wholes (*vide* Marietta, 1988: 251). The moral considerability of individual biological organisms is strengthened, rather than subordinated to the interests of ecosystems and the biosphere, by virtue of the fact that they contribute in an essential way to some greater intrinsically valuable whole. Because the interests of the individuals that constitute systemic wholes are guaranteed to be served by the maintenance of the integrity of such wholes, this requires limitations to be set on the behaviour of individuals that could threaten this integrity. Therefore, *ecosystem* and *ecosphere ethics* respect the individualism of biological organisms and the evolutionary paths which they might follow to the extent that this does not place at risk the autopoietic functioning of the greater ecosystem or ecosphere of which they are members (Fox, 1995: 179). O’Riordan (1986: 3-4) characterises Gaianism as a position from which the cosmos is recognised as being bigger and more wonderful than the human mind can encompass. It is, therefore, regarded as prudent to provide a buffer between what is thought to be technologically possible and what is believed to be desirable. Gaianists argue that all development must be sustainable in ecological terms; in particular, caution is advocated concerning the aggregate consequences of individually minor alterations of the environment by human development.

*Cosmic Purpose Ethics* assume that in addition to humans, some or all nonhuman entities are morally considerable because they embody or are expressive of some kind of metaphysical cosmic interest relating to the ultimate ends of evolution and/or God’s

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community’, which is used by Leopold, with the term ‘*ecosystem*’.

<sup>135</sup> Lovelock (1979) focuses on the autopoietic dynamics that have altered the earth’s atmospheric conditions to the extent that the chemistry of the air and water is controlled within predictable limits, despite perturbations in solar flux. O’Riordan (1986: 4) explains Lovelock’s understanding of this ecosystemic effect as an evolutionary self-protecting mechanism which the ecosphere has developed as a functioning *whole*.

purpose (Fox, 1995: 179).<sup>136</sup> For example: Bookchin (1982), who is an advocate of *evolutionary nontheism*, derives his views from the argument that evolutionary processes advance individuation, freedom and selfhood; the *evolutionary pantheistic* approaches of other cosmic purpose ecophilosophers place God in the position of directing all aspects of the universe towards the realisation of ever greater richness of experience or intensity of feeling (Skolimowski, 1981: 117); Christian fundamentalists who attribute intrinsic value to the nonhuman natural world base their non-evolutionary views on the biblical reference to God's creation of the world in its completed state and justify the moral considerability of all creation through reference to God's expressed satisfaction with His creative work [ "... *God looked at everything he had made, and he was very pleased*" (Genesis 1: 31)]. From these examples, it is clear that a *cosmic purpose ethics* is characterised by a hierarchy of intrinsic value that places humans in the top evolutionary, or God appointed, position. Although this position is significant in terms of how issues of competing rights might be resolved, it is not assumed that this assigns humans with an automatic right to dominate entities of lesser intrinsic value.

A number of value theories have evolved towards the *radical extreme* of mainstream environmentalism. Examples of these include the modernistic ethics of *Deep Ecology* and *Social Ecology* and the post-modernistic ethics of *Bioregionalism*.<sup>137</sup> Although the different emphases of these ethics appeal to various constituencies, they offer a common critique of industrial society and shallow environmentalism and are united in their rejection of materialism and instrumentalism (Devall, 1991: 248). An emphasis on the need for *changes* in the human conceptualisation and spiritual identity of 'Self' (a strong element particularly of Deep Ecology), the institutions and hierarchies of society and the relationships between humans and the greater ecosphere draw these radically inclined ethics towards the extreme position they hold on the ecophilosophical

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<sup>136</sup> It is the enriching metaphysical dimension of cosmic purpose ethics that differentiates this line of intrinsic value theory from those previously described. However, it does introduce an unfalsifiable theoretical grounding which is more difficult to defend or rationalise compared to most other naturalistic forms of intrinsic value theory. Many ecophilosophers regard this as its disqualifying weakness (Fox, 1995: 184).

<sup>137</sup> *Ecofeminism* is another example of environmentalism that gravitates towards the radical extreme of the ecophilosophical spectrum - which is not discussed in this chapter. The truly radical extreme of environmentalism, for example the *Earth First* movement, which is described, for example, by Manes (1990), is also not addressed in this dissertation.

spectrum. According to Naess (1973a: 95-100) a radical ethics is distinguished from the approach to problem-solving that is conceptualised in an isolated fashion, requiring mild reform, in that a holistic view of the human position within the biosphere is assumed (biospheric egalitarianism) and that deep change in the form of human life is required. As described by Hattingh (1999: 70) such ethics share the assumption that mainstream (shallow) environmentalism and environmental ethics provide a superficial understanding of the environmental problematic and therefore call for inappropriate responses, such as slight reformations of values, preferences, practices and institutions. The radical call that is made is for a complete transformation, not only of human consciousness (particularly with respect to human status within the biosphere), but also human behaviour and societal structures.

*Deep Ecology*, as it has evolved since its original formulation described by Naess (1973a), is a normative, ecophilosophical movement which has its grounding partly in the experiences of humans in nature and partly in the knowledge base of ecology and the life sciences - eg. conservation biology (Devall, 1991: 248). It is a probing, challenging kind of ecology that Naess differentiates from the more conventional apolitical kind, and it clearly distinguishes itself by questioning the compatibilities between human society and ecosystems (Devall and Sessions, 1985 in VanDeVeer and Pierce, 1994: 216). It has a strong biocentric emphasis which recognises humans as equal participants in the biosphere (biocentric egalitarianism) and it represents the antithesis of anthropocentric environmental positions that promote the superiority of humans over other species (Sale, 1988: 670). The biospheric egalitarianism of deep ecology and its cognizance of the principles of ecological interconnection introduce the conclusion that no large-scale impacts on ecosystems will be without their effects on human life (Drengson, 1980: 233).

In addition to its grounding in biocentric equality, deep ecology is based upon the ultimate norm of *self-realisation*. Ecological self-realisation is derived from the process of searching for a deep ecological consciousness and state of being which is achieved through a meditative and questioning process and way of life that sustains the widest possible identification with other life forms and entities (Devall and Sessions, 1985 in

VanDeVeer and Pierce, 1994: 216; Warwick Fox cited in Eckersley, 1989: 114). The achievement of such self-realisation permits humans to experience the ultimate level of sensitivity towards the richness and diversity of life and allows the transcendence of human relations to embrace the larger community of all living beings beyond any ontological divide between the human and nonhuman realms (Naess, 1995a in Pierce and VanDeVeer, 1995: 193). Naess draws a conceptualisation of the human Self from the metaphysical inspiration that he derives from Gandhi's philosophy of spiritual growth through liberated self-realisation (*atman*, the achievement of the supreme or universal Self) and his belief in the unity of humanity with all living beings.<sup>138</sup> In this context of biocentric (or ecocentric) equality, maximal realisation of human potentiality cannot be achieved if this compromises the potentials of realisation of other biota (current and future generations) - eg. through the depletion of biological diversity, retardation of evolution and a reduction in the complexity of ecosystems (Naess, 1973b: 232 ).<sup>139, 140</sup> The achievement of high levels of realisation of human potentialities implies that there is a recognition of the intrinsic value of nonhuman biota and ecosystems and that there is an acknowledgement of their equal right to achieve the highest level of self-realisation (Naess, 1973b: 236).<sup>141</sup>

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<sup>138</sup> Self-realisation goes beyond the Western *self*, which Devall and Sessions (1985 in VanDeVeer and Pierce, 1994: 216) define as the isolated ego striving primarily for hedonistic gratification. It is in reaction to this that deep ecologists search for new lifestyles that are less hedonistic and exploitative of nature than lifestyles in the middle and upper-middle classes in advanced industrial societies (Devall, 1991: 257).

<sup>139</sup> The potentials of realisation of many biota have already been severely impacted by the physical transformation of terrestrial ecosystems by humans. Such transformation has ended many millions of years of speciation within the taxa of higher order vascular plants and vertebrates, and accelerated extinction is likely to continue in response to shrinking areas of remaining natural habitat (Quammen, 1996: 549).

<sup>140</sup> Aligned with Naess' conceptualisation of the human Self, Allendorf (1997) cited by Regosin and Frankel (2000: 322) describes certain parallels between Zen Buddhism and modern ecology, which share a non-dualistic understanding of the fundamental identity of subject and surroundings. The latter authors argue that other religions, in particular Jewish teachings, also promote the awareness of the interconnectedness of humans with their environment as well as a reverence of that environment.

<sup>141</sup> Although the intuition of biocentric equality is true in principle, deep ecologists acknowledge that mutual predation and competition amongst species is a biological fact of life; i.e. it is natural that humans, like other species, will modify some ecosystems. However, it is argued that we should be encouraged to live with minimum rather than maximum impact on other species and the Earth in general. In this context, the exponential rate of growth of the human population is an issue that seriously jeopardises the potential for humans to minimise their impact on the ecosphere. This situation is aggravated by the false needs and desires encouraged by technocratic industrial society, which gives rise to increased production and consumption of goods without meeting the vital needs of humans, such as spiritual growth (Devall and Sessions, 1985 in VanDeVeer and Pierce, 1994: 217, 219). Deep ecologists are sensitive to an awareness both of the quality and quantity of products they consume, based on the principle of least harm to living beings and biocentric identity (Devall, 1991: 250).

The protection of nature that the biospherical egalitarianism of deep ecology demands is conceived as the protection of the Self. This conception, therefore, promotes respect for the diversity of all human individuals and their ways of life (cultures, occupations, economic contributions) as well as the diversity of nonhuman individuals as parts of the whole ecosphere, beyond any hierarchical structure which places humans (or certain classes of humans) at the top (Devall and Sessions, 1985 in VanDeVeer and Pierce, 1994: 217; Naess, 1973a: 96).<sup>142</sup> This deep ecological consciousness differs from the focus of the 'shallow' ecology movements which aim to curb, for example, pollution and resource depletion in order to reduce the risk which such issues present to human health and affluence within developed countries (Naess, 1973a: 95). Shallow environmental ideologies are criticised for the willingness of their proponents to settle for environmental policy reforms that do not drive changes in social paradigms that are grounded in the 'myths' of economic growth and progress and the belief that technology is the solution to environmental problems (Devall, 1991: 248).<sup>143</sup>

The transformation which Naess believes humans are capable of undergoing, in order to achieve the state of *atman* and the unity with nature which this allows is not driven by the force of duty to any external moral law. This, rather, can be achieved by drawing on the positive inclinations embedded within humans. As Naess sees it, compliance to an external moral law, i.e. duty, would entail alienation in the form of self-sacrifice. Unity with nature, however, is achieved through an expansion of the self through a process of identification with ever widening circles of nature. In this process, driven as it is by empathy and a sense of shared interests, the narrow egotistical self is left behind and a

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<sup>142</sup> Deep ecology is based on firm principles of social justice and the promotion of appropriate institutional structures to support these principles (Naess, 1973a: 96-98). It is argued that the process of self-realisation cannot be advanced unless there is an egalitarian, classless society that permits the *active* (and acknowledged) contribution of all members in a variety of specialised and non-specialised societal roles. In spite of this grounding tenet of deep ecology, the movement is criticised for its non-confrontational social analysis of issues such as class, race, injustice, capitalism, imperialism etc. and for its apparent Malthusian emphasis on the urgency for a reduction in the human population (Sale, 1988: 672).

<sup>143</sup> Whilst challenging the existence of an ecophilosophical dichotomy that has no convergence potential within policy (Section 4.4.2), Norton (1999) supports the view that *shallow* environmental ideologies might well be more closely aligned with those of advocates of unlimited economic growth than with the *deep* ecology advocacy of environmental responsibility.

richer, more mature *ecological Self* is realised.<sup>144</sup> If reality is experienced by the *ecological Self*, deep ecologists argue that human behaviour will naturally follow norms of strict environmental ethics - but without the experience of duty and sacrifice (Naess, 1995a in Pierce and VanDeVeer, 1995: 197).

*Social Ecology* is based on the premise that the problems that place human society in conflict with the nonhuman natural world have their origins *within* social development itself (Bookchin, 1990 in Pierce and VanDeVeer, 1995: 231); i.e. they are not symptomatic of a conflict, in the first instance, *between* society and nature. The fracture between society and nature is viewed as an expression of the divisions within the social realm that have long existed in the form of domination by humans over other humans in the process of sourcing goods and services from nature. In this respect, labour has always been viewed as the scarce enabling resource necessary to harness, produce and profit from these goods and services and this has given rise to the social hierarchies of slaves and masters, masters and workers. Murray Bookchin (*vide* Bookchin, 1988), who leads the social ecology movement, targets the elimination of social hierarchies as a key priority and argues for the reconstruction of a communitarianism or anarchist politics built upon the evolutionary continuity between the social and natural realms.<sup>145</sup> His views are derived from an understanding of ecosystemic communitarianism, which provides a model or “image of unity in diversity, spontaneity, and the complementary relationships, free of hierarchy and domination” (Bookchin, 1982: 352). Human activity must be guided by overarching evolutionary and ecological processes, not the instrumental needs of humans, in a way that seeks to reconnect human social activity with the natural realm (Eckersley, 1989: 115). Translated into an ecological ethics, this model informs humans about the ‘goodness’ of actions insofar as these might be conducive to the fulfilment of certain natural ends or tendencies.

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<sup>144</sup> The ideal of self-realisation is also advanced by the establishment of decentralised, non-hierarchical institutional structures that deep ecologists advocate for the promotion of local autonomy.

<sup>145</sup> In this respect, Bookchin’s ideals embrace the economic insights of Karl Marx (Bookchin, 1988 in VanDeVeer and Pierce, 1994: 236).

Bookchin describes evolution as developmental, moving from the simple to the complex, from the abstract and homogenous to the particular and differentiated, ultimately toward greater individuation and selfhood within both nature and society (Eckersley, 1989: 100). It is the role of humans, whose advanced evolutionary state is described as “nature rendered self-conscious”, to foster desirable evolutionary pathways in order to promote the wider “emergence of *mind* in the natural history of life” (Bookchin, 1982: 275-276).<sup>146</sup> For this to realise, humans must ensure the existence of a large pool of ecological diversity since this is the necessary “medium for anchoring varying degrees of choice, self-directedness and participation by life forms in their own evolution” (Bookchin, 1986: 29-38). Social ecology recognises the evolutionary position of humans as being elevated from the pool of “first nature” and that our uniquely human culture, institutionalised communities, language and other advanced attributes provide us with a “second nature” status (Bookchin, 1987: 21). This implies that humans are not ordinary members of the biotic community equal to other biota.<sup>147</sup> Rather, it is the “second nature” status of humans that assigns them the role of planetary stewardship and requires them to promote new ecocommunities and ecotechnologies that foster diversity and the growth of nature toward states of greater intellectuality (Bookchin, 1987: 32).<sup>148</sup> In addition to broadening the evolutionary pathways towards this ideal, the diversity that social ecologists wish to promote also assures a future for humanity and, simultaneously, provides relief from the ecological and social monoculture which is the label of modern society.

It is the perceived power of humans to divine the path of evolution that exposes social ecology to criticism in a number of areas. The normative basis of the argument used by social ecologists, that because something *is* (human rationality *is* a product of evolution) therefore something else *ought* to be (we *ought* to foster the development of rationality

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<sup>146</sup> Bookchin uses the term *telos* to suggest a directionality in the evolution which ultimately yields “intellectuality” - an evolutionary quality that provides humans with a privileged status (Bookchin 1982: 364).

<sup>147</sup> *Vide* the contrasting views on this issue that are expressed, for example, by Leopold and deep ecologists whose definition of biocentric equality does not elevate the position of humans above any other biota.

<sup>148</sup> This emphasis on the role of society to promote change and novelty differs from that advocated by Leopold which is to preserve (*inter alia*) the *stability* of the biotic community.

in nature), is criticised for its lack of grounding in hypothetico-deductive logic. Whilst there may be an objective scientific basis to recognise that there *is* a telos in nature and that humans *are* a fulfilment of a tendency in natural evolution, Eckersley (1989: 109) asks why this *ought* to serve as justification for infusing human values into nature to foster and accelerate the future course of evolution? Critics also challenge the extent to which the human role of stewardship over nature's diversity is extended via social ecology theory. In this respect, Ehrenfeld (1978: 127), pointing to a string of 'stewardship' failures, is critical of the humanistic aims espoused by Bookchin, which manifest as the desire to redesign the world in the human image. A sceptical view is taken of the definition of stewardship which, for example, aims to speed up the evolutionary process (through biotechnology, selective breeding) since the record shows that attempts to manipulate ecosystems, even for less ambitious ends, generally result in reduced complexity and diversity; i.e. results which expose human ignorance rather than demonstrate "second nature" intellect. It is argued that such lessons should encourage society to slow down, rather than accelerate, the pace and scale of interventions in ecosystems to levels which are commensurate with human understanding of ecology.

*Bioregionalism* is the final example provided here of another 'narcissistic new-paradigm' claim pertaining to environmental value theory. It constitutes an emerging theory that promotes the re-instatement of an organismic comprehension of the earth, aligned with traditional ancient Greek wisdom that perceives humanity's status as servant or trustee of the natural environment (Schumacher, cited by Sale, 1984: 168). This comprehension contrasts the Cartesian position of humanity as master and possessor of nature, which the scientific and technological revolution is perceived to have encouraged humans to assume. In this respect, the growth of mercantile and corporate capitalism and the spread of global exploitation are viewed by advocates of bioregionalism as expressions of the recently assumed position of dominance by humans over nature (Sale, 1984: 168).

These advocates argue that if humans are to restore the fractured relationship with nature, it is necessary to understand their immediate and specific place of habitation

and to become intimately bonded and responsive to the bio-physical opportunities and constraints revealed by local habitat; i.e. the relationships of neighbourhood and territory (Drengson, 1980: 237). It is the importance that is attached to this understanding of *habitat* that provides bioregionalism with its distinguishing qualities. A bioregion is defined as “a part of the earth’s surface whose rough boundaries are determined by natural rather than human dictates, distinguishable from other areas by attributes of flora, fauna, water, climate, soils and land-forms, and the human settlements and cultures those attributes have given rise to” (Sale, 1984: 168; 1985: 43). In the context of this definition, the significance of scale is recognised and is accommodated in the nested concept of regions within regions. The *ecoregion* captures the defining attributes of biogeographic similarity at the broadest scale, where landscape units are recognised as extending over extensive areas (hundreds of thousands of square kilometres). Within such regions, *georegions* may be defined according to distinguishing surface features such as catchment boundaries, watersheds, mountain ranges etc. *Vitaregions* describe the smallest regional context, which is most significant in terms of the scale of human habitat. It is at this scale where both geographic features *and* vernacular human culture are the primary characteristics that define the region.

Bioregionalism requires an understanding of the capacities and limits of habitats, which can only be established through the close and attuned association that self-conscious living in a habitat invokes. In this respect, Alexander (1990: 162) suggests that bioregionalism is the regional fulfilment of Aldo Leopold’s *land ethic*, which, as will be described later (Section 3.4.2), enlarges the boundary of community to include soils, waters, plants etc. It is argued that such understanding provides a new context to human economic activity, which does not place at risk the imperative for maintaining bioregional complexity and diversity. It is an understanding that stands in contrast to the large-scale transformation of the environment that has accompanied the industrial epoch of human evolutionary development. The concepts of ‘steady state’ economy and regional economic ‘self-sufficiency’ fit comfortably with the definition of bioregionalism, and also contrast the drives for ‘growth economies’ and ‘globalisation’ that are currently taking place; i.e. developments that reduce environmental complexity and increase

threats pertaining to many aspects of human security. In promoting this notion of 'steady state', there is a critical differentiation in bioregionalism between renewable and non-renewable resources, and the environmental and social costs of their use and intersubstitution (Sale, 1984: 170).

Although classified as radical in its formulation, the realisation of certain aspects of bioregionalism is perhaps a less revolutionary concept than this classification would suggest.<sup>149</sup> Sale (1984: 171) describes some examples of socio-political separatist movements that are occurring in various regions of the world, and which are indicative of an evolutionary return by human society to the context of place and habitat. These include, for example, the recent autonomies secured by Wales and Scotland in the UK, the Basques concessions in Spain, the break up of the Soviet Union, the drive in Africa for economic reconstruction and self-sufficiency through initiatives such as the *Millenium Africa Programme* and, as discussed by Alexander (1990: 163), several advances made in the establishment of bioregional communities in the US.

Perhaps the biggest barrier to the securement of a broadly shared allegiance to the concept of bioregionalism is the tension between the perception of its scientific basis on the one hand, and its appeal as an environmental ethics, based on cultural sensibility, on the other (Alexander, 1990: 164). The validity of the key tenets of bioregionalism, articulated for example by Sale (1985: 50), lack broad environmentalist support, not so much in terms of the values that they espouse, but their defended status as 'natural laws' defining what humans *must* do. In this respect Williams (1985), taking into account the complex subjectivity of human consciousness, questions whether the laws of human society can ever be reduced to obligations imposed by 'natural laws', for example, of geography - as specified in bioregionalist value theory. Set against the reductionism that is implicit in such theory, cultural sensibility is seen by some allegiants of bioregionalism as the more defensible explanation of a developing trend in what people appear to be *choosing* to do in terms of promoting sustainability - through a

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<sup>149</sup> In the context of this dissertation, the new generation tools for environmental assessment (eg. SEA), which take as their points of departure the environmental capacity to support human development and societal visioning concerning such development (Section 2.3.3.2), indicate that bioregionalism is an evolutionary possibility.

sense of bioregional consciousness and relationship with habitat (Berg, 1981: 3; Alexander, 1990: 169, 173).

Through the above reference to obstacles to securing a broad community of allegiance to bioregionalism, the deficiencies of *reductionism*, which apply to many of the value theories discussed in this section, begin to emerge as an explanation for the failure of environmental ethics to deliver a new moral theory independent of the rules of governance affecting traditional human relations. In the following section, the reductionistic character of theoretical monism, and the problems arising from monological ethical claims, will be discussed. This is intended to provide a basis for the later evaluation of the alternative, which is ethical pluralism. In this respect, it will be argued that the potential for a dialogical relationship between multiple autonomous theories of value, which is a key principle upon which ethical pluralism is based, presents a more viable option than monism for supporting the practical agenda of environmentalism. This theme of ethical pluralism will be carried through to the conclusion of this dissertation.

### **3.4 MONOLOGICAL ETHICAL CLAIMS VERSUS DIALOGICAL ETHICS**

#### ***3.4.1 Theoretical monism: A flawed ideal***

As described by Norton (1995b: 341-345) the discipline of environmental ethics has been largely dominated by questions of axiology, and the related systematisation of moral intuitions, in the search for a small set of first principles to guide policy and related decision-making insofar as this relates to moral obligations concerning the environment. The idea is that once warranted, the moral directives informed by such principles might also be warranted, and in this way, the outcome initially anticipated for the development of value theory in environmental ethics was that a single correct answer could be generated for every situation of moral consideration (Stone, 1988b; Norton and Hargrove, 1994: 238). Theoretical monism in environmental ethics was thus perceived to be capable of providing an overarching moral theory pertaining to the environment - in a sense, an algorithm (Wentz, 1993: 62).

The appeal of theoretical monism is the promise offered, that once an adopted set of principles is found to be self-consistent, the issue of external competing principles, which might dictate different responses to particular situations, poses no problem since the established theory will hold precedence in the minds of its allegiants. There is thus a natural gravitation towards monism, since it resolves the dilemma of arbitrariness and relativism, and is reflective of the rational worldview, through which logical deliberation and positivism apparently tend to hold greater appeal than any subjective alternative. Aligned with the monism of traditional human ethics, such as utilitarianism, there has also been gravitation towards theoretical monism within the discipline of environmental ethics, most notably in the defence of intrinsic value theory against instrumental value theory, and *vice versa*. The previous two sections of this chapter have been intentionally structured to highlight this 'created' dichotomy between entrenched paradigms of environmental value pertaining to instrumental value theory (Section 3.3.2) and new-paradigm claims pertaining to intrinsic and radical value theory (Section 3.3.3).

Theoretical monism, insofar as it relates to intrinsic value theory, has largely centred on the definition of a set of principles that deal with the question: *What beings are morally considerable?* Norton (1995b: 347) explains the search for a monistic theory of value as an endeavour that also attempts to define a fundamental entity that exists independently of human preferences and values, which explains and underpins all normative judgements in all situations by providing an ontological foundation for value in nature. In attempting to deal with the inherent problems arising from ontological arguments, there have been many attempts to specify the boundaries of moral considerability, illustrated by some of the theoretical responses described in Section 3.3.3 (sentience, autopoiesis, etc.).

In the debate concerning intrinsic value theory, a plurality of 'rules of right action' concerning obligations toward individual members of natural communities, communities as wholes, etc. have emerged. To illustrate this, reference can be made to Callicott's argument for locating intrinsic value at the level of the biotic community (Callicott, 1980: 321-329), and the subsequent response that has had to be formulated to counter the charge of environmental fascism that such value theory invokes; i.e. that the rights of

individuals [both animals (Regan, 1983) and humans (Hardin, 1974; Shrader-Frechette, 1994)] are held secondary to the rights of the community. In the example used here, the specification that individual human rights should remain inviolate over the rights of the biotic community (Callicott, 1989), illustrates the requirement that has arisen for rules of value prioritisation.<sup>150</sup> It, therefore, becomes apparent that the reductionism implicit in rules such as these, tend to erode the advantages that motivated the search for a monistic environmental ethics in the first instance, and highlights the view that if theoretical monism is required to be accompanied by complex sets of prioritising principles, the justification for monism disappears.<sup>151</sup> Developments in intrinsic value theory also highlight the perhaps uncomfortable notion, that the reductionism in theoretical monism, which narrowly defined sets of first principles and rules of priority would seem to imply, is little different to the reductionism of neoclassical economics - a constituent of human-based ethics, which the discipline of environmental ethics seeks to replace, or improve upon.

Related to the above interpretation of reductionism as a flawed aspect of theoretical monism, is the view that monistic value theories presuppose one, universal experience of reality that can be expressed in a clear, universally accessible language - a presupposition that is shared by logical positivism and empiricism. However, the validity of the 'positivist' view is challenged, for example, by Quine (1963; 1969) who argues that whilst natural knowledge is based on sense experience, language is the essential medium for conveying the understanding of such experience (Quine, 1969: 71, 72). Language tends to be arbitrarily adjusted to project both analytical meaning (the direct meaning of words) and synthetic truth (processed meaning), and through the human psychological and cognitive process a "meagre" sensory input can deliver a complex descriptive output (Quine, 1969: 83, 86). The empiricism to which language might be

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<sup>150</sup> Shrader-Frechette (1994) argues that such 'rules' also present a conceptual problem in that firstly, they introduce an inconsistency with respect to the claims of priority of the biotic community (for example, the welfare of the biotic community should take priority over human rights - yet the rules contradict this) and, secondly, such rules require the impossible maximisation of two variables (the priority of the biotic community *and* the priority of human rights).

<sup>151</sup> Related to the reductionism implicit in theoretical monism, Light and Katz (1996) criticise developments within environmental ethics which assume that only a small set of approaches in the field is worthwhile; i.e. that only some ways of developing an environmental philosophy will yield a morally justifiable environmental policy.

assumed to give expression cannot, therefore, be accepted as being universally constant or true since the laws of logic are perceived differently according to the *language* in which they are applied. Thus, empiricism cannot mirror reality in a universally replicable manner (Quine, 1963: 20; 1969: 75).<sup>152</sup>

Quine's argument can be applied to question the existence of a monistic theory of environmental value by explaining that for any description of the world that accounts for all human experience, including reference to the intrinsic value of nature, *another* description will exist that accounts for the same experience but *without* reference to the intrinsic value of nature. Regan (1980: 365) makes a similar point in his critique of Marietta's (1979: 205) argument that ecological knowledge will impart to humans an obligation not to harm ecosystems, by stating that the opposite response (no moral obligation in this respect) can also emerge in spite of such knowledge; i.e. facts at hand may be viewed differently according to individual human consciousness. Thus, the dilemma faced by intrinsic value theorists is the acknowledgement that intrinsic value is either knowable beyond experience (i.e. it is an intuitive, or *a priori*, truth) or that the attribution of intrinsic value is a figment of arbitrary linguistic choices. The epistemological impossibility of reducing sentences to observational and logical terms thus becomes apparent, since there will always be an indeterminacy inherent to the translation of sensory experience into language (Quine, 1969:81, 82). To appeal to an intuitive knowledge of the existence of intrinsic value in nature proves impossible to defend, and an acknowledgement of the analytic and synthetic arbitrariness of language disqualifies any epistemological justification for such an appeal. There are no independent facts about the world, or canons of rationality, to which appeal can be made in the course of determining whether a particular worldview (eg. one that acknowledges intrinsic value in nature) is correct or more reasonable than any competing worldview (Regan, 1980: 366).

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<sup>152</sup> In apparent support of Quine's argument, Hargrove's (1989: 2) reference to logical positivism distinguishes between the activities that scientists engage in when making discoveries and those they engage in when justifying such discoveries; i.e. accounts of one cannot be substituted for the other.

Norton (1995b: 348-351) argues that in spite of an inordinate philosophical preoccupation with intrinsic value theorizing, the monistic environmental morality advocated by applied environmental ethicists has still to clearly specify the boundaries of moral considerability in nature. The manipulation of monistic theory, as in the case of Callicott's response to reconciling principles of environmental holism with obligations to individual rights, and the vagueness as to what beings are morally considerable, has left environmentalists without a reference base that clearly defines what they are obligated to protect (Katz, 1985: 241-256; Aiken, 1984: 269).<sup>153</sup> The metaphysical search for a fundamental entity that exists independently of human preferences and values, and which provides an ontological foundation for value in nature, has thus failed to create a strong single foundation for environmentalism. As a consequence, there has been disillusionment in the poor return on the high expectations that environmentalists have had in terms of the potential unifying function of a monistic, intrinsic value theory in environmental philosophy.<sup>154</sup>

If theoretical monism, as described above, is a flawed concept, what then is the alternative? In the following sections, the potential of a practical dialogical ethics, unconstrained by reductionistic principles, and accommodating of moral pluralism, will be proposed. To introduce this alternative, Aldo Leopold's *land ethic* will now be discussed in terms of its practical emphasis and openness to accommodation of different value positions. From the discussion, the *land ethic* will emerge as a template for a pragmatic and viable environmental ethics.

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<sup>153</sup> Callicott (1996: 219) charges Norton with misinterpreting his position on intrinsic value. Contrary to Norton's claim that he attributes value in nature as being independent of human valuations, he (Callicott) argues that there can be no value without a *valuer*; something has value only if it is *valued* and there can be no value independent of (human) consciousness. This is an argument that is also well defended *inter alia* by Weston (1996: 140) and Stone (1988b: 140); i.e. that only humans do the valuing of nature.

<sup>154</sup> The inflexibility or limits of monistic philosophy are stated by Minteer and Manning (1999: 191) as a source of disillusionment experienced by environmental ethicists. Aligned with the views of Norton (1995b), these authors suggest that as a consequence, the mode of philosophical enquiry is shifting towards the practical resolution of real world dilemmas through the accommodation of *moral pluralism* as a tenable position in environmental philosophy.

### 3.4.2 *Leopold's land ethic: A framework for a dialogical environmental ethics*

Aldo Leopold was employed by the Forest Service in the American Southwest, where he was tasked with the implementation of Gifford Pinchot's conservation policy. A growing realisation of the failure of the conservation philosophy to achieve the aim of resource management for sustainable utilisation caused Leopold to critically re-form his personal worldview on the natural environment and humanity's position within it. An insight into his transformation from an analytic scientific resource use manager to a philosopher of environmental management is provided in *A Sand county almanac*, which contains a compendium of essays that Leopold drafted in the final decade of his career (Leopold, 1991). The concluding essay of the compendium is *The land ethic*, a seminal writing that presents Leopold's practical philosophy on the need for humanity to develop an ecological conscience in order to foster a respectful and surviving relationship with the natural environment. The essay is written with a pragmatic but uncompromised sensitivity towards establishing the credibility of his management principles amongst a predominantly anthropocentric audience. Leopold's *land ethic* has had a profound influence on the development of contemporary environmental ethics and the following review of its conceptual foundations is therefore, appropriate.

The extension of ethical criteria to various fields of conduct is described by Leopold as a gradual process that introduces into society previously inconceivable moral ideals and altered patterns of behaviour (Leopold, 1991: 237). Callicott (1989: 76-77) supports Leopold's views in this regard, and describes examples of trends in emergent moral ideals concerning issues such as civil rights, human rights and women's liberation, which point to an extension of a modern moral consciousness. Aligned with the earlier discussion of the evolution of human society (Section 1.2), Leopold argues that there is a process of ecological evolution in place which determines the *extension* of relationships and a social conscience between individuals in human society (the foundation of human rights, for example) to one which encompasses humanity's relationship to land, plants and animals (Tallmadge, 1981: 357). This relationship is captured in Leopold's concept of the *biotic community*, which includes humans as members, not as the excluded conqueror. Through similar argument, Wilson (1984: 85)

suggests that humans have an “urge to affiliate with other forms of life [and that this] is to some degree innate [residing as a] programme [within the brain]”.<sup>155</sup>

Although Leopold suggests that an ethical consciousness that transcends egocentrism exists in many aspects of society, land-use ethics is highlighted as being governed primarily by economics and narrow human self-interest (Leopold, 1991: 245). He argues that the affirmation of an ethical consciousness of humanity’s relationship with the biotic community must still be achieved through the process of evolution, which will bring about an internal shift in human intellectual emphasis, loyalties, affections and convictions pertaining to this relationship (Leopold, 1991: 246). The evolution of the ethical consciousness that Leopold anticipates is explained by Callicott in terms of the *extension* of Humean-Darwinian “familial social sentiments” to the level of the broader biotic community, which reflects the tendency of interdependent individuals or groups to evolve modes of co-operation (Callicott, 1989: 79).<sup>156</sup> It is Leopold’s view that these ‘naturally selected’ sentiments or ethics endow human beings with a moral response to perceived bonds of kinship and community membership. Through practise and lessons learned, such an ethics is also expected to become a more prominent ecological necessity in the evolutionary continuum which is shaping human society within the greater environmental context; i.e. ethics not only raise moral concern for new subjects, but ethical insight is also derived from the science of ecology (Marietta, 1982: 153). Limitations on freedom of individual action are contingent upon the emergence of any ethics and are, therefore, pre-requisite for the necessary mode of human cooperation within the biotic community if its fitness and survival are to be secured. Viewed from

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<sup>155</sup> The bracketed text is added to clarify Wilson’s argument in the context that it is used here.

<sup>156</sup> Callicott (1989: 79; 1990: 121-122) explains Darwin’s communitarian moral philosophy as one based on the evolutionary traits of affection and sympathy which presented mammals with intra-familial competitive advantages in terms of rearing offspring to maturity. In the case of the human species, which acquired the power of speech and a capacity for abstraction, a spillover of these traits into extra-familial societal relationships resulted in the encodement of various behaviours judged to be concordant or discordant with these competitively advantageous communal-emotional bonds - thus, giving rise to the origin of ethics. Callicott interprets the *land ethic* as Leopold’s extension of such ethics beyond the human species to apply to the ecological community as a whole. Whilst Callicott’s interpretation in this respect is useful to the discussion presented here, it must be noted that he interprets the *land ethic* as advocating a nonanthropocentric monistic ethics - different to the interpretation presented here, which is based on the *land ethic* as a form of ethical pluralism; i.e. it accommodates both aspects of nonanthropocentrism and enlightened anthropocentrism (see Section 3.4.3).

Leopold's perspective, a limitation on freedom of action is not paradoxical to the Darwinian evolutionary concept of 'survival of the fittest'. The survival of the fittest individual species is not the central issue; rather, it is the fitness of the *community* that is achieved through evolution.<sup>157</sup> Collective fitness cannot be realised without limitations on individual action, which might otherwise militate against the inter-dependent survival of the elements of the community whole.

One of Leopold's criticisms of the practise of Pinchotist conservation, and land-use practise in general, is the philosophy towards valuing the environment only in terms of an economic currency.<sup>158</sup> Based on his understanding of systemic functional relationships and the 'integrity' of the biotic community, which is necessary to ensure its 'stability', he was critical of the conservationist focus on instrumental valuation of only those constituent species useful to human society (Leopold, 1991: 244-247).<sup>159</sup> He believed that this philosophy offered little security to the continued existence of the majority of species, communities and ecosystem processes for which no attribution of apparent economic value could be derived. In his defence of the rights of species, Leopold is critical of such conservationist arguments, which are founded only upon an economic rationale for the protection of biota. To illustrate his concerns, he refers to the manufactured economic argument presented by ornithologists in defence of threatened songbirds - a defence based upon the birds' value only as an agent for the bio-control of insect pests (Leopold 1991: 247). Ehrenfeld (1978: 193) points to a similar trend in manufactured economic arguments in his discussion of the conservation dilemma,

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<sup>157</sup> Norton describes the influence that the writings of the American pragmatist Arthur Twining Hadley had on many of Leopold's views on environmental ethics. In the context of Leopold's interpretation of the process of societal evolution towards achieving the extension of a human moral conscience towards the broader biotic community, Norton considers the influence of the following statement by Hadley as pertinent: "It is the institution even more than the man that has been marked out for survival by the process of natural selection" (Hadley, 1913 cited in Norton, 1996a: 87).

<sup>158</sup> Judging Leopold's criticism of Pinchotist conservation, Passmore (1974) cites him as an uncompromising preservationist. However, Norton (1986a: 207) argues that Leopold did not equate 'non-economic' with 'nonanthropocentric' and, therefore, does not judge him as uncompromising. As discussed elsewhere in this chapter, Leopold clearly did have the flexibility to adjust his nonanthropocentric intuitive beliefs to anthropocentric arguments when arguing policy issues in the real world arena of environmental management.

<sup>159</sup> Ehrenfeld (1978: 188) suggests that Leopold's argument for preserving species that are essential to the healthy functioning of large ecosystems exposes a weakness in the defence of other species that are not essential in this respect - i.e. species, in the absence of which, ecosystems can, nevertheless, function effectively.

suggesting that there is a tendency to attach exaggerated and distorted humanistic 'values' to elements of nature that are not obviously 'useful' as resources.

To suggest that Leopold totally rejected economic arguments for valuing nature in terms of its instrumental value for humans would wrongly place him outside the arena of practical environmental management. His deep immersion and experience in conservation imparted a pragmatism that permitted him to accept a degree of economic rationale in environmental management. However, he argued that economic expediency should not be the major criterion to inform land-use decisions and that ethical and aesthetic considerations are equally important. Leopold implied that human cultures will have to rise above economic determinism to become sensitive to ethical and aesthetic values if they are to survive in the long run, and this is clearly reflected in his statement: "[that each question should be examined] *in terms of what is ethically and aesthetically right, as well as what is economically expedient. A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise*" (Leopold, 1991: 262). This view is also present in Leopold's essay, *Thinking like a mountain*, which describes the cascade of environmental consequences which result from management policies developed from the time perspective of humans, which have no sensitivity to the larger, autonomously functioning environmental context (Leopold, 1991: 137-141).<sup>160</sup> Thus, although Leopold acknowledges that the dominant social paradigm for attributing value to nature remains grounded in economic arguments, he indicates that human society should draw closer to the admission of biotic rights for species.

Although Leopold argues for the biotic rights of species, his enquiry into environmental values transcends the issue of individual value and is concerned more with the holistic value of the collective biotic community. This is illustrated, for example, in his description of the 'land pyramid', which he uses to conceptualise the transfer of energy

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<sup>160</sup> Norton (1995b: 353) interprets Leopold's admonition to think like a mountain as a call to respect longer-scale values embodied in the multi-scalar structures and processes of slow-changing natural systems and to balance these against the short-term values of economics. Making a similar point Carpenter (1981: 176) emphasises the mismatch between the short timetables of finance and politics and the much longer time-scales of natural processes.

between and across trophic hierarchies within the biotic community (Leopold, 1991: 251-258). The emphasis in Leopold's *land ethic* is on the holistic functioning of the community as an 'energy unit', within which the circuit of energy between its constituent parts is maintained more or less effectively depending upon the degree of human impact to which the land is exposed and thereby changed. The use of the term 'energy unit' in his characterisation of the biotic community is illustrative of the emphasis he places on the functioning and value of the whole rather than on the individual components.

It is the advancement of holism as one of the pillars of Leopold's *land ethic* that places this 'dialectical' philosophy in a position that contrasts it against the monistic and individualistic moral ideals that have evolved in other areas of mainstream modern ethical philosophy. For example, Kantian and Benthamic philosophies, which attribute moral considerability to *individuals* according to the criteria of rationality and sentience respectively, cannot be extended to justify the moral considerability of the biotic community since, as a whole, it does not have the requisite psychological experience upon which to extend such criteria (Callicott, 1989: 84-85). The application of moral considerability to Leopold's ethical holism is, as discussed previously, grounded in the inherited altruistic sentiments which human society has, or is capable of expressing, towards other members of the biotic community. Although evolutionary science suggests that such moral sentiments exist as an encoded societal inheritance, Leopold suggests that they are more directly informed by the science of ecology, through which insight is gained into the relationships of organisms to one another and to the physical environment.<sup>161</sup>

The ecology that is infused into Leopold's holistic conceptualisation of the biotic community has a rational scientific grounding in the *land ethic* (*vide* his explanation of the pyramidal functioning of trophic processes).<sup>162</sup> Norton (1996a: 89) believes that this

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<sup>161</sup> Leopold's management experience brought with it an acknowledgement that knowing where the utility of individual elements of nature begins or ends is a complex issue. He had participated in failed scientific predator eradication programmes, aimed at maximizing species utility (deer), and had experienced the unforeseen outcomes of such programmes.

<sup>162</sup> Contrary to Leopold's views [and the aligned views of Bookchin (1982)] that only ecology provides the principal axis

grounding in the scientific facts, for example, of physics, chemistry and geology are offered by Leopold as first order beliefs which explain the ecological functioning of the biotic community. Influenced by Ouspensky, the Russian philosopher who saw organicism as an alternative to the atomistic scientific way of looking at the world, Leopold also explored this somewhat metaphysical conceptualisation of the biotic community in his essay *Some fundamentals of conservation in the southwest* (Leopold, 1979). His writing suggests that he intuitively aligned his worldview with an organicist understanding of the earth as being an organismic whole with a slow-metabolizing life (Norton, 1991a: 40). However, he considered the *organicist* conception of the world, and the scientific *mechanistic* alternative, to be second-order beliefs based on the same first-order scientific facts, and not able to be established conclusively. Both conceptions acknowledge the ecological interdependency and interrelatedness of the elements of the biotic community and it is essentially the choice of descriptive language that differentiates them (Norton, 1986a: 206; 1996: 89). The concept of sustainability, which relates to the desire that humans have to pass on the world in an intact state to future generations, is explained by Leopold as an intuitive third order principle which is used to judge second order conceptions of the world. It is a guiding principle grounded in a respect for the ancestral wisdom that truth and right action is that which prevails in the long term.<sup>163</sup> Short-sighted economic determinism in land management fails because it disregards the third order principle of sustainability. Land management which is founded upon the science of ecology, and which takes a long-range view, has the prospect of being sustainable. In Leopold's view, it is of little relevance whether it is organicism or long-sighted anthropocentrism that drives sustainable land use behaviour.

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along which society should be organised in future, Beck (1995: 40) argues that ecology is "on the verge of placing itself at the greatest possible distance from that 'naturalness' to which it sometimes appears disposed to give expression". Convergence in spontaneity in the social life of society with the spontaneity in nature implies that this would be derived from a model of *free, autonomous interaction* according to an ecological "law of nature". As Beck points out, such convergence is not happening "naturally" and in reality, the common call is for strong authoritarian intervention to [unnaturally] *manufacture* the holism that Leopold advocates.

<sup>163</sup> Sagoff (1988: 148) citing Pinchot (1910: 42) explains the contrast between Leopold's views on sustainability and the conservationist argument that requires attention to be directed at the welfare of current generations before that of future generations.

Leopold's pragmatism ultimately influenced his external philosophical strategy, which was to extract a culturally viable common thread from both organicism and anthropocentrism. This thread was the acknowledgment of the *functional interdependency of man and the other elements of the biotic community* (Leopold, 1991: 42). The construction of Leopold's land ethic around the concept of an interdependency between the elements of the biotic community does not imply that he ultimately embraced nonanthropocentrism. Although he rejected narrow-anthropocentrism, he did not deny the human privilege of managing the earth's resources nor did he advocate the acceptance of a single ultimate value to guide such management (Hargrove, 1989: 96).<sup>164</sup> His point was that to ensure the survival of human life on earth within a suitable enviroing context, prevailing policies and management practice had to shift away from short-sighted economic determinism towards the adoption of a long-sighted view of humanity's position within the biotic community. The usefulness of the organicist metaphor which he employed to inform his vision for improved policy and land management was its focus on the functioning of systems and processes rather than the unsustainable economic pursuit of land management for maximum human utility.

Leopold, therefore, advocated an integrative systems approach to environmental management. In the context of value theory, this integrative approach is interpreted as being accommodating of dialogue between nonanthropocentric and anthropocentric appeals to environmental value, and, where necessary, movement between these two ethical positions. An appeal from one position is interpreted as no more or less

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<sup>164</sup> The view expressed here is aligned with the critique levelled by Norton (1991b: 181-182; 1995b: 345-354) against Callicott's nonanthropocentric, monistic conception of value which he (Callicott) believes is central to Leopold's *land ethic*; i.e. that Leopold's rejection of prevailing land-use management is a rejection of anthropocentric instrumental value theory and that the holism/organicism which the land ethic invokes attributes human-independent value to the biotic community as a morally considerable being. Based on this interpretation, Callicott suggests that Leopold declared moral allegiance to the hypothesis that nature has inherent value. However, Norton suggests that the *land ethic* promotes *managerial* holism and that it is morally anthropocentric to the extent that the concept of the biotic community is offered not as a source of human independent value but as the *context for human actions* which are sustainable only if the integrity and autonomous functioning of the community is not disrupted as a consequence. Because Leopold recognised the complexity of the interrelationships in nature and its multitude of values, Norton believes that the option Leopold chose to advocate the protection of this complexity was the protection of the integrity of the community processes which sustain the constituent components - including the economic and cultural values of human communities; i.e. the land ethic advocates what should be protected, not what should be valued.

significant than an appeal made from the other. The important point of the *land ethic* is that, irrespective of the relative ethical merits of human actions and relationship with the environment, sustainability will be guaranteed only through long-sighted understanding of human land-use and impact on the environment. In Leopold's view, this requires an acknowledgement of the pluralism of values according to which this broadly accepted imperative is justified. Norton (1995b: 355-35) believes that the challenge for democratic society to implement this management philosophy is the development of compatible policies that promote *both* human interests into the indefinite future *and* the protection of nature and natural processes through the application of best scientific knowledge. This is aligned with Leopold's anthropocentric views in which the right of humans to alter nature is not questioned, provided these alterations are consistent with ecological knowledge and protect human life in the long run, as well as the natural systems upon which life depends.<sup>165</sup> At root, however, is the challenge, articulated by Leopold, of creating a social consciousness that will create better processes for addressing environmental decisions that affect the interests of present and future generations.

Environmentalism provides the fertile ground from which a social consciousness of the kind advocated by Leopold can emerge. From the discussion in the previous section, it is evident that theoretical monism, and the use of this framework to develop a theory of intrinsic environmental value, has not effectively supported the practical agenda of environmentalism to the extent that Leopold's challenge requires. The potential of enlightened anthropocentrism, as an alternative, will now be described.

### **3.4.3 *Enlightened anthropocentrism***

Weak (or *enlightened*) anthropocentrism is proposed by Norton (1984a) as an alternative and more appropriate and defensible theory of environmental value, to the divergent extremes of value theory discussed earlier in this chapter. Norton's defence of enlightened anthropocentrism is based on his interpretation of some of the key

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<sup>165</sup> That Leopold did not totally reject anthropocentrism is evident in his acknowledgement that: "Granting that the earth is for man - there is still a question: What man?" (Leopold, 1979: 141).

elements of Leopold's *land ethic*, which include: the retention of humans (in particular, the value of human consciousness) as an important source of value in nature; rejection of individualism in favour of a holistic environmental perspective, with humans placed within the context of their sustaining environment (equivalent to Leopold's organicism); and a long range vision for human existence within their sustaining environment, specifically with respect to intergenerational decisions concerning resource use and management.

According to Norton's interpretation of the *land ethic*, an accommodation of a divergency of positions other than nonanthropocentrism is a central feature of Leopold's views, which advocate an inclusive, integrative ethics built on common denominators of many philosophies (Norton, 1991a: 42-43, 60);<sup>166</sup> i.e. Leopold was not a monistic theorist for whom rejection of anthropocentrism would be a pre-requisite for an acceptable environmental ethics.<sup>167</sup> In his discussion of the *land ethic* Norton (1996a: 85) describes Leopold's environmental philosophy as having developed from his management experience and an acknowledgement of the limited scientific understanding of complex ecosystems in terms of their sustainable utility for humans - and not from a philosophical conversion to nonanthropocentrism as the superior metaphysical or moral position.<sup>168</sup> Leopold clearly held certain anthropocentric views,

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<sup>166</sup> This advocacy of moral pluralism is supported by Stone (1988b) who describes moral pluralists as being able to develop a conception of the moral realm as consisting of several schemata, whereby, according to a *lexical ordering rule*, one theory might be adopted to guide relations between close human associates, others might define obligations to fellow citizens and future generations, and yet others might guide relationships between humans and non-human natural entities (Stone, 1988b: 152). Callicott (1990: 109-111), drawing on concerns expressed by Wentz (1988: 313), questions how moral pluralists will act when faced with inconsistent or mutually contradictory ethical principles; i.e. when various independent principles do not converge on a single course of action. He suggests that if it is left only to moral intuition to prioritise conflicting principles, this leads to inconsistency in the choices that are exercised. In this respect, Callicott finds Stone's argument weakened by the selective choice in moral guidance which he (Stone) believes is available through recourse to the modern and contemporary philosophies of Bentham, Kant, Leopold and others, but which alternative philosophies (not currently in vogue) are disqualified from providing. In cases which are open to moral abuse, Callicott also suggests that a principle which might seem most convenient or self-serving in the circumstances will tend to be the one of choice (Callicott, 1990: 112).

<sup>167</sup> Hargrove (1992), who presents a case for weak anthropocentric *intrinsic value* in environmental ethics, agrees with Norton's interpretation of Leopold's *land ethic* - that environmental ethics does not need to be and cannot be fully founded upon nonanthropocentrism.

<sup>168</sup> In his treatise on society's need to be defended against science Feyerabend (1981), like Leopold, challenges the myth that science (alone) provides the means of understanding the world. The exaggerated competence and successes of science make it imperative that it should be just one of the many ideologies that propel society

exemplified through his recognition that humans must and should manage the world. He acknowledged that, through management, humans impact on the natural systems which sustain them, but advised that such management would ultimately be judged successful only if it promoted the protection of nature and, significantly, ensured the survival of the human race in the long term. Above all, Leopold was a pragmatist in the sense that he held the view that, given current attitudes in society, anthropocentric arguments, based on the good of the human species, would have most appeal in environmental policy debates.

Anthropocentrism is described by Norton (1984a: 133) as a position that treats humans as the loci of intrinsic value and which views all elements of nature as having value that is instrumental to the satisfaction of *human interests*. However, there is an ambiguity to anthropocentrism, linked to how *human interests* are variously defined, which would suggest that an environmental ethics does not need to be founded on the supposition that this requires a rejection of anthropocentrism (Norton, 1984a: 134, 146-147). Norton introduces two concepts of *human interest*, the construction of which is based on what he defines as either *felt* or *considered* preferences. *Felt preferences* are desires or needs expressed by human individuals, which can be temporarily satisfied by some specifiable experience; *considered preferences* are expressed after careful deliberation and judgement that they are consistent with a rationally adopted world view, fully supported by a set of aesthetic and moral *ideals* and non-reductionistic scientific theory. For Norton, reference to the interests and/or ideals that are embraced in various situations furthermore determines whether a value theory may be judged *strongly* or *weakly anthropocentric*.<sup>169</sup>

Enlightened anthropocentrism places value not only on *felt preferences* but also on the process of value formation embodied in the criticism and replacement of certain felt preferences with more rational ones; i.e. *considered preferences* supported by ideals.<sup>170</sup>

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(Feyerabend, 1981: 162); i.e. an advocacy of worldview holism with which Norton credits Leopold.

<sup>169</sup> Strong anthropocentrism assumes that human felt preferences predominate in determining value. The preference-based, value-free and reductionistic methodology of neo-classical economics typifies strong anthropocentrism.

<sup>170</sup> Norton (personal communication, September 1998) currently prefers the term “broad” or “enlightened” rather than

Human interests constructed from *considered preferences* and ideals make value formation possible that can relate to experiences of nature which are achieved through rational and scientific reasoning as well as through experiences associated with spiritual enrichment or other subjective and/or moral motives- i.e. experience derived from a pluralism of values.<sup>171</sup> Values that are thus formed are *not* necessarily shaped only by the attribution of intrinsic value to nature.<sup>172</sup> Norton's concept of the negative value of environmentally destructive felt human preferences is consistent with Leopold's rejection of reductionistic, shortsighted, economic reasoning. Similarly, the concept of considered human preferences and the ideals that they foster are consistent with Leopold's holistic approach that he advocated in opposition to economic determinism; i.e. holistic in the sense here, that decisions should be broadly and rationally informed both by systemic ecological knowledge and empathy for the natural environment. The extension of human value beyond merely the satisfaction of felt preferences and the defence of ideals against reductionism to such preferences differentiates enlightened anthropocentrism from strong anthropocentrism.<sup>173</sup>

Norton reinforces the adequacy of enlightened anthropocentrism as a distinctive ethics by positively differentiating its non-individualistic value system from positions based on individualistic values, which are the basic units of concern espoused by contemporary

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"weak" anthropocentrism to describe his understanding of human valuation of the environment.

<sup>171</sup> For example, Thoreau (1958) believes that nature expresses a spiritual reality from which humans can learn spiritual value. The ideal to improve human spirituality is justified without attributing intrinsic value to nature.

<sup>172</sup> Hargrove (1992) finds Norton's interpretation of intrinsic value confusing; i.e. that such value is instrumental in the sense that natural objects have value only in transforming humans in their rational and responsible perspective of the natural environment. He believes that anthropocentric intrinsic value requires little defence - valuing a natural object for its beauty rather than its use does not have to involve confusing detours into metaphysics or mysticism.

<sup>173</sup> Westra (1996: 109-112) is critical of Norton's defence of enlightened anthropocentrism based on the *considered preferences* that supposedly guide rational human action. Given the complexity of ecosystems and the poor understanding of cumulative and synergistic environmental effects of human actions, she questions the extent to which a rational person derives considered preferences through reference to a scientific resource base of such deficiency. It is argued that *immediate needs* - for example, job securement in industry that might ultimately not be sustainable - tend to dominate over the considered preferences that supposedly inform enlightened anthropocentric decisions. Westra is an advocate of ecocentrism and bases this position on the view that human interests are defensible, not because humans are intrinsically valuable beings (unlike anything else) but because both humans and non-humans share an interest in the need for a secure habitat - which is derived from valuable contributions of all participants in ecosystemic processes; i.e. all living things are possessed of value singly and collectively (Westra, 1996: 112).

ethical systems such as utilitarianism and deontology (Norton, 1984a: 138-141). Utilitarians, for example, derive ethical rules from the general principle that all actions should promote the greatest possible happiness for the greatest possible number of *individuals*; contemporary deontologists derive ethical prohibitions from *individual rights* and obligations to protect those rights. As discussed in Section 3.4.2, Leopold largely rejected individualism in favour of holism, through reference to an organicist metaphor, which advocates a shift away from moral concern for *individuals* and species of plants and animals to a concern for the *biotic community* collectively.<sup>174</sup> In this sense, he also urged humans to alter the perception of their apartness from nature (their environmental individualism) in favour of an acceptance of their interrelatedness with the rest of the bio-geophysical world.<sup>175</sup> According to Norton, Leopold believed that an acknowledgement of this interrelatedness fosters a moral reaction to the community of life and, as a consequence, improves the survival chances of human culture.

Norton's theory of enlightened anthropocentrism assumes that it is a worthy cause for human culture and consciousness to be perpetuated in the long term; i.e. a universe containing human consciousness is considered preferable to one without it (Norton, 1984a: 143). He approaches this issue by emphasising the non-individualistic Leopoldian directive to current human generations to maintain the integrity and health of ecosystems, and thereby guarantee a stable flow of resources necessary for ongoing human life into the indefinite future (Norton, 1984a: 144).<sup>176</sup> In this way, options can be held open, so that the reasonable needs of future humans can be fulfilled with respect

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<sup>174</sup> Shrader-Frechette (1994: 61-67) and certain other environmental ethicists recognise problems with the subordination of the welfare of individuals to the "integrity, beauty and stability" of Leopold's biotic community, which implies that human rights, for example, become secondary to the rights of the community.

<sup>175</sup> Echoing Leopold's view that man should not perceive himself to be apart from nature, Callicott (1994: 63) refers to Darwin's (1874) conclusion that there is a seamless continuity between gradually evolved man and his fellow voyagers in the odyssey of evolution

<sup>176</sup> Callicott (1996: 220-221) is critical of Norton's anthropocentric interpretation of Leopold's long range view, arguing that it (the interpretation) indicates a flawed alignment with the third leg of Pinchot's three-legged utilitarian motto: "the greatest good, of the greatest number, for the *longest time*" (see Section 3.2.1). Further criticism of the long range allocational decisions which Norton believes are resolved through enlightened anthropocentrism is offered by Westra (1996: 112), who argues that the moral basis upon which decisions affecting the distant future must be considered from this position, as well as the moral appeal to *considered human preferences* - which may not be universally defensible (Westra, 1996: 111) - are neither easier to defend nor are less controversial than an appeal to the intrinsic value of non-human natural entities.

to whatever goods and services they may require, but which cannot be anticipated at present. Attention here, is directed at the issue of ecosystemic holism, and not on the fulfilment of specifiable individual needs. Norton points out that attempts to govern behaviours affecting the distant future cannot appeal to individual interests and needs of future persons since, paradoxically, the very existence of such individuals hangs in the balance until all relevant decisions are made; i.e. the central value placed on human consciousness cannot be perceived as the aggregation of the value of individual future consciousnesses, since these cannot be 'counted' before current decisions on resource allocation are made (Norton, 1984a: 144).

The maintenance of ecosystemic holism, i.e. the community of life as a fully integrated systemic whole, which is the key focus of enlightened anthropocentrism, concerns both non-renewable and renewable environmental resources. In terms of Norton's value theory, it is implied that current generations should not harvest more than the maximum sustainable yield of renewable resources; there is also an obligation to maintain a stable level of non-renewable resources for utilisation by succeeding generations, necessary to perpetuate human consciousness. However, human technology and the issue of product substitutability are pertinent in this latter regard, in the sense that the depletion of a particular non-renewable resource may be viewed as tradable against the development of a technology that makes future human dependency on the depleted resource redundant (Norton, 1984a: 145).

In various publications (eg. Norton, 1992; 1995a), the concepts of spatiotemporal horizons of human concern and the spatiotemporal dynamics of nature emerge as important interrelated aspects of Norton's philosophy of enlightened anthropocentrism. Based on the interpretation of hierarchy theory developed by Holling (1992), Norton describes the controls and constraints on sustainable human activity that flow down from natural spatiotemporal hierarchy systems. Larger and slower-changing processes at higher hierarchical levels (eg. processes controlled by global physical systems) constrain the behaviour of individuals, including humans and their preferences, at lower levels. According to this model, humans can act freely on the scale of individual choice (i.e. they can strive to satisfy their diverse felt preferences) through their actions that

may be located towards the bottom of the spatiotemporal hierarchy - up to the point where these become constrained by environmental conditions imposed by higher spatiotemporal hierarchy controls (Norton, 1995a: 52). By operating outside these natural controls, the impact of human actions can also work their way up the hierarchy to disrupt critical 'mesoscale' processes - the result of which manifests, for example, as the familiar 3<sup>rd</sup> generation environmental problems described in Section 3.2.2.3. Here, the requirement of current generations to maintain the integrity and health of ecosystems, in order to promote the value associated with the perpetuation of human consciousness, becomes jeopardised as uncertainty develops whether human societies will be able to adapt and thrive when the ecological context in which they have evolved is severely affected (Norton, 1995a: 53).

Using hierarchy theory, Norton constructs a spatiotemporally organised and ecologically informed model of the space in which individuals and communities formulate and pursue their values (including environmental values) and are able to anticipate the associated consequences of this pursuit. For example, decisions derived from the scale of locally developed values, which give expression to the preferences of individuals, might cause quickly reversible impacts that do not raise questions of intergenerational moral importance (Norton, 1995a: 58). Here, 'standard' controls under which individual transactions take place are appropriate for directing decision-making and policy (eg. normal individualistic criteria of economic efficiency, tempered by interpersonal equity considerations). However, there is clearly a potential for conflict to arise between values experienced at different hierarchical levels. For example, values expressed as individual preferences may conflict with community-scale values (eg. values linked to the survival of culture and traditions), and the policies required here must focus on higher level interventions, directed at the maintenance of keystone processes that structure the 'landscape' and determine the sustainability of communities (*vide* Holling, 1992: 478). Where irreversibility and catastrophe are anticipated as a consequence of value conflicts, for example, species extinctions and biological impoverishment, the enlightened anthropocentric policy intervention that is required to guarantee the value of ongoing human consciousness is clearly of a different order to the interventions whereby 'lower scale' environmental processes are protected and individual human

preferences and interests served. Through reference to this hierarchical model, principles thus emerge that can inform policy and environmental decision-making, which proscribe behaviours that are recognised to be environmentally destructive - in particular behaviours that are expected to have effects upon the long range future of human existence.<sup>177</sup>

In summary, Norton believes that an adequate environmental ethic does not need to be nonanthropocentric.<sup>178</sup> However, he argues that it should also not be limited to considerations of individual human interests in the form, for example, of narrow, economic instrumental value theory. Enlightened anthropocentrism describes an emergent trend in environmental ethics, which finds value in human loci, but which is non-individualistic in the sense that such value is not restricted to the satisfaction of felt preferences of human individuals. Such an ethics deals with environmental decisions concerning distributional fairness within generations, *and* it also deals with decisions concerning longer term, cross-generational human interests and associated environmental issues.<sup>179</sup> It is undergirded by a rationally constructed world view that derives values from experiences of nature, which are achieved through scientific reasoning, an intuitive avoidance of actions that are environmentally harmful, and an appreciation of humanity's interconnectedness with the broader community of life on earth. Importantly, enlightened anthropocentrism supports a pragmatic ethics that avoids difficult-to-defend references to the intrinsic value of non-human natural objects. As a supporting value theory that can underpin the broad mission of the discipline of environmental ethics, enlightened anthropocentrism will be discussed further in the

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<sup>177</sup> Norton (1984a: 138, 142) argues that the derivation of guiding principles to support an environmental ethics is best achieved through a *practical philosophy*, as will be discussed in Chapter 4 (Section 4.4.2).

<sup>178</sup> Attfield (1999: 6) shares Norton's views that sustainability does not require a nonanthropocentric ethic since it is justifiable on an anthropocentric basis - for similar reasons to those stated by Norton.

<sup>179</sup> Norton's views on enlightened anthropocentrism have attracted criticism *inter alia* from Westra (1996: 109-112), who questions whether long-sighted anthropocentrists exist in reality - particularly in the area of politics, policy-making and corporate business - where it is argued that the pressure of political correctness with regard to other issues lowers the priority of green concerns. Defending a contrary position to enlightened anthropocentrism, Westra argues that as human economic, recreational, aesthetic and spiritual values are subordinated to the anthropocentric imperative of survival, anthropocentrism becomes so weakened as to be non-existent; i.e. as the survival imperative becomes the common denominator humans share with the rest of life, ecocentrism, or biocentric holism emerges as the most defensible ethical position.

concluding chapter of this dissertation, where its alignment with the new generation tools for environmental assessment will be established.

### **3.5 CONCLUSION**

The discussion presented in this chapter has been structured around the response within the discipline of environmental ethics to the failure of traditional human ethics, for example, utilitarianism, to resolve the environmental crisis as this has been variously perceived by the environmentalist movement. Through application of Kuhnian theory, the failure of human ethics to deal with the environmental problematic is interpreted as having placed into question its ability to resolve the crisis through 'normal' adjustment and incremental change. In this respect, it is concluded that the opportunity now exists for a new, more capable paradigm to emerge, and the developments in environmental ethics are described as the initial response to this opportunity.

The original intent of environmental ethics, as this has been outlined in this chapter, has been the development of a new moral theory that will ethically enfranchise non-human natural entities and nature as a whole, and situate the environment as the object of human moral concern rather than one of mere utility. Measured against the tradition of human ethics, in which the environment is broadly valued in terms of its instrumental utility, the delivery of such a new ethics is regarded as a radical endeavour, demanding of revolution insofar as this relates to the human-environment relationship. Contrary to the initial expectation that the discipline of environmental ethics could bring about such revolution, it is concluded that this has not occurred - a situation that is perhaps not unexpected.

Environmental ethics is still at an originary stage, which is characterised by the high degree of experimentation and uncertainty that exists within the discipline. It is argued that this is predictable in terms of Kuhnian theory, as the effects of unresolved crisis trigger a proliferation of different ideas, which open up a breadth of new possibilities for resolving the environmental crisis. It is a situation that should be anticipated and

welcomed as the cultural process of exploring through new sets of possibilities runs its course prior to the revolutionary emergence of a viable new paradigm in environmental value theory.

The divergence in value theory that has emerged in environmental ethics has been described through reference to the main dichotomy between groups of entrenched paradigms of instrumental environmental value, on the one hand, and 'new-paradigm' claims, on the other. Whilst the entrenched paradigms are relatively familiar in terms of their close relationship with human ethics, the 'new-paradigm' claims pertaining to the intrinsic value of the environment, and the pool of radical value theory, are described as 'narcissistic'. This descriptor is used here in the sense that these claims tend to distort the Kuhnian notion of 'paradigm', since they cannot be defended, in the paradigmatic tradition, on the basis of sets of tested and viable first principles; i.e. they are largely 'slogan-driven' at present - which is not to say that they never will achieve true paradigm status.

It is concluded that there is a high degree of reductionism implicit in the many initiatives concerning the notion of intrinsic environmental value. This is attributable to the narrowness of attempts to derive a small set of first principles that are capable of warranting the moral directives that they intend to inform. Although a gravitation towards the reductionism of theoretical monism is understandable, in that it avoids the dilemma of relativism, theoretical arbitrariness etc., it is concluded that this reflects a number of parallels with the reductionism of neoclassical economics, which the discipline of environmental ethics seeks to replace, or improve upon. As a consequence, there has been disillusionment in the poor return on the high expectations that environmentalists have had in terms of the potential unifying function of intrinsic value theory.

An alternative to theoretical monism, and some of the radical ethics described in the chapter, is *enlightened anthropocentrism*. This has been described as a position in environmental philosophy that treats humans as the most important loci of value, but at the same time views the existence of a healthy environment as important to the satisfaction of considered human interests and preferences. A template for its

formulation exists in the basic structure of Aldo Leopold's *land ethic*, which has the potential to effect practical change in terms of resolving the environmental crisis, *inter alia* through its accommodation of moral pluralism; i.e. its aversion of monistic reductionism. Enlightened anthropocentrism is pragmatic in the sense that it avoids the difficult-to-defend attribution of intrinsic value to the environment, and as an alternative, advocates change from within the existing anthropocentric paradigm of human society. It assumes that it is a worthy cause for human culture and consciousness to be perpetuated in the long term, and that it is this justification that can persuade current human generations to maintain the integrity and health of ecosystems on which human life and consciousness depends. This understanding of the human-environment relationship changes the perception of human apartness from nature in favour of an interrelatedness between humans and the greater biotic community, as defined by Leopold.

Having traversed the spectrum in environmental value theory, an understanding has been gained of the evolutionary trajectory of the discipline of environmental ethics. Supplementing the information contained in Chapter 2, this has advanced the dissertation's central research intent, which is to investigate the co-evolutionary dialectical relationship between environmental ethics and environmental assessment. It is clear that such investigation will need to deal with the contrasting strong and weak paradigmatic attributes of the two disciplines, which is evident from the dissertation's narrative thus far. Since this raises the possibility of an incommensurable relationship between environmental assessment and environmental ethics, it would seem that an indirect relationship between the two disciplines must be investigated. The analytical approach adopted in this regard, and the revealed dialectical relationship between the two disciplines, are the central themes of investigation and interpretation in the next chapter.

*Chapter 4 :*

**THE DIALECTICAL RELATIONSHIP  
BETWEEN ENVIRONMENTAL  
ASSESSMENT AND  
ENVIRONMENTAL ETHICS**

## *CONTENTS*

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## 4.1 INTRODUCTION

The individual development paths of environmental ethics and environmental assessment are described in the two preceding chapters largely through reference to the separate evolutionary trajectories that have created their present form. The aim of this chapter is to interpret this information in order to investigate the existence of a *dialectical* co-evolutionary relationship between the two disciplines. As stated in the introductory chapter of the dissertation, the relevance of undertaking this investigation lies in the view that a constructive dialectical relationship between the practice of environmental assessment and the discipline of environmental ethics offers the potential to contribute to the integration of the currently dissociated objective and subjective aspects of human perception of the environment and thereby arrest the pathology in the human-environment relationship (see Sections 1.2 and 1.3).

In responding to the above aim, the chapter will begin with a brief review of the paradigmatic qualities of environmental assessment, which have been described previously in terms of Kuhnian theory (Chapter 2), and the contrasting non-paradigmatic qualities of environmental ethics (Section 3.1). This is necessary since, according to Kuhn (1970a: 150), there would seem to be little potential for discovering a *direct* dialectical relationship in a situation where, for example, the standards and metaphysical principles of competing paradigms - i.e. standards and principles that differentiate environmental assessment as a paradigm from those supporting the diverse value theories within the discipline of environmental ethics - are expected to be mutually incomprehensible (*vide* Oldroyd, 1986: 323; Chalmers, 1982: 96).

Having exposed the potential incommensurability between environmental assessment and environmental ethics, the chapter follows with a description of the approach used to model the co-evolutionary relationship between the two disciplines. In order to avoid the investigative barriers to revealing a direct dialectical relationship between environmental assessment and environmental ethics, the model will be shown to incorporate the

evolutionary progression of *environmentalism* as a dialectical *intermediary*, which has the potential to reveal an *indirect* relationship between the two disciplines. This relationship will be described as having its grounding in the common origin of the practice of environmental assessment and the philosophy of environmental ethics, both of which are responses to the environmental problematic as this has been, and continues to be, variously articulated by the environmentalist (see Section 1.1). Advancing from this grounding of the model, the chapter will then describe the mediated dialectical relationship between environmental assessment and environmental ethics as revealed by the model.

The analysis concludes with a focus on the strong dialectical relationship between the new generation approaches to environmental assessment, specifically SEA (Section 2.3.3.2), and developments in environmental ethics that are located within the sphere of practical philosophy, for example, of enlightened anthropocentrism (Section 3.4.3).

## **4.2 INCOMMENSURABILITY: A POTENTIAL BARRIER TO DIALECTICAL RELATIONSHIP**

In Chapter 2 the origin of EIA is explained as being discontinuous with the tradition-bound situation that preceded it, and it is suggested that its revolutionary qualities can be defined in terms of a new paradigm in environmental decision-making that it has introduced. In this respect it is argued that EIA has proved more capable of resolving pressing environmental issues than the tools for decision-making that were employed to support the previous paradigm of narrowly defined economic determinism which NEPA has displaced. The coherent tradition of EIA, which has remained consistent in terms of both its established first principles and the form and effectiveness which these have introduced to the standards of practice and methods of EIA, place it firmly within Kuhn's definition of a paradigm (Kuhn, 1970a). Whilst EIA has undergone cumulative change in the interval since its emergence, it has delivered no theoretical or conceptual novelty to the extent that its paradigmatic character has changed significantly. Rather, it has continued to function from the platform first introduced by NEPA and it is the strong

conceptual and methodological grounding which this provides that has enabled EIA and its derivatives to be applied as tools for decision-making for more than three decades.

Confidence in EIA has been secured through the success that it has achieved in resolving certain classes of problems. This is largely as a result of the potential for these problems to be stated in terms which make their resolution possible; i.e. it is presupposed that EIA provides the theoretical basis and methods for their solution as well as the criteria that indicate when a desired solution has been achieved (*vide* Kuhn, 1977: 167). In Chapter 2 it is argued that where the promise of resolution is not apparent for those problems that have no immediate prospect of a solution derivable through EIA, these are either rejected or interpreted as anomalies, to be resolved through progressive methodological development, primarily because they are not reducible to a form that can be stated in terms of the conceptual and instrumental tools that EIA supplies. These paradigmatic aspects of EIA (i.e. the guarantees it provides for problem resolution and the criteria used to reject problems which cannot be resolved) have secured the global allegiance of a community of practitioners and other stakeholders who are persuaded by the promise that EIA offers in terms of its decision-support capability. In this respect, the allegiance that EIA has secured has yet to be undermined by any competing paradigm that is capable of offering better support for decision-making.

Unlike the tradition of EIA, which is shaped monistically and assumes its effectiveness through its paradigmatic character, the situation within the field of environmental ethics is marked by constant debate and lack of consensus over the fundamentals of an environmental ethic. In this respect, a universal set of first principles has yet to emerge to support a monistic theory concerning, for example, the assignation of 'rights' to the non-human natural environment. This is largely a consequence of the polarised positions assumed in the debates concerning environmental ethics, mainly between anthropocentric expressions of environmental value on the one hand and the ontological pursuit of intrinsic valuation of environmental entities and systemic wholes on the other. Amongst the proliferation of ethical positions that are arranged about and

between these extremes, a primary endeavour of environmental ethics remains the search for a basis of value independent of human preferences and self-centred evaluations. This search has yet to yield a strong single foundation for environmental ethics in the paradigmatic tradition of EIA.<sup>180</sup>

From the above overview it would not seem to make sense to search for a *direct* co-evolutionary relationship between environmental assessment and environmental ethics since, according to Kuhn (1970a: 109), an incompleteness of logical contact between the two disciplines is likely to exist. Based on Kuhn's views on the incommensurability of competing paradigms/candidate paradigms, it is concluded that rational exploration between the evolutionary trajectories of environmental assessment and environmental ethics is unlikely to be fruitful. It is anticipated that better results can be achieved through the investigation of an *indirect* dialectical relationship, and the methodology employed to undertake this investigation will now be described.

### **4.3 MODELLING THE CO-EVOLUTIONARY RELATIONSHIPS BETWEEN EIA AND ENVIRONMENTAL ETHICS**

#### **4.3.1 Model structure**

In this section, the outline of a dialectical model will be defined which is used to explain the co-evolutionary relationship between EIA and environmental ethics. In order to do this, it is necessary to first introduce an *intermediary* into the investigative structure, which through its own *direct* dialectical relationship with EIA and environmental ethics, can reveal an *indirect* (i.e. a *mediated*) relationship between these two disciplines. The evolutionary trajectory of *environmentalism* is selected here to serve as this intermediary since, as a broad social-political movement, it is expected to have invited direct responses from within both the philosophical domain of environmental ethics and the action-forcing policy element of EIA. These responses will have been intended

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<sup>180</sup> As discussed in Section 3.1 it can be argued that such a single foundation for environmental ethics is not required [eg. Hargrove (1989: 8)].

largely to resolve the environmental problematic as this has been/is perceived by the environmentalist movement. The model that has been developed to depict this response-relationship is shown in Figures 4.1(a) and 4.1(b) and its defining features are described below. Figure 4.1(a) summarises the key features of the evolutionary trajectories of environmentalism, EIA and environmental ethics, which have already been described in Chapters 2 and 3, and it is from this interpretive basis that the interpretation of the co-evolutionary relationships depicted in Figure 4.1(b) is derived.

The analytical framework that is provided by the evolutionary trajectory of environmentalism creates the primary structure and central axis of the model depicted in Figure 4.1. Also contributing to this primary structure is the evolutionary trajectory of EIA and the pattern of divergent development of environmental ethics (not definable according to a trajectory *per se*).<sup>181</sup> The model's secondary structural character is created by the temporal division, according to which the evolutionary trajectories of environmentalism and EIA are fragmented and the developments within environmental ethics have progressed more diffusely between its early and later stages. The temporal division that is introduced is used to indicate the phased nature of evolutionary development that has occurred within both the environmentalist movement and the practice of EIA, and in this respect, there is alignment with the structure previously used to explain the temporal-thematic evolutionary patterns described in Chapters 2 and 3.

Whilst the concepts of a *trajectory* and *temporal phases* of development are appropriate for incorporation into the model to conceptualise the evolution of environmentalism and EIA, they are less appropriate for application to developments in the field of environmental ethics. As stated previously, the discipline is still in its formative phase and its diverse outputs reflect the disorganised processes of exploration, experimentation and testing of ethical theory aimed at resolving an environmental crisis, which it might be argued, traditional forms of intervention (eg. conventional ethics, environmental policy) have failed to address thus far [*vide* Weston (1995: 463; 1996:

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<sup>181</sup> In a sense, environmentalism is depicted in the model as an independent variable that has mediated the co-evolution of its two dependent variables (environmental assessment and environmental ethics).

147)]. Developments in environmental ethics can, therefore, be interpreted as a manifestation of a *paradigm shift in process*, but not yet achieved (Hattingh, 1999: 80), evidenced by the fact that such developments are located outside the track of a definable evolutionary trajectory that would mark the *normal* advancement of a discipline that has already achieved paradigm status (Kuhn, 1970a: 186; Oldroyd, 1986: 322; Toulmin, 1972: 101). In Figures 4.1(a) and (b), the key developments in the evolution of environmental ethics are arranged in the form of a diverging structure which has only loose definition according to a temporal pattern of development; i.e. a narrowly defined pool of value theory during the 1970s, characterised, for example, by the attention directed at animal rights theory, broadening over time into a diverse pool of value theory.

The model presented in Figure 4.1(a) and (b) also indicates the external forces that are recognised as having triggered the various directional shifts and phases of advancement of environmentalism over the past 30 years, and which are also expected to have invited certain responses (strong, weak, inadequate, staggered) in the evolution of EIA and the generation of environmental value theory. These are characterised in terms of the generational definitions attached to the broad forms that the environmental problematic is perceived to have assumed (i.e. 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> generation environmental problems) and which are shown to have directed the evolutionary responses indicated in Figures 4.1(a) and (b).<sup>182</sup>

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<sup>182</sup> 1<sup>st</sup> generation environmental problems are defined in terms of human (over-) use of the environment, the depletion of non-renewable resources (production effects) and specific threats to particular species and natural areas; 2<sup>nd</sup> generation problems have their definition in consumption-related impacts (eg. pollution) affecting human health and quality of life; 3<sup>rd</sup> generation problems relate to threats (potentially catastrophic) which modern industrial societies pose to future generations (eg. global warming). These generational definitions of the environmental problematic are discussed in Section 3.2.

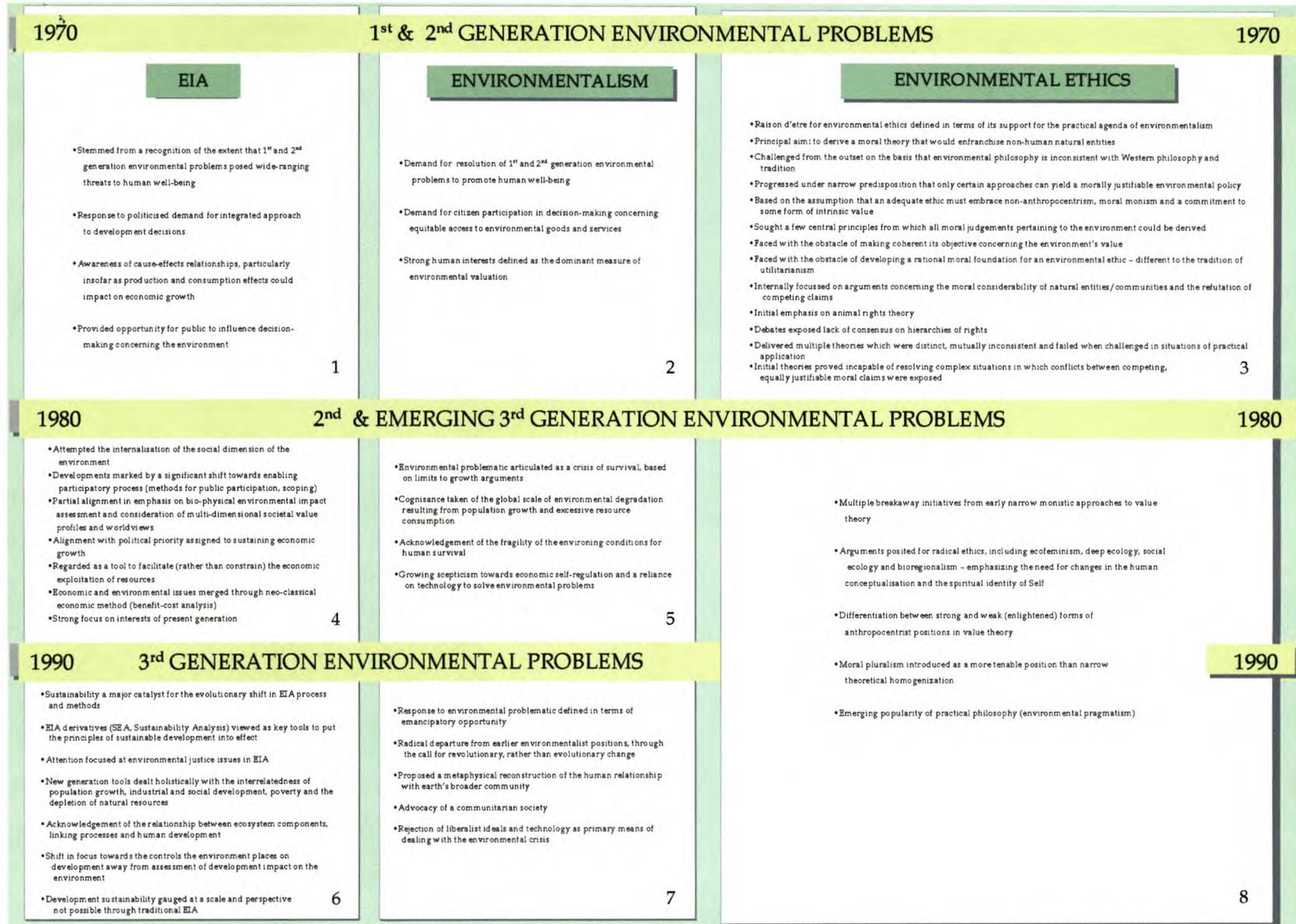


Figure 4.1a: Model of the co-evolutionary relationship between EIA and environmental ethics (supplementary information)

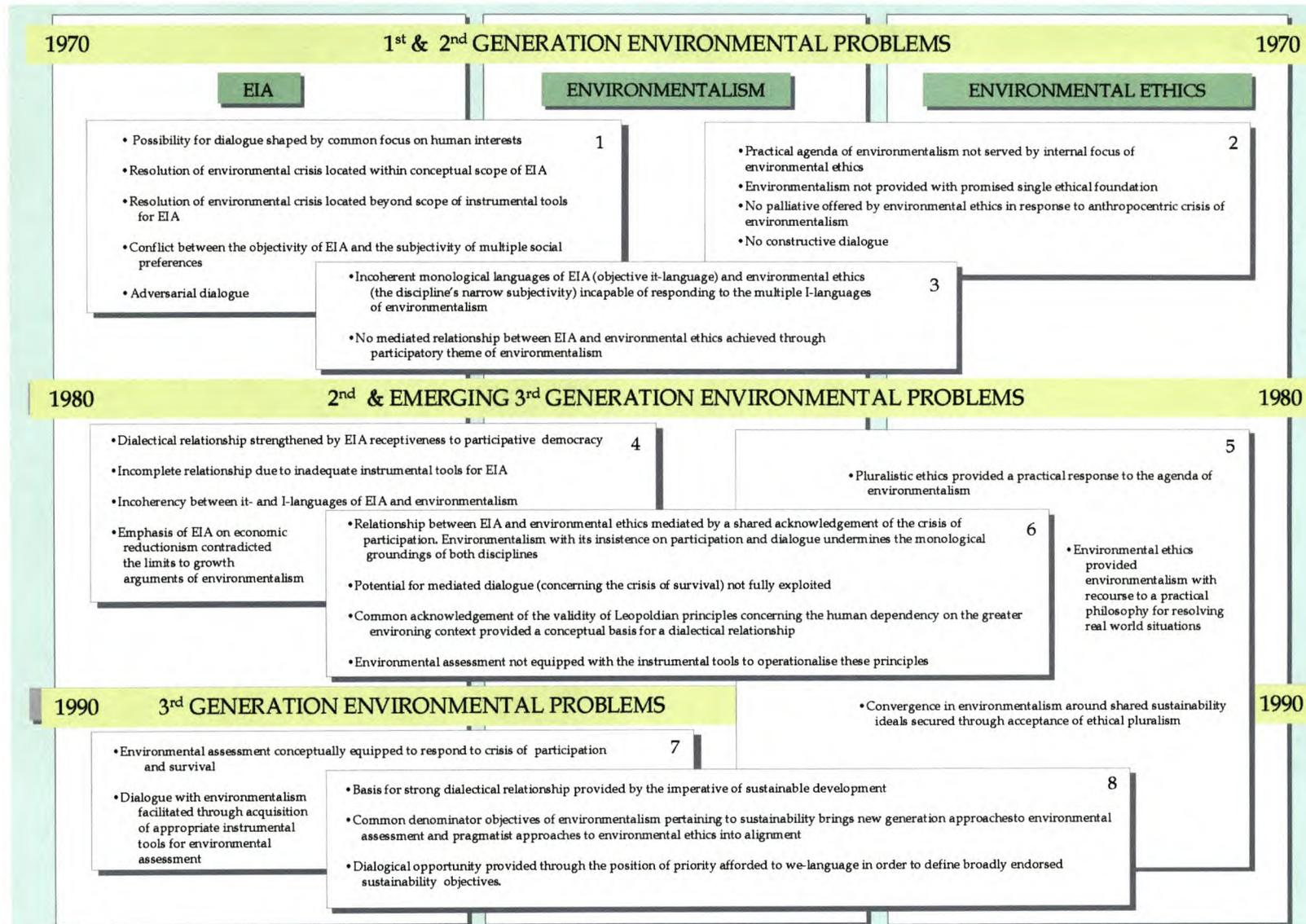


Figure 4.1b: Model of the co-evolutionary (dialectical) relationship between EIA and environmental ethics

The individual evolutionary developments of EIA and environmental ethics, which might be assumed to have been directed at the resolution of the environmental problematic (as this has been/is perceived by the environmentalist movement) are summarised in the model and an assessment presented of the adequacy of response to the various themes in environmentalism. A cross-cutting temporal analysis of the individual responses in EIA and environmental ethics to the evolution of environmentalism, and an assessment of trends in this respect, completes the model structure.

#### **4.3.2 *Cross-cutting analytical logic***

The analytical logic used to investigate the dialectic between environmentalism and EIA is based on the assumption that this (the dialectic) will be shaped by the influencing vectors of environmentalism that can be stated in terms that permit a response via EIA through recourse to its conceptual, theoretical and instrumental attributes. Importantly, this includes the *language* of discourse between environmentalism and EIA and, more specifically, the status attributed to *it-*, *I-* and *we-language* in contributing to and creating the dialectic (see Chapter 1). Kuhn (1970a: 23-24) would explain this as a logic that constitutes the rules or standards held in common by environmentalism and the EIA paradigm, which are revealed in their individual evolutionary paths; i.e. common grounding values and principles that define a logical contact or coherency. Conversely, aspects of incommensurability between environmentalism and EIA, due to the absence of shared rules, can also explain the extent to which discourse may not have been possible along their respective evolutionary paths. The logic of *shared* values and principles (i.e. *rules*, in the Kuhnian sense) is, therefore, applied as an investigative medium to undertake the cross-cutting analysis to define the dialectical relationships that provide part of the linking structure to the temporal-dialectical model presented in Figure 4.1. Essentially, this logic represents the interpretive medium for defining the patterns of dialogue and development synchronicity between environmentalism and EIA over the past three decades. A less formal interpretive medium is used to define the patterns of dialogue between environmentalism and environmental ethics.

Whilst it has been previously stated that environmental ethics is not definable in terms of a paradigmatic tradition, this does not suggest that there is no point of convergence around which some key value theories arising from within the discipline are located. In this respect, the fundamental principles of Aldo Leopold's *land ethic* (Leopold, 1991) are clearly of major significance given that extensive reference is made to these principles in the cornerstone arguments and multiple interpretations of what might constitute an environmental ethic. For example, the contrasting views offered by Norton and Callicott (discussed in Chapter 3), which are grounded respectively in *pluralistic* and *monistic* (non-anthropocentric) moral arguments, both draw largely on Leopoldian principles for their central philosophical themes [eg. Norton (1984a, 1991a, 1996a); Callicott (1979, 1989)]. For the purpose of the following analysis, these principles are regarded as being sufficiently constant and fundamental to some of the key evolutionary forms of environmental ethics. Thus, if a dialectical relationship between EIA and environmental ethics is to be revealed in their evolutionary histories, it is likely that these principles could in some way have enabled/created this relationship over time.<sup>183</sup> In order to establish this possibility, Leopold's *land ethic* principles are used as an investigative medium to reveal patterns of dialogue between EIA and the discipline of environmental ethics. In this respect, the interpretation is based on the discussion presented in Section 3.4.2, which emphasises the *pragmatism* of Leopold's philosophical strategy and its culturally viable grounding in both organicism and anthropocentrism - where a rejection of narrow anthropocentrism is implied, but not to the extent that a doctrine of nonanthropocentrism is embraced [*vide* Hargrove (1989: 96)]. Here, reference is made to Norton's (1995b: 353) interpretation of Leopold's philosophy, which is seen to promote compatible policies that serve *both* human interests into the indefinite future and the protection of nature and natural processes through the application of best scientific knowledge. Considering the practical application of such philosophy, the key challenge is to create a social consciousness that will result in better processes for supporting environmental decisions that affect the public interest of present and future generations. In attempting to reveal a dialectical relationship between EIA and

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<sup>183</sup> The interpretation of a dialectical relationship will be based mainly on the emerging theory of *enlightened anthropocentrism*, which is constructed upon the fundamental principles of the *land ethic* (Section 3.4.3).

environmental ethics, the extent to which this challenge is supported by emerging ethical theory will be established.

An interpretation and discussion of the results of the above analysis is presented in the sections that follow. This begins with a discussion of the common origin of environmentalism and the disciplines of environmental ethics and EIA, which will be explained through reference to the catalytic influence of 1<sup>st</sup> and 2<sup>nd</sup> generation environmental problems. Analysis of the evolutionary progression during the first decade (1970-1980) will then be undertaken through reference to both the thematic response in environmentalism (i.e. response to the perceived environmental problematic) and to the respective responses (shared values and principles, also differences) in the development of EIA and environmental ethics. Discussion of the continued evolutionary progression during the second and third decades (1980s, 1990-present), which is shown to have been directed by a continued appreciation of 2<sup>nd</sup> generation environmental problems and the emerging severity of 3<sup>rd</sup> generation problems, concludes the analysis. This focuses on both the strengthening dialectical relationship between EIA and an emerging pragmatist understanding of environmental value theory (a shift towards theoretical pluralism), and the adequacy of response that this offers to contemporary environmentalism. In this respect, the chapter concludes with a discussion of the strong dialectical relationship that will be shown to exist between *enlightened anthropocentrism* (a new generation position in environmental ethics) and the new generation approaches to environmental assessment and management - a situation that will be investigated further in the final chapter of this dissertation.

#### **4.4 DIALECTICAL RELATIONSHIPS GROUNDED IN A COMMON ORIGIN**

The history of contemporary environmentalism has its origin in the environmental custodianship ideals of the preservationist and conservationist movements, which took form and have developed since the end of the 19<sup>th</sup> century. Its origin is thus grounded in the 1<sup>st</sup> generation environmental concerns that were articulated by these movements in

response to the unsustainable trend in the exploitation of the earth's resources that was recognised at the time (Figure 4.1(a), window 2). The post-Pinchotist conservationist lobby for environmental custodianship, which was triggered by the economic risk posed by the unsustainable exploitation of natural resources, differed from the preservationist lobby which (*inter alia*) argued for the protection of certain species and selected areas of outstanding natural appeal (Section 3.2.1). However, the concerns of both movements were grounded in a shared appreciation of the environmental consequences of the *production* effects of economic activity on the natural resource base which was being utilised at an unsustainable rate (Norton, 1991a: 213). In a Kuhnian sense, the views and actions of conservationists and preservationists were shaped by shared rules (principles of *moderation* concerning the use of environmental resources) that were considered applicable to the resolution of a special class of problem. This problem was commonly defined as the disregard for environmental limits and the environmental effects of *production*, which both movements saw fit to resolve, albeit from slightly different perspectives [*vide* Kuhn (1970a: 23-24)].<sup>184</sup>

It was the emergence of 2<sup>nd</sup> generation environmental problems, linked mainly to the *consumption*-related impacts of the post-war techno-industrial revolution, which served as the effective catalyst, triggered by the environmentalist movement, for the genesis of both the philosophical discipline of environmental ethics and the practice of EIA (Figure 4.1(a), windows 1 and 3). In creating this impetus, the portrait of environmental decay described, for example, by Carson (1962) - which emphasised the pervasive environmental impacts of pollution, pesticide usage and the siting of nuclear facilities, etc. - provided environmentalism with the *raison d'être* to seek both a new environmental ethic and the institutionalisation of a process such as EIA. Two emerging environmental disciplines with a common appreciation of the consumption and

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<sup>184</sup> As discussed in Section 3.3.2, both conservationist and preservationist principles have a common appreciation/grounding in the instrumental values that the environment provides to humanity. Preservationists do not seek the avoidance of sustainable productive use of environmental resources (the conservationist position on environmental utility), but argue that certain aspects of the non-human world should be left in a 'natural' state in order to provide other humanly useful services such as sustainable life support functions (eg. the environment's source and sink values), its psychogenetic value, etc.

production effects of 1<sup>st</sup> and 2<sup>nd</sup> generation environmental problems, were thus established.

The commonality in alignment between the origin of EIA and environmental ethics is described *inter alia* by Sessions (1974: 80) and Sagoff (1988: 147) who suggest that the formulation of environmental policy at that time (NEPA, with EIA as its action-forcing provision) echoed the concerns of Aldo Leopold for the ethical and aesthetic linkage between humanity and nature. Grounded to some extent in the principles of Leopold's *land ethic* [eg. that the survival of human cultures in the *long run* requires a sensitivity to ethical and aesthetic values (Section 3.4.2)], NEPA thus provided a formal set of (Kuhnian) 'rules and standards' (values, principles) necessary for achieving the resolution of the environmental problematic as this was broadly perceived by the environmentalist movement. These values and principles were seen to have the potential to direct both the initial practice of EIA and the philosophical endeavours within the new field of environmental ethics in a more formally constructed framework than any previous structure (undefined 'rules and standards') linking the actions of preservationists and conservationists.

Based on the above analysis it is concluded that the initial dialectical relationship between environmentalism (providing a central linking structure) and environmental ethics and EIA was characterised by certain shared theoretical concepts, including the Leopoldian principle of resolving the *long term* environmental effects of production and consumption. At the point of origin of environmental ethics and EIA - with their purpose aligned with the cause of environmentalism - there was no evidence to suggest an 'incompleteness of logical contact' between the two disciplines, which Kuhn (1970a: 109) would define as a paradigmatic incompatibility.

Whilst the ethical and institutional response to dealing with emerging environmental crisis was prompted by somewhat different motives - the preservationist bias of environmental ethics differed from the greater conservationist bias of EIA - the shared environmental custodianship ideals promised an alignment in the respective missions of

the two disciplines. Any difference in motive for environmental custodianship did not manifest as a cause for significant evolutionary polarisation. In this respect, the distinction between the motives of the more anthropocentrically inclined purpose of EIA and the less anthropocentrically inclined purpose of environmental ethics promised to diminish in importance as the emphasis of both disciplines was directed towards the *longest term* values (instrumental, intrinsic) assumed to be important for the protection of the environment (*vide* Norton, 1986a: 212-213).

The extent to which the development trajectories of environmental ethics and EIA would sustain this promise of alignment would be revealed in the course of the following decades. In the discussion that follows, an analysis is provided of the dialectical continuity/discontinuity between environmentalism, EIA and environmental ethics. Through reference to the structure of the dialectical model structure presented in Figure 4.1(a) and (b), the analysis focuses on the various temporal responses to the environmental problematic, which define the individual evolutionary trajectories of environmentalism and EIA and the divergent evolution of environmental ethics. In the concluding analysis of the mediated dialectical relationship between EIA and environmental ethics, the focus is on the *similarities* and *differences* that are evident in these responses.

## **4.5 POST-ORIGINARY DIALECTICAL RELATIONSHIPS**

### ***4.5.1 Dialectical relationship between environmentalism and EIA***

#### ***4.5.1.1 Dialectical relationship between environmentalism and EIA: 1970s***

The externally perceived mission of the environmentalist movement during the 1970s manifested quite differently to what might perhaps have been anticipated as an appropriate evolutionary response to the environmental problematic (1<sup>st</sup> and 2<sup>nd</sup> generation environmental problems).

As described in Section 3.2.2, environmentalism during the 1970s was recognised as a movement in which societal demands for *equitable access* to environmental goods and services emerged as the dominant theme. The initial evolutionary development of environmentalism was thus directed by the imperative of human well-being insofar as a response to the effects of 1<sup>st</sup> and 2<sup>nd</sup> generation environmental problems was called for. Whilst the politicisation of the emerging environmentalist movement might have sought progress from an entirely different grounding - eg. a moral grounding in the search for a new ethic of the environment (eg. Naess, 1995b: 445) - this was made redundant by its association with the democratic demand for citizen participation in decision-making concerning environmental contribution to human well-being. As described in Section 3.2.2, a *crisis of participation* had developed (Eckersley, 1992: 8-11; Foreman, 1995: 50-53; Rodman, 1980: 65).

In what should have become the quest for moderation in human exploitation of the environment (development of an environmental custodianship ideal) environmentalism continued to be defined in terms of strong human interests as the dominant measure of valuation of the environment. This development exhibited little discontinuity with traditional instrumental value theory and clearly, no major shift attributable to a fresh insight into the consequences of the environmental problematic could be discerned.

Similar to the causal influences that first directed the trend in environmentalism during the 1970s, the origin of EIA was linked to the increasingly politicised demand from a broadening constituency for an integrated approach to decision-making in order to address pressing environmental issues (Carpenter, 1981: 176). This stemmed from a recognition of the severity of the developing environmental problematic and, more specifically, from a realisation of the extent to which this could pose wide-ranging threats to human well-being. The constituency demanding this approach included both environmentalist factions, with a developing understanding of environmental cause-effect relationships associated with resource depletion, and an increasingly affluent sector of society sensitised to the cause-effect relationships linked to *production* and *consumption* effects mainly insofar as these impacted on economic growth.

The political enactment of NEPA (with EIA as its action-forcing provision) reflected a broadly sought response to 1<sup>st</sup> and 2<sup>nd</sup> generation environmental problems as these were recognised by various constituencies.<sup>185</sup> In this respect, NEPA provided an unprecedented opportunity for the public to influence decision-making concerning the environment, which was made possible by the statutory requirement for public disclosure (through EIA) of project information held by US federal agencies (Barbour, 1980:114, 189). Such influence was strengthened by NEPA's entrenchment of the grassroots democratic right to challenge agency plans via the federal courts - illustrated by the fact that by 1978, about 1000 NEPA cases had been filed by various plaintiffs in the US (Clark, 1997:18). The rigor with which the legal process dealt with the NEPA suits filed against federal agencies, and the high proportion of rulings issued in favour of the plaintiffs in these cases, reflect the sensitivity of NEPA to the environmentalist crisis of *participation* that prevailed at the time.

The emerging dialogue between the environmentalist movement and developments in EIA during the first decade was clearly defined by the extent to which *human interests* shaped the discourse (Figure 4.1(b), window 1). It might be concluded, therefore, that the *potential* for a strong dialectical relationship existed between the practice of EIA and the *participatory* theme of the environmentalist movement at the time. In this respect, the logical basis for the relationship is revealed by the particular class of problem - environmental threats to human well-being - which was deemed to be important in terms of its resolution through EIA. It is also revealed by the apparent capacity of EIA to respond to (resolve) this class of problem through application of the conceptual and instrumental tools that had been developed to support the process. Dealing with the emerging threats to human well-being was thus perceived to fall within the sphere of resolution of the new EIA paradigm.

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<sup>185</sup> The NEPA policy response supports the view expressed by Norton (1991a: 187-243) that competing principles (for example, preservationist, conservationist and economically utilitarianist values) often suggest similar moral strategies; i.e. that consensus in a policy instrument such as NEPA can be achieved and that shared policy goals emerge within such a statutory framework in spite of the divisions regarding the basic environmental values of various constituencies.

Packaged within the framework of EIA, the traditional scientific method applied in impact assessment during the 1970s was aligned with the anthropocentric rationality that prevailed in the environmentalist movement. Alternative approaches to resolving environmental issues through EIA that could not easily be framed within a narrow scientific or technical context were not immediately sought out in the first decade.<sup>186</sup> Criticism of the process of EIA as it was first practiced, is that it was product driven, with scientific data collection preceding positivistic analysis and the production of technical reports (Bacow, 1980: 109; Graham Smith, 1993: 9). Supporting this view, Shrader-Frechette (1982) argues that EIA typically sought to assess only proximate (usually technical) project alternatives, for example, rather than fundamentally different options. To illustrate the technical emphasis of EIA the latter author defines this tendency as the *fallacy of unfinished business*; i.e. unfinished in the sense that, while alternative technical design and economic feasibility options received attention in EIA, alternative social, ethical and political solutions were seldom considered.<sup>187</sup> O’Riordan (1981) suggests that this severely limited the effectiveness of EIA, citing the absence of socially related data and the problematical [economically value-laden] weighting of findings as contributing factors. EIA was thus weakened by what Söderbaum (1990: 485) describes as a single paradigmatic scientific perspective and the absence of a broad information base to aid decision-making. This supports Commoner’s (1971: 187) conclusion that *reductionism* in the system of natural science as practiced in the 1970s - i.e. scientific analysis of the properties of isolated parts and an inattention to the natural complexity and interconnectedness implicit in system *wholes* (incorporating humans) - explains the ecological failure caused by technology [and to some extent, the tools applied to assess its environmental impact].<sup>188</sup>

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<sup>186</sup> Graham Smith (1993: 8), citing Sadler’s (1986: 102) views suggests that the practice of EIA was grounded in a technocratic perspective on problem-solving (which served as a supplementary mechanism to its scientific content) thereby perpetuating to some extent (rather than displacing) the paradigm of political economic determinism in decision-making.

<sup>187</sup> Callicott (1994: 70) explains this trend as a response to political and social preference pressures and not to the lack of alternative technologies which could prove more capable of sustaining the health of ecosystems under threat.

<sup>188</sup> Howard (1979: 176) protests against the moral dimension which holistic arguments such as those posited by Commoner automatically acquire and considers it unwarranted that analytic reductionism should be considered

In addition to the expectation that EIA would resolve the environmental problematic, the approach to such resolution that was anticipated by the environmentalist movement centred on the promotion of *participation* in decisions concerning equitable access to environmental goods and services. This appeared to be easily compatible with the *conceptual* basis for EIA, which was derived from the need to deal with issues such as the social fairness of resource allocations and to ensure balanced decision-making in the broad public interest (Canter, 1977: 1). However, in contrast to the compatibility of the *conceptual rationale* for EIA with the defined *crisis of participation*, a response would prove difficult to formulate through application of the relatively simple *instrumental* tools which had been developed to put the practice of EIA into effect (Figure 4.1(b), window1). Symptomatic of the initial urgency to clarify and make workable the new paradigm of support for environmental decision-making, the tools available for EIA were designed to reduce environmental complexity for the purpose of impact assessment. Significantly, they excluded techniques that would prove capable of resolving complex issues linked, for example, to the social environment and the integration of such issues with bio-physical environmental considerations addressed through EIA in its primitive form.

Whilst EIA might have attempted to deliver a response to the societal demand for equitable access to environmental goods and services during its first decade of practice, its reductionistic methods and focus on bio-physical environmental issues proved incapable of fully responding to the perceived environmental crisis [of *participation*]. In the absence of real participatory opportunity provided via EIA, litigation proved to be the only effective option available to environmentalists in terms of influencing development decisions (Carpenter, 1981: 177-178). As described, for example, by Canter (1997) and Holmes Rolston (1988: 253) recourse to NEPA's *last resort option* (legal intervention) proved to be a more effective (adversarial) mode of participation than any opportunity that EIA could provide through good process and method (Figure 4.1(b), window 1).

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morally reprehensible. In this respect, he argues that holism cannot hold this privileged position unless an adequate alternative can be offered to this analytic approach to ecosystem understanding.

The reductionism of EIA and the axiomatic belief in the *objectivity* of science inherent in its methods proved to be an inadequate response to the *subjectivity* of multiple social preferences and values arising from the environmentalist *crisis of participation*. As discussed in Chapter 1, the rational disclosure of the world that EIA proved capable of providing - articulated via monological *it-language* - was dissociated from the multiple *I-languages* of environmentalists. The objective scientific method of EIA thus proved incapable of engaging the inter-subjectivity of environmentalism and its multiple expressions of environmental value (Figure 4.1(b), window 1). As a result, the initial pragmatism with which EIA can be credited brought with it a cost whereby the traditional problem-solving methods applicable to the natural sciences proved to be a barrier to deriving an adequate understanding of the relationships between the bio-physical and social components of the environment - upon which the achievement of sustainable development would later be argued to depend (James *et al.*, 1983: 9). The failure of its *instrumental methods* to deal holistically with the relationship between human society and other linked constituents of the non-human natural environment provided little evidence of a deterministic dialogue indicative of a close co-evolutionary relationship with environmentalism beyond the *conceptual basis* for such a relationship.<sup>189</sup>

Although a statutory mechanism had been created to enable *participation* in development decisions during the 1970s, the litigative form which this assumed indicates that the approach to EIA at the time did not permit *effective* participation. Without a broadened focus beyond the positivistic scientific emphasis of EIA, a rich dialogue with the environmentalist movement would prove illusory and the new paradigm of environmental decision-support was faced with an anomalous situation that could not be rejected; i.e. it demanded attention in the form of an improved process and method to ensure its resolution (see Section 2.3.2.1). The key defining aspects of the dialectical relationship that existed between environmentalism and EIA during the 1970s

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<sup>189</sup> In essence, this failure of EIA was determined by the disaggregation of the natural environment from the social, cultural and historical environmental contexts (Giesecke, 1981: 138). To illustrate this, it is revealing to consider the cause of failure of EIA applied in USAID projects, which Carpenter (1981: 179) attributes to the disaggregation of the bio-physical environment from the social, economic and other aspects of the environment.

are summarised in Box 4.1, which draws on the modelled relationship described in window 1 of Figure 4.1(b).

**Box 4.1:** Key defining aspects of a dialectical relationship between environmentalism and environmental assessment during the 1970s

- The potential for dialogue between environmentalism and EIA was defined by the extent to which *human interests* promised to shape the dialectical relationship
- The class of problems expected by environmentalism to be resolved through EIA was located within the paradigm's *conceptual* scope of response
- A response to the *crisis of participation* proved difficult to formulate through the *instrumental tools* of EIA
- Participation was achieved through recourse to legal intervention
- The narrow *objectivity* of EIA scientific method proved an inadequate response to the *subjectivity* of multiple social preferences and values arising from the *crisis of participation*

#### **4.5.1.2 Dialectical relationship between environmentalism and EIA: 1980s**

Due to the limitations of the instrumental tools of EIA to respond effectively to the *crisis of participation*, the dialectical relationship between its practice and the environmentalist movement during the 1970s did not strengthen much beyond the conceptual linkage that was clearly in place. However, as discussed in Section 2.3.2.1, significant developments in EIA occurred during the 1980s to change this situation, when the evolutionary advancement of the process sought to internalise the social dimension of the environment and to accommodate this as an important aspect of impact assessment (Figure 4.1(a), window 4). In this respect, the environmental crisis as it was perceived at the time and the trend towards participatory rather than representative democracy concerning development decisions would make its full impact on the

practice of EIA in its second decade (Nicholson, 1980: 5). The significant shift towards enabling public participation in the assessment process and the initiatives designed to consolidate social issues within the broader definition of the environment made EIA increasingly more effective in terms of arriving at better social decisions (Enk, 1980: 224). In this respect, closer [but only partial] alignment was achieved between the analysis of the bio-physical environmental impacts of proposed developments and the multidimensional value profiles and worldviews of society. The evolutionary trend in the development of the instrumental tools of EIA during the 1980s was thus inclined towards a strengthened, albeit somewhat unsynchronised and incomplete, dialectical relationship with the *participatory* eco-political theme which dominated the 1970s.

Such incompleteness of relationship became evident during the 1980s through the inability of the inherently reductionistic method of EIA to contribute to the participatory dialogue that it invited (Figure 4.1(b), window 4). Whilst EIA had acquired the instrumental methods to promote such dialogue (public consultation methods, scoping), it had not acquired (and probably can never acquire) a method capable of responding to all of the multiple *I-languages* (diverse expressions of environmental value and individual preference) through which demands for response were articulated. Applied as an objective process, EIA could not discriminate between and/or attribute priority status to one *I-language* above another. In this respect, it raised the expectation of dialogue (in multiple *I-languages*), but lacked the capacity to satisfy the many individual preferences that its shift towards participatory method promised. Although attempts were made to assist the reversal in the alienation of decision-making from the interior *I-languages* of environmentalists, its failure to resolve the environmental problematic can be seen to be a manifestation of its continued reliance on the familiar *it-language* of scientific method which dominated impact assessment. However, such *it-language* was perhaps initially considered appropriate for dealing with concerns linked to an emerging new form of environmentalism.

As previously described in Section 3.2.2, the conceptualisation of the environmental problematic at the beginning of the 1980s began to assume a new identity defined as

the *crisis of survival* (Eckersley, 1992: 11-17), which displaced the *participatory theme* from its position of dominance (Figure 4.1(a), window 5). However, whilst participation in EIA would become important in terms of influencing development decisions in the course of this decade, there would be poor political alignment with the newly perceived environmental crisis insofar as NEPA (and EIA) would become a policy instrument to deal with this situation. In this respect, there was general policy failure to seriously acknowledge that human survival was at stake and the main policy response around this time was the publication of regulations which signaled the view that the approach to dealing with environmental crisis was reducible to standardised procedures for impact assessment (CEQ, 1978).<sup>190</sup> Although these regulations delivered an effective guiding mechanism for EIA, which has remained more or less unchanged up to the present, their promulgation was no substitute for the type of policy intervention in the environmental arena that the *crisis of survival* might have invoked.<sup>191</sup>

Whilst the effects of 3<sup>rd</sup> generation environmental problems [global warming, massive loss in biodiversity (Norton, 1991a: 207-214)] had been an emerging phenomenon in the preceding decade, the high levels of consumption during the 1980s began to translate into environmental impacts of extremely high significance - thereby fueling the *crisis of survival* arguments. However, in the US (and elsewhere in the developed world) the focus of government since the mid 1970s contradicted rather than was aligned with the emerging crisis articulated by the environmentalist movement. This focus was explicitly directed at securing adequate resources necessary to *sustain* economic *growth* - a response that has increasingly characterised the socioeconomic system for more than two hundred years (Meadows *et al.*, 1992: 3). Between the mid-1970s and

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<sup>190</sup> Although this is the record of the CEQ response to the perceived *crisis of survival*, cognizance must be taken of a key provision of the statute which states "... that it is the continuing policy of the Federal government ... to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." Given the political will to realise this provision of NEPA, which extends beyond the quantifiable environmental issues which can be addressed in NEPA's EIA provisions (Caldwell, 1997: 33), the act itself cannot necessarily be regarded as deficient with respect to an alignment between its grounding philosophy and the concerns upon which the *crisis of survival* was constructed.

<sup>191</sup> An exemption from the provisions of NEPA of the Alaska Pipeline Bill of 1973 is revealing in terms of the political attitude of the time which did not perceive the environmental crisis to be one of survival due (*inter alia*) to global resource *scarcity*, but rather one of securing *access* to resources.

the late 1980s the environment was off the political agenda (Jacobs, 1999: 29), and throughout the developed world the 1980s was an era of marked consumer extravagance underpinned by laissez-faire economic policies (Durning, 1992: 33).

To illustrate the focus on economic growth as a global socioeconomic paradigm, reference can be made to developments in the US at the time when attention was directed at sourcing alternatives to the supplies of crude oil (essential for enabling economic growth)- which had been placed under threat by developments in the Middle East in the mid-1970s. In this situation, maintenance/growth of consumption patterns sustained by reserves of crude oil was perceived to be a greater imperative than investment in alternative (sustainable) sources of energy. Merchant (1992: 26) explains this as a typical (capitalist) response during periods of recession when concerns for environmental issues (quality, sustainability) are overridden by attempts to increase productivity. Paradoxically, support for this *growth paradigm* would re-emerge a decade later in the recommendations of the *World Commission on Environment and Development* (WCED) which propose that *vigorous economic growth* in both industrial and developing countries is a necessary prerequisite to enable the achievement of an environmentally sustainable future (WCED, 1987:1; Rees, 1988: 274). Sessions (1995: 411) citing Lewis (1993) regards the endorsement of the paradigm of economic growth by the WCED as a global sanction of the 1980s era of materialism. According to Lewis it also placed into question the statements of scientists formulated during the preceding decades predicting the magnitude of the ecological crisis that needed to be resolved and not exacerbated by expanding world industrial output as advocated by WCED (1987). In the context of the *crisis of survival* theme, Worster (1995: 418) concludes that the underpinning arguments developed during the 1960s and 70s (i.e. which confirmed the magnitude of this crisis) would be severely compromised and obscured by the new concept of sustainable development.

The focus of economic policy was on *production* guided by the economic and monetary aspects of *markets*, not the physical environmental content of such activity and the associated environmental externality costs (Bresso cited in Ravaioli, 1995: 123;

Mikesell, 1992: 3). Clearly, this had little to do with the alternative imperative to reduce consumption of resources, which was the central theme of the *Limits to growth* argument - aimed at raising global awareness of the threats to human survival posed by population growth and the even higher growth in production. In this respect, the argument centred firstly, on the finite capacity of the environment (the earth's *sources*) to provide the streams of materials and energy to sustain growth and secondly, on the limits of the earth's *sinks* to absorb the associated pollution and waste (Club of Rome, 1972: 24; Meadows *et al.*, 1992: 8).

The above contradiction is explained by the entrenchment in economic policy of the phenomenon of increasing consumption as a key social value - the rationale for this being that if no one buys, no one sells, and if no one sells, no one works (Durning, 1992: 21, 106; Merchant, 1992: 25). These effects also extended to non-Western and developing countries via a reliance on commodity exports to the developed world for the bulk of their foreign earnings and the concomitant economic growth that this (and/or rapid industrialisation) promised became the perceived best route for escape from poverty and dependence on foreign aid (Meadows *et al.*, 1992: 5; Mikesell, 1992: 1; Daly cited in Ravaioli, 1995: 94). As described by Labini cited in Ravaioli (1995: 89) the serious state of underdevelopment in the Third World is seen to require material and quantitative growth to address poverty issues.<sup>192</sup> In this respect, Carpenter (1981: 176) explains the wariness of developing countries at the time to apply environmental standards that could interfere with these economic objectives and, for example, EIA was regarded as a tool to facilitate (rather than constrain) the economic exploitation of the resources which such countries have to offer (Carpenter, 1981: 183-184, 187). Developed and developing countries alike thus demonstrated an unwillingness to adopt policies aimed at reducing consumption (Daly cited in Ravaioli, 1995: 93), and it is not surprising that the *Limits to growth* and *crisis of survival* argument of the 1980s generated little policy support.<sup>193</sup> As stated by Barbour (1980: 109), although significant

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<sup>192</sup> Georgescu-Roegen cited in Ravaioli (1995: 95) makes it clear that much of the industrial production of Third World countries is not a response to local demand; it is largely alien to the culture of these countries and is a response to the consumption needs of the developed world.

<sup>193</sup> Although the authors of *Limits to growth* acknowledge that in the 20 years since this publication there have been policy

steps were taken in the US to respond to environmental problems, these did not deal with the issue of resource scarcity and the threats this posed to the prospects of survival of the human species in the long term.

History suggests that the effectiveness of two of the main elements of NEPA - the CEQ and the act's declarative statement on national environmental policy - became politically marginalised since their original conception.<sup>194</sup> Political support for NEPA that was evident during the early 1970s was not sustained and a divergence developed between US economic policy and the environmentalist movement which regarded NEPA as an instrument capable of responding to the *crisis of survival*. This divergence can be explained through reference to the influence that high financial stakes and the special interests [the short-term preferences] of powerful stakeholders in the economy have on the political process (Barbour, 1980: 111). In this respect, the remoteness of political concern from the *crisis of survival* is also a manifestation of the historic separation of economics from the natural sciences - which was an important medium through which attempts were made to empirically define the environmental crisis (*vide* Club of Rome, 1972; Meadows *et al.*, 1992: 2). This separation, which was initiated at the start of the Industrial Revolution, would converge only towards the end of the 20<sup>th</sup> century in response to political re-sensitisation of the cost of environmental protection (Jacobs, 1994: 67).

Throughout much of the 1980s economics and environmental issues were merged mainly through neoclassical economic methods which focused on the *economic relationship* between human society and the natural environment - an approach which

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and other responses to the environmental crisis in terms of the development of technologies, concepts and institutions that can create a sustainable future, much has also happened which perpetuates poverty, the waste of resources and the general depletion of the earth's capacity to support human life. Resource and pollution flows have grown to levels exceeding predictions made in 1972 (Meadows *et al.*, 1992: xiv- xvi). Third World countries have also increasingly become burdened by huge debts to the richer countries as a result of the importation of production technologies designed to assist the global trend in growth economies (Ravaioli, 1995: 90).

<sup>194</sup> Evidence of the lack of political will to realise the full impact of NEPA is the failure of the US to ratify the Biodiversity Convention and, more recently, the Kyoto Protocol pertaining to global warming - due to the potential constraints that this could impose on economic performance.

was advocated in terms of its application, for example, to EIA via benefit-cost analysis, which attempted the monetisation of non-market environmental aspects of development (Carpenter 1981: 185-187).<sup>195</sup> Through this mode of analysis, policy is required to be morally neutral; i.e. facts must be distinguished from and assume dominance over values (Jacobs, 1994: 70). The strong utilitarianist approach to neoclassical environmental valuation and its lack of attention to inter-generational equity in dealing with resource distribution was clearly aligned with the political view of the 1980s which had a strong focus on present generation interests; i.e. a re-affirmation of the Pinchotist conservation philosophy as a guiding doctrine. This response is explained by Dobelstein (1980: 109), Sagoff (1988: 150) and others as a classical liberal view on human individuality - a view that supports political intervention only to the extent that it promotes efficient functioning of markets. Sustainability - a fundamental concept underpinning the *crisis of survival* - was not assumed to be a key priority of policy. In this respect, the short term political perspective on environmental issues [i.e. the attention given to the satisfaction of immediate economic preferences (Durning, 1992: 12)] suggested a degree of incommensurability between EIA - an action-forcing policy provision and potentially a tool for enabling sustainable development [eg. insofar as it can direct sustainable industrial development (WCED, 1987: 220)] - and the concerns for human survival, articulated through the dominant theme of environmentalism, which expressed the perceived limits to, rather than the opportunities for, growth (Figure 4.1(b), window 4).

Whilst the practice of EIA during the 1980s significantly opened up the assessment process to stakeholder involvement, its methods could not provide a locus for providing responses to the many divergent values and moral/ethical precepts articulated by the environmentalist movement and society in general. EIA had not acquired (and cannot ever acquire) the instrumental methods to interpret and respond to the multiple *languages* of human subjectivity used to defend environmental and other values (Section 1.3). Consequently, where method permitted, the many expressions of value

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<sup>195</sup> The introduction of the environment into economic development theory and policy would only begin to influence development economics in the late 1980s and 1990s (Mikesell, 1992: 4).

and subjective preferences, which the EIA process invited, could only be reduced, quantified and assessed through normal empirical mode of investigation (Drengson, 1980: 226) - exemplified by the employment in EIA of methods such as environmental benefit-cost analysis. The results of such analysis, which were communicated in the familiar *it-language* of traditional EIA, would find a limited receptiveness in environmentalism during the 1980s, thus constraining the depth of the dialectical relationship that promised to materialise during this decade (Figure 4.1(b), window 4). The key defining aspects of the dialectical relationship that existed between environmentalism and EIA during the 1980s are summarised in Box 4.2, which draws on the modelled relationship described in window 4 of Figure 4.1(b).

**Box 4.2:** Key defining aspects of the dialectical relationship between environmentalism and environmental assessment during the 1980s

- A strengthened dialectical relationship between EIA and environmentalism was promoted by the shift towards *participatory democracy* (the dominant eco-political theme of the 1970s)
- An incompleteness of dialectical relationship was attributable to the inadequacy of EIA methods to respond to the *participatory* dialogue which the (EIA) process invited
- EIA had not acquired methods capable of responding to multiple *I-languages* of *participants* (their diverse expressions of environmental value) through which demands for response were articulated
- EIA output was communicated in the familiar *it-language*, which proved largely incompatible with the multiple *I-languages* of participation
- An inadequate response was provided by NEPA (and EIA as its action-forcing provision) to the newly perceived *crisis of survival*
- Response to the crisis was assumed to be reducible to standardised methods for EIA
- As part of the economic growth paradigm of the 1980s, EIA was regarded as a tool to facilitate (not constrain) growth within the limits of diminishing resources

- Alignment of EIA with the political emphasis on neo-classical economics evident in the adoption of shared analytical methods such as benefit-cost analysis; i.e. a strong emphasis on the monetisation of environmental resources.

#### **4.5.1.3 Dialectical relationship between environmentalism and EIA: 1990s**

A significant development in environmentalism occurred during the 1990s to supplement the existing themes of participation and survival. This was triggered by the increasing severity of the earth's environmental problems, in particular those of 3<sup>rd</sup> generation significance, which caused a shift towards the advocacy of *emancipatory opportunity* (Eckersley, 1992: 17-21) in dealing with the environmental problematic (Figure 4.1(a), window 7). In this respect, the dominant theme of the environmentalist movement at the time has been described in Section 3.2.3 as one which sought emancipation from the environmental crisis through a metaphysical, non-anthropocentric reconstruction of the human relationship with earth's broader community. A movement towards a more communitarian society and a rejection of liberalist ideals and technology as the primary means of dealing with environmental crisis was regarded as pre-requisite for the realisation of this opportunity. Archetypal in this respect are the arguments posed, for example, by the deep ecology movement, which represent a radical departure from earlier environmentalist positions based simply on evolutionary change in the traditions of conservationism and preservationism.

Given the radical shift in the trend in environmentalism, an accommodation of the *emancipatory* theme in EIA would imply a significant discontinuity in its development which, based on a Kuhnian explanation, would be reflected in a revolutionary change in the principles and tradition upon which its practice was previously based. To explain this change would require the revelation of a causal process which could be interpreted as instrumental in terms of triggering the non-cumulative, or revolutionary, advancement of EIA with respect to process, its methods etc. Whether there is a case to explain a revolutionary development in EIA during its third decade of practice as symptomatic of the emergence of anomaly triggered by its failure to resolve the environmental

problematic will be discussed later in this chapter. However, before moving to this point of enquiry the discussion will first focus on the trends in the evolutionary and *incremental advancement* of EIA based on its strengthening alignment with the dominant themes of environmentalism during the preceding two decades.

Developments in EIA during the 1990s suggest a continued closing alignment with the *participatory* theme in environmentalism, which took the form of a linear response to the increasing societal demand for equitable access to environmental goods and services (Figure 4.1(b), window 7). An example of this response, which is a manifestation of the alignment of EIA with the *crisis of participation*, is the introduction of the concept of *environmental justice* during the 1990s as an important aspect of EIA (Council on Environmental Quality, 1997: 1). Hartley (1995: 281) attributes this development to the synergistic efforts of civil rights activists and environmentalists and collaboration across the historic fracture that previously existed between the two movements (see Section 2.3.3.2). As described in Section 2.3.3.2, environmental justice is an extension of traditional moral theory pertaining to civil rights, where the emphasis is on *anthropocentric environmental equity*. In this respect, its accommodation within the EIA process cannot be interpreted as a significantly novel development in the conceptual or theoretical basis of environmental assessment. In the Kuhnian tradition of 'normal science' (Kuhn, 1970a: 23-24), it simply reflects progress made in the resolution of a class of problem first defined in the 1970s - which is the resolution of threats that emerging environmental problems pose to human well-being. The need to determine the extent of equity in the distribution of environmental goods and services did, however, require some revision to the instrumental standards of EIA which had proved inadequate in terms of responding to environmental discrimination in society (Hartley, 1995: 282). Such revision stemmed from the inadequacies of EIA methods, such as benefit-cost analysis, which focused on the quantification of *aggregate* net gains for society which development could offer, with little emphasis on *distributional* issues.

A major catalyst for evolutionary change in EIA during the 1990s, which was linked to the *crisis of survival*, was the greater acknowledgment given to the concept of *sustainable development* as this was first articulated by the World Commission on

Environment and Development, WCED (1987) and promoted globally through the UN Conference on Environment and Development (1992) and other initiatives (Figure 4.1(a), window 6). Whilst various constituencies have attempted to define the meaning of sustainable development self-servingly (Callicott *et al.*, 2000: 28), in the Leopoldian tradition these initiatives have expressed through rational argument a concern for human survival in the long term based on the need to protect the natural environment (Barrett and Grizzle, 1999: 25).

Unlike the dismissal of the environmentalist concerns linked to the *Limits to growth* era of the 1980s, the widespread acknowledgment of the consequences for humanity of 3<sup>rd</sup> generation environmental problems and the global acceptance of the sustainability arguments had a profound effect in galvanizing action to begin the process of reversing the trends in unsustainable development. In this respect EIA, and more importantly its derivatives, including for example, Strategic Environmental Assessment (SEA) and Sustainability Analysis, which would begin to evolve during the 1990s, were viewed as key tools that could put into effect the principles of sustainable development (WCED, 1987: 63; Barrow, 1997: 8; Dalal-Clayton, 1992: 6). The holistic analytical techniques of new generation approaches to environmental assessment revealed the interrelatedness of the multiple problems of population growth, industrial and social development, poverty and the depletion of natural resources; i.e. the substance of concern upon which the ideals of sustainable development are grounded (Brown and Lemons, 1995: 2).

SEA, for example, seeks to investigate in a novel way the controls which the environment imposes on development - a different approach to that of EIA, which focuses on the impact of development on the environment (CSIR, 1999). As an evolutionary extension of the integrative EIA techniques of the 1980s, which as described in Chapter 2, began to acknowledge the relationships between ecosystem components, linking processes etc., the strategic approaches to environmental assessment continued to define a course of convergence towards the Leopoldian cognizance of man's position as member of the *biotic community*. In his essay *Thinking*

*Like a Mountain* Leopold (1991: 244-247) argues that for human activity to be sustainable in the *long term* it must be responsive to the larger, autonomously functioning environmental context upon which human existence is ultimately dependent. Aligned with this view, the general aim of new generation methods of environmental assessment is to derive an understanding of the greater environmental context and the controls that this places on human activities in order for them to be sustainable. In a sense, a tool such as SEA ideally aims to achieve what Leopold would describe as the *science of ecosystem health*, which is to “determine the ecological parameters within which land may be humanly occupied without making it dysfunctional” [according to the interpretation that Callicott *et al.* (2000: 27) give of Leopold (1991)]. This is addressed by defining aspects such as limits of acceptable change, management objectives related to these limits and indicators of sustainability. In this way, development sustainability is gauged at a scale and perspective that EIA had previously proved incapable of providing.

Whilst the new generation tools for environmental assessment became *conceptually* firmly grounded in the principles of sustainable development (a response to the crisis of *participation* and *survival*), they have begun to reflect an important advancement in terms of acquiring and ordering the *instrumental* tools necessary to put these principles into effect (Figure 4.1(b), window 7). Most important in this respect, is the acknowledgment given to the importance of *language* and its *priority* in the conduct, for example, of SEA. For the first time in its course of evolution, the primacy of *we-language* in the process of environmental assessment and management is now recognised. There is a realisation that it is the essential medium for engaging (through discourse) the diversity of *I-languages* of environmentalism according to which individual preferences are expressed, and for achieving convergence out of the heterogeneity and complex intersubjectivity that defines human society (*vide* Sections 1.2 and 1.3). Through a *participatory* emphasis on *common visioning* as the point of origin for SEA, attention is directed at the up-front securement of *shared ideals* - to which the effort of achieving sustainable development can be directed. Regan (1984) describes the enabling conditions for the construction of *ideals*, and these are well

aligned with the approach to visioning that is adopted in new generation tools such as SEA. These emphasise the importance of *clarity of concept* (eg. the imperative of sustainable development and what it means in theory and in practice); *knowledge* necessary to inform a vision/ideal (eg. information on the state of environment, trends, consequences of different choices etc.); avoidance of contradiction (between the vision/ideal and practice) through *rational* discourse and contemplation; and *impartiality* implicit in a vision/ideal in the sense of justice principles (Regan, 1984: 18-21).

By focusing on visioning, and the grounding of this endeavour in the principles of sustainable development, the challenge of engaging in participatory dialogue - which previously could not be accomplished through EIA by its promise of response to multiple *individual* preferences - has largely been overcome. In the process, the importance of *it-language* (the value of scientific method, how its results can inform decision-making) has not been reduced; however, the focus of scientific objectivity (still the methodological mainstay of environmental assessment) is now one of *response to* the achievement of shared ideals and vision - not *vice versa*.

The key defining aspects of the dialectical relationship that has existed between environmentalism and EIA during the 1990s up to the present are summarised in Box 4.3, which draws on the modelled relationship described in window 7 of Figure 4.1(b).

**Box 4.3:** Key defining aspects of a dialectical relationship between environmentalism and environmental assessment during the 1990s – present

- Strengthening alignment of EIA with the eco-political themes of the two preceding decades
- A response to the *participatory* theme of environmentalism was demonstrated by the introduction of an environmental justice assessment process as part of EIA
- New generation approaches to environmental assessment and management (SEA, Sustainability Analysis) were *conceptually* firmly grounded in the principles of sustainable development (a response to the *crisis of participation and survival*)

- The acquisition of *instrumental* tools for environmental assessment, such as SEA, became necessary in order to put the principles of sustainable development into effect - particularly with respect to the language employed and its priority of application
- The importance of *we-language* is recognised as an essential medium for environmental assessment in order to engage the diversity of *I-languages* (of environmentalism)
- In response to the participation imperative, an emphasis on *common visioning* as the point of departure has been incorporated into new generation approaches to environmental assessment - to secure shared ideals (in spite of value differences), which could direct the effort of achieving sustainable development
- Objectivity of scientific method has been retained as a key component of environmental assessment in order to test and optimise the selection of alternatives for achieving the common vision

#### **4.5.1.4 Evaluation**

Based on the preceding discussion and the above summary of recent developments in the dialectical relationship between environmentalism and environmental assessment, this section of the chapter concludes with a brief evaluation of how 'well' the evolution of environmental assessment has responded to the issues raised by environmentalists relating to *participation*, *survival* and *emancipation*.

Essentially, the analysis thus far shows that the dialectic between environmentalism and environmental assessment has historically manifested as a direct, but temporally staggered, relationship. The relationship has been direct, in the sense that a relatively clear pattern of cause-and-effect is evident, whereby key issues emerging from the various themes of environmentalism have triggered related effects in the development of environmental assessment. So, for example, the environmentalist issue of *participation* has been increasingly accommodated in the process of environmental

assessment, particularly with respect to its new generation tools, which acknowledge the multiple environmental preferences of interested and affected parties, yet formulate a rational response based on shared ideals that are defined. Similarly, the attention increasingly directed at determining environmental capacity, thresholds, limits etc., based on ecosystem level approaches to environmental assessment and the incorporation of humans into the definition of environment, make its practice acutely sensitive to the issues of *survival* raised by environmentalists; i.e. a sensitivity framed within the imperative of sustainable development.

In contrast to the above cause-and-effect pattern in the dialectical relationship between the *participation* and *survival* issues arising from environmentalism, and the response elicited through environmental assessment, *emancipation* issues are not obviously accommodated in the new generation tools, such as SEA. In this respect, no compelling argument can be offered to indicate that environmental assessment has promoted, in a radical sense, the cultural and institutional transformation of human society as a way of halting the pathology in the human-environment relationship. Environmental assessment finds its scope of application in the prevailing modern political context and cannot be credited with having shifted liberal political philosophy towards, for example, a system of communitarianism, which is a key emancipatory ideal. It can also not be credited with having promoted a new cultural paradigm and changed human consciousness, which is based on the metaphysical reconstruction of human relationships with the earth's broader biotic community.

Since its revolutionary origin in NEPA, environmental assessment has undergone cumulative, evolutionary change in the tradition of what Kuhn (1970a) would describe as *normal* development. Such development has been responsive to, and accommodating of, the environmentalist's issues pertaining to *participation* and *survival*, and the process has had recourse to the conceptual and instrumental tools that have been appropriate for resolving the issues and problems with which it has been challenged. However, environmental assessment has not undergone revolutionary change to the extent that it embodies the ideals of a new paradigm of *emancipation*. Whether its evolutionary

trajectory may take the process to a point where it undergoes change that is discontinuous with its early and current development trajectory, cannot be anticipated at present. However, considering the scope of unresolved environmental problems and the many responses that are continually proposed as options to address this situation, revolution (in the Kuhnian sense) is perhaps a future possibility. In this event, environmental assessment may still undergo radical change to the extent that its conceptual and instrumental tools find application in a new emancipatory paradigm.

#### ***4.5.2 Dialectical relationship between environmentalism and environmental ethics***

##### ***4.5.2.1 Dialectical relationship between environmentalism and environmental ethics: 1970s***

Similar to EIA, the discipline of environmental ethics has as its *raison d'être* the support of the practical agenda of environmentalism (Hattingh, 1999: 68), which through various temporally related themes (Eckersley, 1992: 7-31), seeks the resolution of environmental problems affecting the state of both the natural environment and human well-being (Light and Katz, 1996: 1). From the outset, the essential aim of the discipline has been challenged on the basis that environmental philosophy is inconsistent with Western philosophy and tradition (Passmore, 1974 cited in Hargrove, 1989: 3), and the question thus arises whether a *paradigm claim* - concerning a new environmental ethic - could ever secure societal allegiance to the extent that it would warrant paradigm status (*vide* Kuhn, 1970a: 102)? Given this uncertainty - attributable, perhaps, to the relatively short time that the discipline has been in existence - it is questionable whether environmental ethics has yet been able to support the agenda of environmentalism by providing the response first sought to the *crisis of participation*, and later, responses to the *crisis of survival* and the *opportunity for emancipation*. The extent to which the discipline has provided such support will emerge from the following discussion.

The development of environmental ethics has proceeded from its initial purpose (formulated in the early 1970s), which was to derive a moral theory that would ethically enfranchise nonhuman natural entities and nature as a whole (Figure 4.1(a), window 3); i.e. an ethic of the environment (Callicott, 1990: 99; Regan, 1981: 20; Holmes Rolston,

1975: 93). Such an ethic was seen as distinctive from standard ethics in the sense that it was expected to be founded upon principles which presuppose that non-human natural entities have value independent of human value (Norton, 1984a: 132).

Mainstream environmental ethics set out to achieve its purpose under a *narrow* predisposition that only certain ways of developing an environmental philosophy can yield a morally justifiable environmental policy, and thereby respond to the expectations of the environmentalist movement (Light and Katz, 1996: 2). In this respect, it was initially assumed that an adequate environmental ethic must embrace non-anthropocentrism, moral monism and a commitment to some form of intrinsic environmental value. Axiological questions linked to the search for a few central principles from which all moral judgments pertaining to the environment could be derived thus framed the direction of theoretical enquiry during the first decade or so of environmental ethics (Norton, 1996b: 105).

Environmental ethics has grappled with a number of major obstacles (Stone, 1988b: 140). It has had to make coherent its *objective* concerning the environment's value - in the sense that if it is not *valued* by humans, then in what sense does it *have value*? It has also had to develop a rational *moral foundation* for an environmental ethic, which, if not based on utilitarianism, must draw on some inherent moral property of the environment (its sentience, autopoiesis, etc.). As might be anticipated of any emerging discipline responding to crises that have demanded resolution during its pre-paradigm phase, environmental ethics - in attempting to overcome the obstacles that it has faced - has delivered a multitude of theories pertaining to both the environment and the human-environment relationship. Generally, these theories have tended to be distinct and mutually inconsistent - and have failed when challenged in situations of practical application requiring response to a *broad* scope of moral concern (Callicott, 1990: 101). Whilst many of the early theories have sought the advantages of ethical monism, including the comfort of logical consistency and internal coherency which this potentially offers, they have not proved capable of resolving complex situations in which conflicts between competing, equally justifiable moral claims are exposed (Norton, 1996b: 105).

Animal and natural rights theory, which dominated developments in environmental ethics during its first decade generally took the form of neo-Kantian ethics, for example, based on conation/sentience as a qualifying attribute to which intrinsic value attached (eg. Taylor, 1986; Attfield, 1981; Holmes Rolston, 1988; Regan, 1983; Singer, 1995). This was accompanied by debates concerning hierarchies of rights based on arguments, for example, that animals like humans should enjoy rights, but *not the same* rights, and that whilst humans have *strong* rights due to their autonomy, sentient animals should have *weaker* rights (eg. Holmes Rolston, 1988: 45, citing Bentham, 1789). Complicating this debate of hierarchies, Callicott's (1980) interpretation of Leopold's attribution of intrinsic value to the biotic community (as opposed to its constituent elements) invoked charges of environmental fascism, in that the rights of individuals [for example, animals (Regan, 1983)] are seemingly held secondary to the systemic functional value of the community.

In contrast to its purpose of securing convergence towards a single theory of value - suitable for threading into policy formulation - early debate within environmental ethics was initially internally focused, directed mainly at divergent arguments pertaining to the moral considerability of entities, communities etc., and the refutation of competing claims - anthropocentric, or otherwise (*vide* Hattingh, 1999: 79). Over much of what might be termed the gestation period of environmental ethics, the metaphysical search for a foundation of value that exists independently of human preferences and values and which provides an ontological foundation for value in nature has failed to create a strong single basis for environmentalism. The vagueness as to what beings are morally considerable left environmentalists without a policy base which clearly defines what they are obligated to protect (Katz, 1985: 241-256; Aitken, 1984: 269). Thus, a defence of the environment from a confused position linked to an elusive monistic theory of value did not provide environmentalists with an adequate justification for claims of priority of environmental goals, and according to Light and Katz (1996: 1) environmental ethics (in its first decade or so) was ineffectual as a practical discipline.

There is no evidence that a constructive dialectical relationship was established between environmental ethics and environmentalism over this period (Figure 4.1(b), window 2). Certainly, there were no developments within the discipline that offered a palliative to the environmentalist movement at the time which can be interpreted as a response to anthropocentric concerns for equitable access to environmental goods and services arising from 1<sup>st</sup> and 2<sup>nd</sup> generation environmental problems. As a consequence, there was perhaps a measure of disillusionment in the poor return on the high expectations that environmentalists may have had in terms of the potential unifying effect that a single theory of environmental value might have provided.

The factors explaining the absence of a dialectical relationship between environmentalism and environmental ethics during the 1970s are summarised in Box 4.4, which draws on the modelled relationship described in window 2 of Figure 4.1(b).

**Box 4.4:** Key defining aspects explaining the absence of a dialectical relationship between environmentalism and environmental ethics during the 1970s

- No constructive dialectical relationship was established between environmental ethics and environmentalism
- Internally focused, academic arguments within environmental ethics did not equip environmentalism with an adequate justification for claims of priority of environmental goals
- The vagueness concerning moral considerability of environmental entities left environmentalism without a policy base that clearly defined obligations for the protection of such entities
- Environmental ethics failed to create a strong single foundation for environmentalism
- No palliative was offered to environmentalism for dealing with the anthropocentric concerns of equitable access to environmental goods and services

#### **4.5.2.2 Dialectical relationship between environmentalism and environmental ethics: 1980s and 1990s**

The various endeavours at theory formulation within the discipline of environmental ethics during its first decade or so of existence generally attempted to reduce all ethical environmental concerns to a defence from a single moral position (Norton, 1996b: 106). Its early focus on theoretical monism thus signaled an unyielding approach to value theory, leaving little space for accommodation of values experienced in multiple modes and contexts. This inflexibility is stated by Minter and Manning (1999: 191) as a key source of disillusionment regarding the failure of the discipline to support environmentalism. Aligned with the views of Norton (1995b), these authors suggest that, as a consequence, the mode of philosophical enquiry shifted towards the practical resolution of real world dilemmas through the accommodation of *moral pluralism* as a more tenable position in environmental philosophy.

As stated in Chapter 3, a new discipline such as environmental ethics, which is still in its originary phase, should not be constrained by theoretical and methodological dogma demanded of monistic approaches to theory formulation (Weston, 1996: 147). This perhaps explains what might be perceived to have been the failure of early attempts to deliver a single *breakthrough* environmental ethic in the mold of a new paradigm that could have supported the environmentalist movement in dealing with the *crisis of participation and survival*. It also explains the origin of the many *breakaway* initiatives that have richly advanced the discipline beyond its narrow initial focus on theoretical homogenisation and which have created the diversity of value theory that the discipline has acquired more recently (Figure 4.1(a), window 8). In this respect, it will be argued that a diversity of value theory - "a collection of independent ethical generalisations, norms and principles, that are only loosely related" (Hargrove, 1989: 8) - serves as a more appropriate platform of support for environmentalism than a single theory of value. In presenting this argument, reference will be made to what Norton (1991a: 187-243) describes as a convergence hypothesis - which suggests that environmentalists are

evolving toward a consensus in policy even though they remain divided regarding basic values.

The abstract, philosophical debates, which sought to determine what might and might not be philosophically supportable, initially promoted little positive dialogue with the environmentalist movement and, as a consequence, the practical intent of the discipline was largely obscured (Hargrove, 1989: ix). However, as new philosophical approaches were proposed to resolve the environmental problematic (particularly the situation created by the emergence of 3<sup>rd</sup> generation environmental problems), a significant strengthening dialogue with environmentalism would be achieved (Figure 4.1(b), window 5). In this respect, the greatest impact of environmental ethics in terms of positively influencing environmental policy and supporting the agenda of environmentalism was provided by an emerging form of *practical philosophy*, which operates at the informal interface between the pluralism of human environmental values and the decisions that they inform in *real cases* (Norton, 1991a: 198; Norton and Hargrove, 1994: 240).

*Practical philosophy* functions similar to the circular reasoning of justice theory which Rawls (1971: 48-51) describes as the process whereby a reflective equilibrium is progressively achieved through alternating attempts to formulate and apply theory to cases and to check principles against intuitions about what should be done in particular situations. Practical philosophy does not assume that useful theoretical principles will be developed and established independent of practices, institutions and decision-making processes, but acknowledges that theory is introduced only insofar as it may help in understanding specific management problems. It is thus a philosophy based on the generation of principles from practice (not *vice versa*) and it is this internal (rather than a detached) perspective that provides its credible empirical foundation (Minteer and Manning, 1999: 193, 200). In this respect, it *enables* environmental practice (Weston, 1995: 466).

The *pragmatism* of an emergent *practical philosophy* in environmental ethics - following the discipline's earlier focus on the *applied* philosophical endeavour of developing a monistic theory of environmental value - is described by Norton and Hargrove (1994: 236) as a response that seeks to avoid dogma, arguing for the urgency of addressing management issues without the impediment of theoretical differences. In this respect, it exhibits a pragmatism fashioned in the political strategies employed at times by environmental advocates such as Aldo Leopold and Rachel Carson - both of whom were largely committed to biocentrism, but employed and emphasised human-oriented argument when in the political and policy arena (*vide* Sections 3.2.2 and 3.4.2).

Norton (1991a: 82-83) describes, for example, how Carson initially used ecological reasoning to challenge human arrogance toward other species, but adjusted her arguments in the policy arena to emphasise, for example, the threat of chemicals to *human* health and survival in order to achieve her ultimate goal of changing human attitudes to nature.<sup>196</sup> Similarly, Norton (1996a: 92, 95) concludes that in policy debates Leopold chose not to base his moral strictures on non-anthropocentrism or on too great an emphasis on philosophical theory. Rather, he made reference to *real world situations* which he had experienced as an environmental manager to develop his arguments pertaining to the need for change in the relationship between humans and their sustaining environment.<sup>197</sup> In this respect, Rodman (1983: 89-92) concludes that Leopold, in a very practical way, challenged anthropocentric value theory from *within*, (i.e. its autonomy was not invalidated) anticipating that such a challenge would need to be progressively worked out in the way that utilitarian and deontological theories have been refined over time [*vide* Weston (1996: 139, 148)].

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<sup>196</sup> In her arguments against the excessive use of chemical pesticides Carson (1999: 26) admits, for example, that there may well be a case for pest control - but not to the extent that *humans* are destroyed as a consequence; i.e. an argument with an anthropocentric grounding.

<sup>197</sup> Whilst Leopold might have found the strategy of anthropocentric appeal appropriate, Sagoff (1991, in Pierce and VanDeVeer 1995: 174) suggests that such argument is increasingly being overtaken by a moral rationale for valuing the nonhuman world. For example, current environmental legislation tends to answer more directly to moral concerns relating to the "health" of the natural environment rather than to only human health. Similarly, the advance of technology, through which the substitution of natural goods is achieved, is transforming the instrumental value of many species (whales, for example) to one of moral value, which is largely independent of any direct human utility.

Although Norton believes that practical philosophy has been more effective in terms of influencing environmental policy and providing a platform for environmentalism than the applied philosophy of non-anthropocentric theoretical monism, he argues that this influence is derived in a somewhat 'virtual' sense from the *pluralism* of views held by environmentalists who operate from seemingly opposed camps.<sup>198</sup> In this respect, the different themes of environmentalism (crisis of *participation* and *survival* and the opportunity for *emancipation*) suggest an inherent multiplicity of environmental concern and motive attached to different spheres of environmentalism. The contradiction that would seem to arise from an acknowledgement of the positive influence on policy of certain views held by 'classified' non-anthropocentrists for example, is explained by Norton's conclusion that the supposed polarised positions, which many environmentalists believe they defend, has more to do with an exaggerated fabrication of such dichotomies than with the actual behaviours of environmentalists in practise.<sup>199</sup> In this respect, Norton (1999) questions the validity of what might be termed a *divergence theory* of environmentalism based on a metaphysical principle which distinguishes between two exclusively defined systems of anthropocentric and non-anthropocentric value.

Norton (1991a:187-204) is sceptical whether there is empirical evidence that proves environmentalists behave as members of exclusive and opposed groups and that such behaviour is driven by paradigms of closed belief systems supported by sets of axioms and principles that are either rejected or accepted monolithically. He suggests that there is little evidence to support this since most people most of the time operate with open systems of belief and are not guided in all their decisions by unquestioned, complete

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<sup>198</sup> Examples of such polarisation include Naess's (1973a) location of deep ecologists in the camp of individuals who believe that non-human elements of nature have independent value - which differentiates them from human-centred shallow ecology; similarly, Devall and Sessions (1985) use the label "reform environmentalists" (equivalent to Naess's shallow ecologists) to contrast this faction from that which believes in biospecies equality; etc.

<sup>199</sup> Like Norton, Minter and Manning (1999: 196) believe that the philosophical dichotomy in environmental value theory overstates the situation that exists in the real world in which ethical pluralism predominates. According to Barrett and Grizzle (1999: 24) consensus that emerges from such pluralism is enabled through participative decision-making and an increasing acceptance and understanding of ecological science.

sets of axioms.<sup>200</sup> Paradigms do not characterise and determine human actions; rather, it is their worldviews [i.e. views that exceed the demand for satisfaction of momentary inclination (Regan, 1980: 364)] or opportunistic references to selected fragments of worldviews that assist in their understanding of the world and guide their decisions in various situations (Hartley, 1995: 282). According to Norton (1991a: 75, 84), worldviews may be *partly* founded on central and formative principles, but do not necessarily reflect a well developed systematic philosophy; i.e. they refer to a constellation of beliefs, values, concepts and a set of background assumptions against which humans recognise the world and act in it.<sup>201</sup> In this respect, Norton's worldview definition is aligned with Weston's (1996: 139) observation that "ethical ideas are deeply interwoven with and dependent upon multiple contexts - other prevailing ideas and values, cultural institutions and practices, a vast range of experiences, and natural settings as well".<sup>202</sup> It is also aligned with Toulmin's (1972: 98) explanation of how human thought and perception can *vary rapidly* in certain situations, yet can reflect a *consistency* determined by central principles in other situations.

The earlier reference to the actions of Leopold and Carson, who embraced biocentrism but argued in public from anthropocentric principles, explains how people who may appeal to divergent values may share a similar desired outcome. Closed system thinking is generally not possible where moral choices have to be made because the facts which inform such choices are seldom unquestionable, there is seldom a choice between only one or another option and moral principles seldom point in directly

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<sup>200</sup> Sagoff (1991, in Pierce and VanDeVeer, 1995:175, 176) argues that there are often instrumental as well as intrinsic values justifying the protection of the environment. For example, the level of investment in water pollution control in the USA cannot be justified solely on instrumental grounds alone (derived from human health concerns); it also has much to do with the emotion upon which moral arguments are constructed. If only beneficial use rather than the intrinsic value of the natural environment was of concern, controlling harmful impacts such as pollution would often not be worth the cost.

<sup>201</sup> In his discussion of *institutional environmental economics* Jacobs (1994: 85) provides support for Norton's worldview definition. The author argues that people have economic preferences *and* moral and cultural attitudes towards the environment and these variously provide the context from which people express their views concerning the environment in different situations.

<sup>202</sup> Describing the context-dependent nature of 'ethical ideas', Weston (1996: 144) uses the analogy of Rawls' (1980: 318) views on how conceptions of justice are sought, not in terms of applicability for all societies, but for a particular society of concern.

opposing directions. Competing principles more often than not suggest similar moral strategies, and it is on this premise that Norton (1991a: 187-243) presents a hypothesis of convergence in environmentalism. This is based on the thesis that environmentalists are evolving toward a consensus in policy even though they remain divided regarding basic values; i.e. policy can serve as a mechanism for reconciling divergent interests, for example, in maintaining ecosystem integrity *and* securing equity in the distribution of resources within and between generations (Angermeier, 2000: 374; Barrett and Grizzle, 1999: 25).<sup>203</sup> Norton defends this thesis by reviewing four complex areas of policy debate in the US and explores the mechanism through which policy convergence is achieved in this debate. In his policy analysis he focuses on the common denominator objectives or goals that virtually all environmentalists support and which are expressed, explained and justified by appealing to a variety of value axioms and worldview fragments (biocentrism, enlightened utilitarianism etc.) to justify policy positions.

Through the convergence hypothesis Norton challenges the view that environmentalists hold no common ground, even though they may not have accepted a common shared worldview. He believes that, most importantly, there are *shared policy goals* and that this feature characterises the unity upon which his thesis is based.<sup>204</sup> Human appeal to a diversity of values and their pursuit of multiple and distinct aims and objectives within policy (Barrett and Grizzle, 1999: 24) is not merely peripheral to the area in which unity exists, but it is a strength of the movement which is used, in the first instance, to secure coalitionary support from a broad spectrum of people who share a commonly sought general outcome to an environmental issue under debate. This outcome, which Norton believes is being achieved in the US, includes environmental policies which militate against simple economic aggregationism and which respond sensibly to the constraints

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<sup>203</sup> Norton's *convergence hypothesis* suggests that the interests of humans and the interests of nature differ only in the short run. An acknowledgement that humans form an integral part of the community of life implies that long term human interests coincide with the "interests" of nature. Careful management of the full community of life is to protect the far-distant future of the human species and its evolutionary successors, and *vice versa* (Norton, 1996a: 99-100).

<sup>204</sup> Weston (1992) believes that an emerging consensus in all areas of these policy debates is an optimistic claim by Norton. Others see environmentalists diverging rather than converging, or converging only temporarily, or diverging over other issues as they converge over policy. A safer conclusion might be that *potential* consensus positions have emerged. Weston acknowledges that this is, nevertheless, grounds for optimism.

associated with human exploitationist activities. The new policy currency is the concept of *sustainability* - a response to the environmental problematic, in particular the suite of 3<sup>rd</sup> generation problems - not in the economic, demand-oriented sense of definition, but one which recognises limits inherent in the complexity and organisational integrity of larger ecological systems.

The common denominator that can unite environmentalists is not a commitment to a particular moral principle, but a consensus view that the activities of economic man are constrained because of the impacts behaviours impose on their larger context. A shared concern for the consequences of such impacts prompts stakeholders to press for inclusion in policy, for example, goals that aim to maintain biological diversity and complexity and protect associated controlling processes. The rationale for such concern is the recognition that these issues are also integral to the global enviroing systems that provide the larger context for human life. Neither economic productivity nor aesthetic and intergenerational moral values can be protected without protecting the complex, organised system that provides the ecological context upon which all values depend. This is the realisation of Leopold's pluralistic integrationism; i.e. an ethics supported not by shared metaphysical or moral axioms, but by an emerging worldview which, although accommodating in terms of moral pluralism, is based largely on scientific principle and the language of ecology.<sup>205, 206, 207</sup>

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<sup>205</sup> Light and Katz (1996) suggest that environmentalists call for two distinct types of pluralism: *theoretical pluralism* (the accommodation of theoretically incommensurable bases for moral consideration), and *metatheoretical pluralism* (openness to the plausibility of divergent ethical theories working together in a single moral enterprise - justifying an ideal from different value positions).

<sup>206</sup> In this respect, Barrett and Grizzle (1999: 29) suggest that ethical enquiry into issues of sustainability benefits from contact with the natural sciences.

<sup>207</sup> Shrader-Frechette (1989) and Shrader-Frechette and McCoy (1994) caution against a reliance on ecology as an ultimate philosophical grounding. They question the assertion that ecological science can *determine* environmental values and/or provide imperatives for environmental ethics and policy. The authors argue that there are no general ecological theories that have the predictive power to do this to the extent that is perhaps expected of the science. The contribution of ecology to informing environmental ethics and values lies more in the realm of natural history and case studies (i.e. case studies useful in the context of Norton's *practical philosophy*).

The convergence hypothesis also credits environmentalists with Leopold's style of pragmatism, which recognises that politics are ultimately influenced by economic imperatives. In the context of political debate, they acknowledge that individual rights, moral obligations to protect species and scientifically modelled sustainability thresholds of ecological systems are the variables that are factored into the goals of environmental policy initiatives.<sup>208</sup> Convergence via the shared goals of environmentalists in the practical and pragmatic arena of environmental policy development is considered to be more important than the achievement of theoretical unity in environmental ethics.<sup>209</sup> The *convergence* that Norton believes has been achieved through policy defines a constructive *raison d'être* for the discipline of environmental ethics, which contrasts with the academic debate on the sidelines concerning the problems associated with *divergency* in value systems. In this respect, Norton argues that the growing consensus (just described) has not been accompanied by a narrowing of the value positions that environmentalists might employ in policy debates, but is achieved through arguments pertaining to values which might arise from reference to worldviews as divergent as those characterised by a grounding, for example, in deep ecology and environmental economics.<sup>210</sup> Supporting this view, Hattingh (1999: 80) suggests that the diverse pool of value theory originating from within the discipline of environmental ethics opens up, rather than solves key environmental questions - which are then carried through for resolution through policy.

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<sup>208</sup> Once political buy-in is secured for the *shared* goals of policy initiatives, Norton (1991a: 189-191) argues that environmentalists can accept some measure of economic *efficiency analysis* to determine the ranking of programmes that may be implemented to give effect to these goals. Equally, there may also be a measure of dispute amongst environmentalists concerning which programme or strategy would be most appropriate in different situations; however, such dispute does not detract from the positive achievement in terms of consensus relating to policy goals which are agreed upon.

<sup>209</sup> As discussed previously, Weston (1992), for example, does not believe that it should now be a mandate of the discipline to achieve theoretical unity.

<sup>210</sup> Taking a contrary view, Simon in Myers and Simon (1994: 43) suggests that this broadening of value positions, which is exemplified by the vagueness which arises, for example, from the diversity of goals which environmentalists might state as the *raison d'être* for conserving biodiversity makes it difficult to compare the worth of a species-saving activity against another value.

Whilst moral monists believe that the role of environmental ethics is to deliver a unified worldview, Norton suggests that, although this might be strategically politically useful for environmentalism, it is perhaps questionable whether there is *one* correct worldview. He concludes that at present, the environmental movement operates quite successfully by drawing on a pluralism of values and conceptual tools (*vide* Parker, 1996: 21)<sup>211</sup> and is gainfully pragmatic through political compromise and ideological non-exclusivity. This loose model of operation avoids the dilemma of having to assign value in nature that is reducible only to monetary units or the rights of species. However, Norton believes that the role for environmental ethics might be to further the development of a new *integrated worldview* - one that captures the pluralism of existing first-order moral criteria but supported by second-order principles or rules defining which moral criteria should apply in given situations.<sup>212</sup> The defining role of these second-order principles should be one that takes cognisance of the systemic context of the situations requiring moral resolution at the temporal and spatial scales that are consistent with Leopold's *land ethic*.

The key defining aspects of an emerging dialectical relationship between environmentalism and environmental ethics during the 1980s and 1990s are summarised in Box 4.5, which draws on the modelled relationship described in window 5 of Figure 4.1(b).

**Box 4.5:** Key defining aspects of an emerging dialectical relationship between environmentalism and environmental ethics during the 1980s and 1990s

- Breakaway initiatives in environmental ethics from the narrow monistic approaches to value theory - i.e. the accommodation of *moral pluralism* - provide a practical response to the expectations of environmentalism

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<sup>211</sup> Norton's argument in support of moral pluralism finds a parallel in Jacobs' (1994: 88) advocacy of methodological pluralism in the domain of economic environmental valuation; i.e. that economics should allow into its analysis contributions from other disciplines.

<sup>212</sup> In a contrary view, Weston (1992) does not believe that an ethic should be reduced to a type of algorithm that would result from the introduction of second-order principles (rules) of the kind envisaged by Norton.

- The emerging *practical philosophy* in environmental ethics is capable of operating at the informal interface between the pluralism of environmental values held by environmentalists and the decisions informed in real cases
- Environmental theory has advanced to assist the understanding of specific, real situations facing environmentalists
- There is a realisation that the pluralism of views held by environmentalists does not create a situation of dichotomy, which places the holders of such views in opposed camps
- Novel approaches to value theory acknowledge that convergence towards shared ideals in environmentalism - most notably those grounded in the principles of sustainable development - can be achieved in spite of the justification of these ideals from different value positions
- Consensus in environmentalism around key objectives is achieved through the accommodation of a broadening, not narrowing, of value positions

#### **4.5.2.3 Evaluation**

From the above discussion and summary of recent developments in the dialectical relationship between environmentalism and environmental ethics, the question arises whether a pluralist, pragmatic approach can adequately respond to the *participation*, *survival* and *emancipation* issues raised by environmentalists? i.e. a question posed in a similar vein to the evaluation of the relationship between environmentalism and environmental assessment presented in Section 4.5.1.4.

A first response to the above would be to make reference to the argument presented in this chapter, and elsewhere in this dissertation, that applied philosophy, in which theoretical monism finds its grounding, would not seem to offer better possibilities in this respect. The main reason for this lies, ironically enough, in the preoccupation of applied philosophy with abstract theoretical issues and intricate internal debates. Although this may change in future, these issues and debates in a double irony, nevertheless indicate

the areas of environmental philosophy where solutions to the diverse issues of environmentalism, in the form of viable policy options, are unlikely to be found at present.

The serious implications arising from the current pathology in the human-environment relationship, about which environmentalism is concerned, require an urgent and practical response. In this respect, any contribution from within the discipline of environmental ethics that is inclined towards the pragmatism that is demanded of the situation, offers the potential to make a constructive and measurable impact. Confirmation of the promise that this mode of influence offers, is provided by the exemplar of Aldo Leopold's arguments grounded in real world management imperatives, which call for change in the relationship between humans and their sustaining environment - not through revolution, but through evolutionary change from within the prevailing social-political paradigm.

Whilst an extension of the response offered by Leopold to the current situation - i.e. his advocacy of pragmatism through evolutionary, as opposed to revolutionary, change - does not obviously suggest an inability to accommodate the environmentalist's issues of *participation* and *survival*, some conflict with *emancipatory* theory, which calls for *radical* cultural and institutional transformation, is evident. The relevance of this conflict, given the current evolutionary trajectory in environmental ethics, is apparent, since it might be seen to diminish the promise offered by ethical pluralism and pragmatism to contribute to the resolution of the environmental problematic. However, much of the discussion in this chapter focuses on the questionable distinction that is made, for example, between advocates of emancipatory theory, and other environmentalist 'factions' - which presents an artificial polarisation of the situation, given the behaviour of such 'factions' in practice. The counter-argument offered in earlier discussion is that environmentalists do not operate within silos, according to closed value systems, and in fact, they tend to draw on a variety of arguments and values that generally converge towards a broadly shared outcome, which, although variously expressed, quite adequately finds its locus in the definition of sustainable development.

A pluralistic approach to environmental ethics promotes the validity of diverse positions in value theory, thereby accommodating to a far greater extent the issues of *participation*, *survival* and *emancipation* than any alternative monistic value theory offered thus far. This approach also finds alignment with Thomas Kuhn's explanation of how crises are resolved from a plurality of ideas generated in response to the persistent failure of an existing single theory to provide such resolution. In the current absence of a dramatic change in allegiance to the current global social-political paradigm (a future possibility that should not be discounted), pluralism in environmental ethics provides the important breadth of possible justifications for implementing the broadly shared ideal of sustainable development. What is important, is the recognition that there is convergence towards this ideal, as manifested by the many environmental policies (supported by the principles of sustainable development) that have been developed in response to the pressures of environmentalism. Less important, is the debate concerning the priority of any single value position over another in justifying sustainable development. As indicated elsewhere in this dissertation, the present era of experimentation with environmental value theory and the generation of a plurality of options is a situation that should be anticipated and welcomed during this originary stage of environmental ethics and its relationship with environmentalism.

#### **4.6 INTERPRETATION OF A MEDIATED DIALECTICAL RELATIONSHIP BETWEEN EIA AND ENVIRONMENTAL ETHICS**

The promise of a close dialectical relationship between EIA and environmental ethics - which their common origin in an appreciation of 1<sup>st</sup> and 2<sup>nd</sup> generation environmental problems might have suggested - did not manifest during the first decade of practice and philosophical endeavour of the two disciplines (Figure 4.1(b), window 3). This can be explained by the immediate dichotomy that developed between the anthropocentric emphasis of EIA (its response at a conceptual level to the environmental *crisis of participation*) and the nonanthropocentric focus of environmental ethics on the assignation of intrinsic value to the non-human natural environment (its failure to respond to the *crisis of participation*). In the absence of dialogue between

environmentalism and environmental ethics the opportunity for a dialectical relationship between EIA and environmental ethics (mediated by the evolutionary trajectory of environmentalism) also failed to exist.

During the 1970s there is little evidence to suggest that NEPA's advancement of democratic participation in decision-making contributed in any way to the defence of a non-anthropocentric environmental ethic. In this respect, the evolutionary course of development in EIA did not force a shift in the ethics of decision-making away from a predominantly anthropocentric doctrine towards a position of alignment with the nonanthropocentric ethical deliberations underway within the discipline of environmental ethics at the time. This can be attributed to the recourse in EIA to the entrenched concepts of conservation that Sagoff (1988: 148) describes as having their focus on the maximisation of social welfare as this is understood in economic theory. It also signaled an affirmation of faith in the positivism of science (a pillar of Pinchotist conservationism), which as described by Bacow (1980: 109), was employed in EIA to inform decision-making at the time. In this respect, the early *vocabulary* of EIA - for example, its reductionistic scientific methods and its oversimplified checklist analytical approach [*vide* Bendix and Graham (1978: vii); Carpenter (1981: 182)] - proved familiar to the persistent dominance of a reductionistic calculus in political decision-making.

The key factors explaining the absence of a mediated dialectical relationship between EIA and environmental ethics during the 1970s are summarised in Box 4.6, which draws on the modelled relationship described in window 3 of Figure 4.1(b).

**Box 4.6:** Key factors explaining the absence of a mediated dialectical relationship between environmental assessment and environmental ethics during the 1970s

- There was no alignment in the evolutionary trajectories of EIA and environmental ethics in spite of the mediation effect of the *participatory* theme of environmentalism

- The anthropocentric *participatory* theme of environmentalism invited a weakly aligned conceptual response in the practice of EIA, which was not possible in environmental ethics given the discipline's strong nonanthropocentric inclination
- The monological language of both EIA (its use of objective *it-language*) and environmental ethics (its narrow, monological subjectivity) proved incapable of responding to the intersubjectivity (multiple *I-languages*) of environmentalism

Human regard for the environment during the 1980s had changed little since Aldo Leopold's observation almost half a century earlier that land use ethics were governed by economics and short term human self-interest (Leopold, 1991: 245). Developments in EIA during this decade indicated closer alignment in this respect rather than an advancement of the ethical extensionism with respect to humanity's relationship to land, plants and animals, which Leopold argued lay within the potential of human evolution; i.e. the evolutionary potential of human social sentiments to be extended to the broader *biotic community* (Callicott, 1989: 79). However, in spite of the alignment of EIA with development activity which tended to set humans apart from and in a relatively narrow utilitarian relationship with the biotic community, its evolutionary course nevertheless did indicate a closing position related to Leopold's *land ethic* in two important areas (Figure 4.1(b), window 6).

The first, was the enhancement of the social dimension of environmental assessment and, more importantly, an acknowledgment of the dependency of humans on - and their right to defend their interests with respect to - their bio-physical enviroing context (Susskind, 1982: 7). Although these interests clearly have an anthropocentric grounding, the extent to which EIA could accommodate them was not contradictory to Leopold's views concerning the human privilege of *utilizing* and managing the earth's resources (Leopold, 1979: 141). The main deficiency of EIA in this respect - which would receive attention only in the following decade - was the failure of the process to adequately respond to the interests of future generations and to ensure the protection

of nature and natural processes into the indefinite future; i.e. Leopold's long-sighted view of humanity's position within the biotic community (Norton, 1995b: 353).

A second development in EIA that reflected a closing alignment with Leopold's *land ethic* was the evolutionary trend towards an integrative systems approach to environmental management. This was an important shift in the process of impact assessment from the traditional fragmentation of the bio-physical environment into discrete components for the purpose of analysis (narrow scientific reductionism) towards ecosystem and landscape level approaches to EIA (Sadler, 1996: 27). An acknowledgment of the systemic functional relationships between constituent elements of ecosystems - and a tentative sensitivity towards the management of human impacts affecting the integrity of such *systems* - thus began to emerge within EIA. This departure from the previous atomistic mode of scientific analysis enhanced the grounding of EIA in the type of science which was proposed by Leopold as representing an essential first-order requirement for understanding the ecological functioning of the biotic community (Norton, 1991a: 40; 1996a: 89). More generally, it was also an advancement aligned with a developing trend among environmental philosophers at the time (eg. Holmes Rolston, 1975) of selecting ecological principles upon which to base ethical norms for land use, resource management and conservation - an approach which was defended as being as sound as any other ethical rationale (Marietta, 1979: 195, 207). The greater analytical holism that was introduced into EIA did not extend to include Leopold's organicist conceptualisation of the environment. However, Norton (1996a: 89) argues that Leopold would not consider the more mechanistic scientific conceptualisation that was applied in EIA to be automatically in conflict with the ideals of the *land ethic*, since it acknowledges - albeit in a different descriptive language to that of organicism - the inherent interrelatedness of the elements of the biotic community. Through this evolutionary advancement in EIA greater cognizance was therefore taken of the synchrony between human activity in the short term and the larger, autonomously functioning environmental context within which such activity occurs - a fundamental aspect of Leopold's *land ethic* (Leopold, 1949 (rep 1991): 137-141, 262; Norton, 1995b: 353). According to Kuhnian theory, developments in EIA during the second decade,

which promoted the understanding of ecosystem functioning, permitted the environmental problematic to be stated in terms which enhanced the potential for its resolution. Considering the impact of Leopold's views on the generation of theory within the discipline of environmental ethics, the increased alignment of EIA with a key tenet of the *land ethic* (i.e. that human activity should be perceived in the context of the greater systemic whole) is considered the most significant development in the dialectical relationship between environmental ethics and EIA during the 1980s.

A summary of key aspects of an emerging dialectical relationship between EIA and environmental ethics during the 1980s is presented in Box 4.7, which draws on the modelled relationship described in window 6 of Figure 4.1(b).

**Box 4.7:** Key aspects of an emerging mediated dialectical relationship between environmental assessment and environmental ethics during the 1980s

- A weakened monological grounding of both EIA (its opening up to the multiple *l-languages* of participation) and environmental ethics (its evolution towards theoretical *pluralism*) initiated a dialectical evolutionary relationship focused on resolving the *crisis of participation*
- Enhancement of the social dimension of environmental assessment indicated a developing dialectical relationship with environmental ethics grounded in the Leopoldian principle of human interrelatedness (dependency) on their complex bio-physical environing context
- The *potential* existed, but was not effectively exploited, for a mediated dialogue between EIA and environmental ethics concerning the resolution of the *crisis of survival* theme in environmentalism
- In EIA, although cognizance was taken of the synchrony between human activity in the short term and the larger, autonomously functioning environmental context

- within which such activity occurs - a fundamental aspect of Leopold's *land ethic* - no response was offered with respect to the development of an instrumental method capable of responding to the emerging imperative of sustainable development

In the tradition of 'normal science' (Kuhn, 1970a: 42), the conceptual, theoretical, instrumental and methodological tools of environmental assessment were extended and revised during the 1980s and 1990s to attempt the resolution of a familiar, albeit freshly articulated, class of problem which is the promotion of human survival - *in the long term*. In this respect, the revision of the paradigmatic standards of EIA [*vide* Kuhn (1970a: 186)] which was required to respond to the global concern for sustainability was the shift in emphasis from what Norton (1984a: 133-136) describes as the satisfaction of short term *felt human preferences* to more rationally derived *considered preferences* (see Section 3.4.3). Whilst traditional EIA could be viewed as the tool of choice for responding to *felt preferences* (short term human needs), new generation tools for environmental assessment and management such as SEA found application in the domain of *considered preferences*. This approach is consistent with Leopold's rejection of shortsighted, environmentally harmful economic reasoning, and is one that provides rational decision-making support based on systemic ecological knowledge - which the new generation tools can generate - as an alternative. It is also consistent with Norton's (1984a) concept of *enlightened anthropocentrism*, whereby humans are retained as the important (and only) locus of value, but with the acknowledgment that there is a critical interdependency between human existence and the complex environmental whole which sustains them in the long term (Section 3.4.3). SEA and Sustainability Analysis, for example, promote a non-individualistic ethics - based on the employment of *we-language* to secure shared ideals (in spite of differences in basic environmental values) - concerning distributional fairness within generations and the promotion of cross-generational human environmental interests; i.e. they are tools that are responsive to an enlightened anthropocentric basis for decision-making (Figure 4.1(b), window 8).

A summary of key aspects of the dialectical relationship between EIA and environmental ethics forged during the 1980s and 1990s is presented in Box 4.8, which draws on the modelled relationship described in window 8 of Figure 4.1(b).

**Box 4.8:** Key aspects of a mediated dialectical relationship between environmental assessment and environmental ethics forged during the 1980s and 1990s

- The imperative of sustainable development (arising from the crisis of *participation* and *survival* in environmentalism) currently provides a strong basis for a dialectical relationship between new generation approaches to environmental assessment (eg. SEA) and a practical philosophy in environmental ethics
- The common denominator objectives of environmentalism pertaining to sustainability - expressed as the crisis of *participation*, *survival* - provide the focus for both new generation approaches to environmental assessment and emerging pragmatist approaches to environmental ethics
- The issues of *emancipation* raised by environmentalists have not mediated a co-evolutionary response in environmental assessment and environmental ethics
- Environmental ethics has responded directly to the theme of *emancipation*, but has yet to yield a viable basis for policy. Set in the context of the prevailing modern social-political paradigm, environmental assessment has delivered no response to the radical appeal for *emancipation*
- The priority of *we-language* used to define sustainability objectives through appeals to a variety of values, which dialogical opportunity in the fields of both new generation approaches to environmental assessment and moral pluralism promotes, provides the basis of the current phase of co-evolutionary development between the two disciplines

Whilst it is suggested that the accommodation of a sustainability rationale within the process of environmental assessment and management indicates an evolutionary

convergence with the Leopoldian sentiment of environmental ethics, the extent of such convergence is clearly contingent upon which of the multiple interpretations of and approaches to sustainable development it most obviously accommodates (Section 2.3.3.1).<sup>213</sup> In this respect, a skeptical perspective is offered by O’Riordan (1986: 4-6) who suggests that the evolution of environmental assessment and management has taken a strongly positivist route which is revealed by the attention directed at defining sustainability in terms of the *boundaries of environmental tolerance* to human impacts. The argument here is that environmental assessment has become a tool that enables the economic break-even point to be more accurately calculated at which marginal investments in environmental enhancement balance marginal costs. This is aligned with Baxter’s (1974 in Pierce and VanDeVeer, 1995: 384) view that humans will strive to reduce pollution, for example, through the diversion and investment of resources up to the point (calculated through SEA, for example) where the achievement of a desired state does not compromise the realisation of some other more valued preference.<sup>214</sup>

Based on O’Riordan’s views, EIA, SEA, and Sustainability Analysis could be regarded as manipulative tools that open the way to exploitative environmental abuse, which is rationalised as being located within the bounds of sustainability. Their potential could thus be seen to fall short of responding to the interpretation of sustainability which recognises that its attainment is determined by factors such as ecological processes operating in the long term - i.e. *beyond short term* human control (Daily, 1997) - which cannot be revealed through the prevailing method of environmental assessment. However, whilst EIA might be judged to be derived from an economic exploitative framework (eg. in which the test of development acceptability could require the

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<sup>213</sup> Different models of sustainability/sustainable development can be distinguished. For example, the *limits to growth* model described by Club of Rome (1972) suggests a radical interpretation, whilst the interpretation provided by *Our common future* (WCED, 1987) is more conservative. Using the radical/conservative typology developed by Jacobs (1999), a detailed discussion of the shared *theoretical* and different *practical* interpretations of sustainability/sustainable is provided in Chapter 5.

<sup>214</sup> In their criticism of views such as this, Callicott *et al.* (2000: 28) argue that the substitutability axiom of neoclassical economics implies that there are no irreplaceable natural resources. As resources become scarce substitutes are found, and needs (of the present generation) are met through exploitation of currently available resources, which results in the bequeathment to future generations of a depleted natural resource base - justified by the legacy of wealth, technology and a strengthened culture of human inventiveness which is passed on to future generations.

monetary benefits of a project to exceed its costs), there would seem to be a reasonable argument that its new generation derivatives such SEA are strongly grounded in the ideals of *ecological sustainability*.<sup>215</sup>

Attempting to establish whether the evolutionary course of environmental assessment and management reflects either the positivist route presumed by O’Riordan (1986) or it has been (or should be) guided, for example, by an ethics defined only by the prevailing emancipatory theme in environmentalism is unlikely to be fruitful. Essentially, such effort would be an extension of the philosophically rich but practically unhelpful dialectic in environmental ethics that (*inter alia*) places anthropocentrically based ethical arguments in opposition to those grounded in a nonanthropocentric environmental ethic. As discussed earlier in this chapter, humans operate with open systems of belief and are not guided in their decisions by unquestioned, complete sets of axioms (Norton, 1999). Attitudes are not easily changed only through narrow moral persuasion of the kind promoted through any particular stream of environmentalism (Nelson, 1979: 263) or through short term economic reasoning.<sup>216</sup> Humans face specific problems armed with the ethical attitudes and biases which they possess and they are directed in their decision-making not so much by *a priori* perceptions of morally correct environmental ends as by ethically correct procedures according to which a locally relevant end - which is ‘to do what is right’ - is generated (Nelson, 1979: 270). This is the way of democratic culture which gains its credibility from an accommodation of diversity in moral thinking, thus enabling it to deal with the unpredictable variability of human experience with the natural world (Minteer and Manning, 1999: 194).

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<sup>215</sup> Callicott and Mumford (1997) would define ecologically sustainable development as human activity that does not compromise ecosystem health; i.e. human occupation/use of land to the extent that it is not made dysfunctional (Leopold, 1941).

<sup>216</sup> Many contrary views suggest that greater effort should be invested in *moral persuasion* concerning crucial environmental values (eg. Angermeier, 2000: 374).

## 4.7 CONCLUSION

This chapter has taken the information derived from the analysis of the individual evolutionary trajectories of environmental assessment and environmental ethics, which is contained in the two preceding chapters, and advanced part of the dissertation's main research theme by revealing a co-evolutionary dialectical relationship between the two disciplines.

Based on the analysis of the development trends in environmental assessment and the divergence in value theory generated from within the discipline of environmental ethics, it is concluded that a relatively strong dialectical relationship exists between the two disciplines. Mediated by the issues arising from the various themes in environmentalism, this relationship indicates a close alignment between the new generation approaches to environmental assessment and the practical philosophy of enlightened anthropocentrism.

Environmental assessment has been shown to be responsive, in a pragmatic sense, to the issues arising from environmentalism. This is illustrated, for example, by the extent to which it invites *participation* and is thereby guided in its approach. Whilst environmental assessment has always had a conceptual grounding in this demand for *participation*, it is concluded that it is only in its new generation approaches that an effective response to this demand has proved possible. This has not been achieved through attempts to respond to multiple individual human preferences (expressed in multiple *I-languages*), which the early EIA consultative process invited. Rather, the focus has been on the definition of shared ideals, which are underpinned by broadly accepted principles of sustainable development (expressed in *we-language*). Both new generation approaches to environmental assessment and recent developments in environmental ethics, recognise that there is convergence in environmentalism around these principles, although they may be justified by appeals to very different values and ethical positions.

Environmental assessment has traditionally been practiced from a strong foundation in scientific objectivity. It is concluded that throughout its course of evolutionary development, the significance of this foundation has not diminished, but has increased as the *survival* issues arising from environmentalism have been added to the issues of *participation*. Holistic approaches to environmental assessment, based on sound ecological theory now makes it possible to establish environmental thresholds, limits etc. at which the *survival* of humans within their enviroing context may be jeopardised. Here, there is a commonality with enlightened anthropocentrism, which focuses on the importance of ecosystem protection in order to guarantee the sustainability of environmental services necessary for the perpetuation of human consciousness.

In the case of both new generation approaches to environmental assessment and the practical philosophy of enlightened anthropocentrism, the common emphasis is, therefore, on the subjective process of seeking and establishing convergence around the ideals of sustainable development. This is initiated in advance of objective scientific method, which may be employed, for example, to inform rational approaches to achieving sustainable development.

It is concluded that the issues of *emancipation* arising from environmentalism have not contributed to a mediated dialectical relationship between environmental assessment and environmental ethics. Although many supporting value theories and philosophies have emerged from within the discipline of environmental ethics in support of the theme of emancipation in environmentalism (eg. deep ecology, ecofeminism, social ecology, bioregionalism etc.), no equivalent response is evident in the new generation approaches to environmental assessment. Environmental assessment has retained its grounding in the liberal social-political paradigm, which is essentially incommensurable with the radical communitarianism and other cultural changes advocated by emancipatory theorists. The fact that radical positions in environmental ethics have yet to yield a theory that provides a *viable basis* for informing policy choices probably explains the failure of environmental assessment to respond to the environmentalist issues of emancipation.

In the following chapter, which summarises the key conclusions emerging from the dissertation's overall theme of investigation, there will be further investigation of the alignment between new generation approaches to environmental assessment, specifically SEA, and the practical philosophy of enlightened anthropocentrism. This will be achieved through confirmation of the common grounding of their underpinning principles in what will be defined as certain *core ideas* of sustainable development. Importantly, this alignment will be shown to exist not only at a *conceptual* level of interpretation of these core ideas, but also with respect to their *practical meaning*. In this respect, it will be argued that if the dialectical relationship between environmental assessment and environmental ethics is to be effective in terms of arresting the pathology in the human-environment relationship, a common interpretation of what sustainable development implies in practice is essential.

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*Chapter 5 :*

**CONCLUSION**

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## 5.1 INTRODUCTION

In drawing this dissertation to its conclusion, it is necessary to re-visit the research intent outlined in the introductory chapter, and to review the progress that has been made in terms of achieving what it has promised. In this respect, the intention has been to investigate the individual evolutionary trajectories of environmental assessment and environmental ethics, and to reveal a co-evolutionary dialectical relationship between the two disciplines. By making the assumption that the principles of sustainable development offer the potential to arrest the current pathology in the human-environment relationship, the intention has also been to establish whether the revealed relationship has its grounding in these principles.

The dissertation's conclusions pertaining to the individual evolutionary trajectories of environmental assessment and environmental ethics are summarised in Sections 5.2 and 5.3, respectively. This creates the context for a review of the main conclusions pertaining to the revealed dialectical relationship between the two disciplines, which is provided in Section 5.4. This review will, however, be shown to fall short in terms of responding to the research question concerning the relationship's grounding in the principles of sustainable development, and further attention will be directed at this issue in Section 5.5. Here, the contested status of sustainable development will be described, and a taxonomy will be created from the main dichotomies in practical interpretation of a number of core ideas of sustainable development.

The taxonomy of sustainable development will be used as a framework in which to locate both the grounding principles of *SEA*, which is an example of a new generation approach to environmental assessment, and *enlightened anthropocentrism*, which has been proposed as a viable, practical environmental ethics. Through this approach, a comparative evaluation of the taxonomic profiles of the two disciplines is possible, and it will be established whether the relationship between environmental assessment and environmental ethics is grounded in a common interpretation of the *practical*

*implications* of sustainable development; i.e. a common grounding revealed through similar taxonomic profiles.

## **5.2 EVOLUTIONARY TRAJECTORY OF ENVIRONMENTAL ASSESSMENT**

From the discussion presented in Chapter 2, it is concluded that the emergence of environmental assessment, as an action-forcing provision of NEPA, represents a major non-cumulative break in the past tradition of narrow economic determinism, following many unsuccessful previous attempts to resolve the developing environmental crisis. The switch in global allegiance to this new paradigm in environmental policy is explained by the promise offered by its new fundamentals, which require that economic and environmental quality should be compatible, and that the fulfillment of social, economic and other requirements of present and future generations must permit humans and nature to live in harmony.

At its point of origin, the practice of environmental assessment promised to accomplish what previous policy initiatives had failed to do in terms of resolving the environmental crisis. However, it is clear that, as in the case of most paradigms, it did not immediately fully meet the expectations of its constituency of allegiants.

Reflection on the initial evolutionary development of environmental assessment brings to the fore its very strong rational grounding in scientific materialism. In its first decade of practice it is concluded that this was relatively narrowly focussed on the bio-physical natural environment - reduced to its constituent components - and dealt with impact prediction through an atomistic, empirical mode of enquiry. Environmental impacts were typically revealed, in a monological fashion, as empirical statements reflecting the condition of the concrete world. Essentially, a simple procedure was applied to objectively 'map' the current or predicted state of affairs concerning those sensory aspects of the environment that have physical location. Value-free, *it-language* served as the dominant medium for the conduct and communication of environmental

assessment, which was a language familiar to, and framed by, the prevailing rational worldview.

Also described in Chapter 2, is the infusion of advanced ecological sciences into the process of environmental assessment during its second decade of practice, which manifested as a more holistic understanding and assessment of environmental impacts affecting the natural environment. Systems theory thinking, evident in the emergence, for example, of *ecological impact assessment*, began to direct the approaches that were adopted. Although these developments represented an advancement on previous excessively reductionistic methods of impact assessment, it is concluded that the introduction of systems theory applications held little promise of an appropriate response to arrest the pathology in the human-environment relationship. In this respect, it made little impact in terms of securing the integration of the subjective human cultural value spheres with the objectivity implicit in scientific materialism - which, it has been argued, is a necessary condition for effectively dealing with the environmental crisis. This is attributed to the continued focus on scientific empiricism as the basis for environmental assessment, and its conduct and communication in objective, value-free *it-language*.

In reaction to its initial failure to effectively accommodate social issues in the process of environmental assessment, it is concluded that significant developments occurred during its second decade of practice. Whilst these developments represented a major advancement in terms of enhancing the effectiveness of environmental assessment, it has emerged that this was constrained by the incoherency that existed between the *I-languages* through which the multiple subjective preferences and values of stakeholders were expressed, and the *it-language* of response that the process was capable of delivering. Although the evolution of environmental assessment had, in a sense, moved closer to the integration of the objective and subjective spheres of human perception of the environment, it could not achieve this, since it lacked the tools to effectively deal with diverse subjective values and often contradictory moral dispositions concerning the environment arising from the process of invited participation. *It-language* remained the dominant medium of enquiry and communication for environmental

assessment - a situation that would inevitably fail with respect to its ability to interpret and respond to the multiple *I-language* issues arising from its acquired participatory process.

Recent evolutionary advancement of environmental assessment has focused on responding to the above deficiencies, by developing approaches that integrate humans, and their social and economic traits, into the definition of environment. In this respect, it is concluded that environmental assessment is now capable of engaging the multiple subjective *I-languages* of human society and making dialogue possible with the objectivity of *it-language* employed in its traditional methods. This is reflected in the emergence of new generation approaches to environmental assessment, such as SEA, which engages *we-language* in order to secure broad agreement on shared ideals around sustainable development, which can be articulated in spite of divergent justifications of these ideals. The impossibility of responding to multiple *I-languages* according to which such justifications are made, is thereby avoided.

It is this latest development that perhaps captures the most significant evolutionary advancement in the practice of environmental assessment, and which makes it truly capable of contributing to the arrest in the pathology in the human-environment relationship. It is concluded that its new generation approaches can potentially promote, through practically implementable method, the essential integration of the dissociated *subjective* and *objective* human cultural value spheres.

### **5.3 EVOLUTIONARY TRAJECTORY OF ENVIRONMENTAL ETHICS**

From the discussion presented in Chapter 3, it is concluded that the emergence and evolution of the discipline of environmental ethics is a response to the failure of traditional human ethics, such as utilitarianism, to resolve the developing environmental crisis. This failure of 'normal' ethics to deal with crisis has placed into question its validity as a value paradigm, and this explains the opportunity that exists for a discipline such as environmental ethics to deliver a more capable paradigm in this respect.

Measured against the tradition of human ethics, in which the environment is valued mainly in terms of its instrumental utility, the aim of environmental ethics, which is to situate the environment as the object of human moral concern rather than one of mere utility, is considered to be a revolutionary endeavour.

In contrast to the high expectations of environmental ethics to deliver a viable new theory of environmental value, it is concluded that developments within the discipline do not yet reflect a revolution in value theory. Similar to the way in which human ethics have resulted from a protracted and complex cultural process of testing and assimilation, the current evolutionary trajectory in environmental ethics is not expected to immediately deliver a single, unifying theory of environmental value. The discipline is still at an originary stage, which is characterised by the high degree of experimentation and uncertainty that exists as the effects of unresolved environmental crisis trigger a proliferation of different ideas and value theories intended as a response to this crisis. This situation is to be expected as environmental ethics challenges tradition and opens up new possibilities, rather than narrows the debate at this early stage towards any particular theory of value.

The divergence in value theory that has emerged in environmental ethics has been described through reference to a central dichotomy. This exists in the form of competing theoretical arguments grounded in entrenched paradigms of instrumental environmental value, on the one hand, and 'new-paradigm' claims pertaining to either the intrinsic value of the environment or calls for radical cultural and institutional change in human society, on the other. Whilst the entrenched value paradigms are relatively familiar in terms of their close relationship with human ethics, it is concluded that the 'new-paradigm' claims are largely 'slogan-driven' at present, and cannot be defended, in the paradigmatic tradition, on the basis of tested and viable fundamental principles.

The high degree of reductionism implicit in the many initiatives concerning the notion of intrinsic environmental value is a major contributing factor that explains their failure thus far to attract an allegiance that is indicative of their potential paradigm status. It is

argued that this is attributable to the failure of attempts to both narrowly systematise human moral intuitions concerning the environment, and to adequately justify the boundaries of the moral considerability of nature. It is concluded that, paradoxically, attempts at reductionistic and monological representations of value systems, are viewed as having a number of parallels with the reductionism of neoclassical economics, which the discipline of environmental ethics seeks to replace.

In response to the above limitations in value theory, it is concluded that the evolutionary trajectory of the discipline is currently moving towards a practical philosophy, based on a pragmatism that is accommodating of moral pluralism. Enlightened anthropocentrism, which is one form of such philosophy, offers an alternative to theoretical monism and some of the radical ethics described in Chapter 3. It is dialogical in the dual sense of its rejection of monological accounts of human valuation of the environment, and its differentiation from the individualistic values of conventional ethical systems. It assumes that it is a worthy cause for human culture and consciousness to be perpetuated in the long term and that it is this justification that can persuade current human generations, perhaps from a variety of value positions, to maintain the integrity and health of ecosystems on which human life and consciousness depends.

## **5.4 CO-EVOLUTIONARY DIALECTICAL RELATIONSHIP BETWEEN ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTAL ETHICS**

### ***5.4.1 Dialectical relationship between environmentalism and environmental assessment***

The dissertation has clearly differentiated between the paradigmatic qualities of environmental assessment and the contrasting non-paradigmatic qualities of environmental ethics. In this situation, where there would seem to be little potential for discovering a *direct* dialectical relationship between the two disciplines, the rationale for incorporating the evolutionary progression of environmentalism as a dialectical intermediary, to reveal an *indirect* relationship between the two disciplines, is apparent.

Considering the relationship between environmentalism and environmental assessment, it is concluded that this manifests as a direct, but temporally staggered, dialectic. The relationship reflects a relatively clear pattern of cause-and-effect, whereby key issues emerging from the various themes of environmentalism have triggered related effects in the development of environmental assessment. For example, the theme of *participation* in environmentalism has been increasingly accommodated in the process of environmental assessment, particularly with respect to its new generation tools that acknowledge the multiple values and preferences of interested and affected parties, through a focus on shared sustainability ideals. Also, the increasing attention directed at determining environmental capacities, thresholds, limits, etc., based on ecosystem scale approaches to environmental assessment, and the incorporation of humans into the definition of environment, make its practice acutely sensitive to the theme of *survival* as this has emerged in environmentalism.

In contrast to the above cause-and-effect pattern in the dialectical relationship between the *participation* and *survival* issues arising from environmentalism and the response elicited in the practice of environmental assessment, it is concluded that the theme of *emancipation* in environmentalism is not obviously accommodated. In this respect, there is no evidence to suggest that new generation approaches to environmental assessment promote, in a radical sense, cultural and institutional transformation of human society as a way of halting the pathology in the human-environment relationship. It is also concluded that environmental assessment cannot be credited with having promoted a changed human consciousness, based on the metaphysical reconstruction of human relationships with the earth's broader biotic community - in the mold of emancipatory theory.

Since its revolutionary origin through NEPA, environmental assessment has undergone continuous evolutionary development, which has been responsive to, and accommodating of, the *participation* and *survival* themes of environmentalism; i.e. it has acquired the conceptual and instrumental tools necessary for responding to issues of *participation* and *survival*. Whether the evolutionary trajectory of environmental

assessment will take the process to a point where it undergoes revolutionary change that is discontinuous with its current development trajectory - to the extent that it is directly responsive to the theme of *emancipation* in environmentalism - cannot be anticipated at present. However, considering the scope of unresolved environmental problems and the many responses that are continually proposed as options to address this situation, revolution in the approach resolving to environmental issues is perhaps a future possibility. In this event, environmental assessment may still undergo radical change to the extent that its conceptual and instrumental tools find application in a new *emancipatory* paradigm.

#### ***5.4.2 Dialectical relationship between environmentalism and environmental ethics***

It is concluded that early developments within environmental ethics were shaped by an applied philosophy, whereby the focus of abstract debate was largely on the determination of what aspects of the natural environment might or might not be philosophically supportable in terms of their intrinsic value. In this respect, the effort of theory formulation was directed towards reducing all ethical concerns to a defence from a single moral position. This promoted little positive dialogue with environmentalism, firstly, because developments contradicted the expectation that the discipline would engage in the practical (not abstract) exercise of delivering a viable, anthropocentrically inclined ethics capable of resolving the environmental crisis of *participation*, and secondly, because the pluralism of values from which environmentalism traditionally draws could not be accommodated in the unyielding approach to theoretical monism.

Value theory proposed during the first decade or so of environmental ethics was a source of disillusionment regarding the failure of the discipline to support environmentalism in a practical sense. As a consequence, the more recent philosophical enquiry has shifted towards support for the resolution of real world dilemmas; i.e. the focus shifted towards making a constructive, measurable impact in terms of resolving the environmental crisis of both *participation* and *survival*. Contributing to this shift, has been an accommodation of moral pluralism as a tenable position in environmental philosophy. In contrast to its early evolutionary trajectory, it is,

therefore, concluded that recent developments in environmental ethics have resulted in a strengthening dialogue with environmentalism, particularly in so far as this relates to the themes of *participation* and *survival*.

It is perhaps questionable whether evolutionary advancement towards a pragmatic and pluralistic ethics is responsive to the *emancipatory* theme in environmentalism. However, it is concluded that the distinction that is made between advocates of *emancipatory* theory, and other environmentalist 'factions' presents an artificial polarisation of the situation, given the behaviour of such 'factions' in practice. The counter-argument that has been presented in this dissertation is that environmentalists do not operate according to closed value systems, but tend to draw on a variety of arguments and values that converge towards broadly shared outcomes, which, although variously expressed, generally find their locus in the definition of sustainable development. It is concluded that a pluralistic approach to environmental ethics acknowledges the validity of diverse positions in value theory, thereby accommodating, to a far greater extent, the issues of *participation*, *survival* and *emancipation* than any alternative monistic value theory offered thus far.

#### ***5.4.3 Mediated dialectical relationship between environmental assessment and environmental ethics***

It is concluded that a relatively strong dialectical relationship currently exists between the disciplines of environmental assessment and environmental ethics. Mediated by developments in environmentalism pertaining to the crisis of *participation* and *survival*, this relationship manifests as a close alignment between the new generation approaches to environmental assessment and the pragmatic ethics, for example, of enlightened anthropocentrism. Such alignment is evident in the similar evolutionary trajectories of both disciplines as these have been directed by the broadly acknowledged imperative of sustainable development. In this respect, it is concluded that there has been a shift away from the narrow monistic approaches that characterised early developments in both disciplines (the narrow scientific objectivity of EIA; the search for a monistic theory of value in environmental ethics) towards an

acknowledgement of the autonomy of multiple environmental values - the holders of which can, nevertheless, find convergence about the shared ideals of sustainable development.

It is concluded that developments in both the disciplines of environmental assessment and environmental ethics have promoted the integration of the dissociated subjective and objective human cultural value spheres, and in this way they have the potential to contribute to an arrest of the pathology in the human-environment relationship. This is possible through the practical support for decision-making provided by a tool such as SEA, which is dialectically linked to a pragmatic environmental ethics, such as enlightened anthropocentrism. Through such relationship, the *integration* of the objective and diverse subjective aspects of human perception of the environment becomes a real possibility. The enabling condition for this is the priority of *we-language*, used to articulate shared sustainability ideals, that is acknowledged by these recent evolutionary products of environmental assessment and environmental ethics.

Whilst the imperative of sustainable development has clearly served as a catalyst in terms of the forged dialectical relationship between environmental assessment and environmental ethics, uncertainty concerning what this concept implies in practice places into question the significance of its supporting principles as a context within which alignment between the two disciplines is shown to exist. Although the idea of sustainable development commands widespread allegiance at a *theoretical* level, it remains a contested concept with respect to its *practical interpretation*. The contested views relating to a number of core ideas of sustainable development create what might be termed a taxonomy within which new generation approaches to environmental assessment (eg. SEA) and, for example, enlightened anthropocentrism can assume particular profiles. Depending on the degree of their taxonomic alignment, this holds certain implications for the constructive advancement of the dialectical relationship between the two disciplines. A closer examination of this taxonomy is, therefore, necessary to ultimately bring the dissertation's research theme to its conclusion.

## **5.5 SEA AND ENLIGHTENED ANTHROPOCENTRISM: LOCATING THEIR FUNDAMENTAL PRINCIPLES IN THE TAXONOMY OF SUSTAINABLE DEVELOPMENT**

### *5.5.1 Contested status of sustainable development*

Whilst the twin concepts of *sustainability* and *sustainable development* hold dominant positions in the field of policy and politics (Jacobs, 1999: 21), Hattingh (2000: 2) notes that their interpretation is fraught with a number of internal tensions. These potentially place into question the *practical usefulness* of the concept of sustainable development.<sup>217</sup> Unless these tensions are recognised and made explicit, allegiance to its principles, for example by the disciplines of environmental assessment and environmental ethics, is unlikely to contribute to the arrest of the pathology in the human-environment relationship.

The internal tensions that currently strain the ideal of a common interpretation of sustainable development have their origin in a number of key initiatives promoted during the 1970s to address the environmental problematic as this was perceived at the time. The concept of *sustainability* is linked to developments in Western countries when, as described in Chapters 2 and 3, the seriousness of the effects on the environment of consumption and production, which was attributable to post-war industrialisation, became widely realised. These were documented in two keystone reports - *Limits to growth* (Club of Rome, 1972) and *A blueprint for survival* (Goldsmith *et al.*, 1972) - which had a significant impact on subsequent economic and environmental policy debates.

Triggered by the above initiatives, and in response to a similar cognisance of the global state of environmental deterioration linked, in particular, to the social issue of poverty, a number of United Nations conferences dealing with the environment and development were convened to debate the situation (eg. the 1972 *Conference on the Human*

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ngably - most commonly conflated as the single concept of sustainable development - they have their origins in quite different historical contexts, which explains much of the contested status of the concept of sustainable development.

*Environment*, Stockholm; 1992 *Earth Summit*, Rio de Janeiro). A series of reports was also compiled which both informed and flowed from these conferences, and important publications in this respect include the *World Conservation Strategy* (IUCN, 1980) and *Our common future* (World Commission on Environment and Development (WCED), 1987). In a sense, these reactive initiatives reflected the level of discontentment of poorer countries with the Western preoccupation with the importance of protection of the natural environment rather than with the responses required to deal with global poverty issues and inequalities concerning access to environmental resources.

A dichotomy thus emerged in the fundamental principles upon which the rationale for sustainability and sustainable development, respectively, would later be variously defended from the platforms provided by the above initiatives. This is explained by Hattingh (2000: 3) as having originated from the two distinct historical contexts: The *Limits to growth* and *Blueprint for survival* initiatives provide one context, from which calls were made for a *halt in material growth* through structural adjustments to the global economy and social systems, in order to achieve a state of equilibrium [*vide* Daly's (1973) arguments for a steady state economy]; i.e. a breakaway from the linear model of growth and accumulation (Redclift, 1989: 4). The second context relates to the focus on *development*, considered necessary to address the essential needs of the world's poor (Rees, 1988: 273), which is implicit in the UN initiatives, such as WCED's (1987:43) interpretation of sustainable development as this is articulated in *Our common future*.<sup>218</sup> In a somewhat different emphasis to the *Limits to growth* arguments, *Our common future* indicates an allegiance to the principle of intersubstitutability of natural capital with human and financial capital (*vide* Norton, 1992: 99), and emphasises the issue of intra-, rather than inter-generational justice.

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<sup>218</sup> Sustainable development is defined as '*development* that meets the needs of present generations without compromising the ability of future generations to meet their needs'. This latter definition is clarified by two (often ignored) key provisions which include: the egalitarian imperative to respond to the unmet needs of the world's poor through *development* and the equitable distribution of resources; and the assumption that the limits for such development are imposed '[more] by present states of technology and social organisation [than by any other environmental limitations]' (WCED, 1987: 7).

Responding to concerns relating (*inter alia*) to the loose interpretation of the principle of resource intersubstitutability, an approach to merging the aims of sustainability and sustainable development was attempted by the IUCN in 1991. In *Caring for the earth: A strategy for sustainable living*, IUCN (1991) proposes a set of principles that centres on the need for equity, stakeholder participation in decision-making, the conservation of nature, and economic efficiency. According to these principles, the maintenance of an intact reserve of natural resources defines the basis of economic sustainability, with development enabled through human adaptation to change, for example, through improvements in knowledge, organisation and technical efficiency (Achterberg, 1994: 29). This principle is illustrated by the assumption that natural capital and other forms of capital are not intersubstitutable to the extent suggested, for example, in *Our common future* (Hattingh, 2000: 5). Quality of life, not merely survival, emerges as a core idea of sustainable development according to the IUCN (1991), as well as an appreciation of the value of nature, which is expressed as a principle of respect for all life, now and in the future. A weaker anthropocentric conceptualisation of sustainable development is thus evident in *Caring for the earth*, which deviates from the strong anthropocentrism of *Our common future*.

According to Hattingh (2000: 6) the integration of the concepts of sustainability and sustainable development that was proposed by the IUCN (1991) has not resolved the basic interpretive dichotomy, and as a consequence, the conflation of the two concepts into the single idea of sustainable development brings with it the previously described interpretive tensions. Nevertheless, a set of core ideas concerning sustainable development has emerged in a cumulative way, which attracts a broad base of support. Based on these core ideas, sustainable development has been introduced into the vocabularies of diverse groups, such as politicians, business, industry and environmentalists, who have previously defended divergent positions with respect to economic and environmental policies through recourse to quite different 'languages'.

Through the acquisition of a new vocabulary, a common medium for dialogue has evolved which - according to Quine's (1963: 42; 1969: 81) views on the role of language in terms of community expression of their interpretation of the world - now enables the

articulation of a broadly accepted understanding of the global environmental problematic and an expression of the urgency regarding its resolution. A secured *first level of understanding* of the concept's core ideas thus exists, in the sense that there is broad acknowledgement that sustainable development can serve as a new trajectory for development (Jacobs, 1999: 26-27). Explained in terms of Kuhnian theory, the notion of sustainable development theoretically provides a set of rules that informs a common appreciation of the key issues characterizing the environmental problematic and the general response that is required in this respect [*vide* Kuhn (1970a: 23-34)].

In spite of the fact that the concept of sustainable development has now achieved 'common currency' status - manifested most explicitly by the commitments to its implementation elicited from most countries attending the 1992 *Earth Summit* - its usefulness is beginning to be questioned since little progress has been achieved in terms of reversing the unsustainable course of global development. There is a growing realisation that this has resulted from the confusion about what is meant by the concept at a *second level of understanding*. In this respect, Jacobs (1999: 22) classifies the fractures which are developing in the allegiance to the goal of implementing sustainable development through reference to the following three areas from which criticism is lodged: its vagueness of definition and lack of agreement on what it means in practice (*vide* Achterhuis, 1994: 198); its obscurement, rather than resolution, of fundamental divisions in environmental values (eg. divisions between advocates of economic growth and parties who promote the maintenance of ecological integrity); and a rejection, for example, by emancipatory theorists, of its cultural source in modernism and scientific positivism - to which the origin of the environmental problematic is widely attributed in the first instance (*vide* Eckersley, 1992: 17-21).

Through reference to the dual historical context of the concepts of sustainability and sustainable development, which has been described above, a taxonomy that covers the divergence of interpretation of its practical meaning can be constructed. From this basis, taxonomic profiles of new generation approaches to environmental assessment and environmental ethics can also be constructed, making it possible to test their alignment with regard to their particular interpretations of sustainable development -

which is implicit in their supporting principles. The construction of this taxonomy will now be described.

### 5.5.2 *A taxonomy of sustainable development*

Whilst there is a persistence in the *theoretical* validity of the broad range of core ideas or moral objectives of sustainable development (eg. that environment and economy should be integrated; that the interests of future generations should be protected), disillusionment with its potential to realise these objectives confirms what Jacobs describes as a typical characteristic of any *contested concept* (similar to democracy and social justice, for example). This is the controversy generated at what has been described as the *second level* of interpretation of what the core ideas of sustainable development mean in *practice* (Jacobs, 1999: 25; Rees, 1988: 273). With an understanding of the main sources of fracture in allegiance to sustainable development Jacobs defines four major 'faultlines of contestation' (*degree of environmental protection, equity, participation, and scope of subject area*) through which two opposing and competing *second level* interpretations of the core ideas of sustainable development can be shown to arise (Jacobs, 1999: 31-38).

Table 5.1 presents a taxonomy that is created by the matrix of eight sources of interpretation yielded by the faultlines through the four main contested ideas of sustainable development. This matrix, which is discussed below, describes the multiple opposing positions of practical interpretation of the concept. Depending on which combination of interpretations are assumed to be valid, it is clear that multiple and distinct models of sustainable development can be adopted by various constituencies, which largely explains the concept's contested status and the failure of its ideals to be advanced.

**Table 5.1: A taxonomy of sustainable development (SD)**

<b>Contested core ideas of sustainable development</b> <i>(cf. Jacobs, 1999)</i>	<b>Opposing interpretations of sustainable development (SD)</b>	
<b><i>Degree of environmental protection</i></b>	Strong interpretation of SD	Weak interpretation of SD
<b><i>Equity</i></b>	Egalitarian conception of SD	Non-egalitarian conception of SD
<b><i>Participation</i></b>	Bottom-up interpretation of SD	Top-down interpretation of SD
<b><i>Scope of subject area</i></b>	Environmental protection	Social development

With regard to the dichotomy in views concerning the ***degree of environmental protection*** that is necessary to promote sustainable development, Table 5.1 indicates that this manifests as either a *weak* or *strong* interpretation.<sup>219</sup> From a *weak* perspective of sustainable development, levels of environmental protection are not assumed to place strict limitations on economic activity. This view, which typically characterises the perspective of governments and business, is that economic benefits can be traded off against those of environmental protection. The opposing *strong* view of sustainable development, to which, for example, the sciences of ecology and environmental economics typically give expression, is that economic activity should be promoted only to the extent that it does not exceed the carrying capacity of the environment. The concern here is that natural capital should be retained in an intact state and that current use of resources should not diminish the environment's capacity to sustain equivalent levels of usage in the future. Taken to the extreme, the strong view is also constructed around arguments for the intrinsic value of nature.

Table 5.1 indicates that ***equity*** as a second faultline in the taxonomy of sustainable development yields both the demand for an *egalitarian* world, in which equitable access

<sup>219</sup> This dichotomy of interpretation typically fuels debates between anthropocentric and ecocentric value advocates (Jacobs, 1999: 31).

to and re-distribution of resources favours developing countries and the poor in general, and the dominant *non-egalitarian* view that places little practical emphasis on equity as a key issue of sustainable development. Previous reference has been made to this interpretive tension, which has its origins in the dual historical context of the concepts of sustainability and sustainable development, and the contrasting emphases placed, for example, on *development* and *environment* in *Our common future* (WCED, 1987) and *Limits to growth* (Club of Rome, 1972) respectively.

The imperative of *development* - in order to promote the socio-economic upliftment of poor countries through the distribution of global environmental resources, and calls for the equitable access to these resources, is a general *egalitarian* trait evident in the rationale for sustainable development emanating from developing countries. Associated with this conceptualisation of sustainable development are the related demands for a reduction of consumption of global resources and the shrinkage of ecological footprints of Northern countries to free up the ecological space required by developing (Southern) countries. The emphasis on environmental limitations on economic activity - i.e. attention to green, rather than brown (social and poverty) issues - defines some of the *non-egalitarian* base arguments around sustainability emanating from developed countries. Related positions on sustainable development tend to exhibit little commitment to global resource distribution, and respond to the imperative for reducing consumption patterns by shifting, elsewhere, the mitigation of impacts of maintained/increasing levels of consumption in the developed world - which is, generally, to the countries of the developing world. An illustrative example is the expectation of developed countries that forest ecosystems in developing countries will be protected in order to serve as carbon sinks in counteracting global warming.

As indicated in Table 5.1, ***participation*** as third faultline in the taxonomy of sustainable development manifests either in a *top-down* or *bottom-up* approach with respect to its contribution to the discourse around sustainable development. In a *top-down* approach, governments and business tend to seek participation mainly from expert and key stakeholder groups in the process of establishing sustainability objectives. Broader participation only later becomes an instrumental requirement for achieving these

objectives - for example, during the implementation of policy. The *bottom-up* approach manifests in situations of strong participative democracy, where public participation is sought from the outset, for example, with respect to determining community visions of their localities and setting related targets for key environmental and social objectives. Taken to the extreme, *bottom-up* participation becomes a 'good' in its own right and tends to lose its objective relationship with other key determinants of sustainable development, such as carrying capacity and environmental limits.

The ***scope of subject area*** covered by the concept of sustainable development is shown in Table 5.1 to define the fourth faultline through which the environment is either *narrowly* or *broadly* perceived. Here, the motivation for sustainable development either takes the form of a *narrowly* defined emphasis on the protection of the natural environmental resource base - from which human needs are met - or it is more *broadly* articulated to include human development needs as central to the achievement of sustainable development; i.e. the attention is focussed on aspects such as the opportunity for self-fulfilment, participative rights, and protection of culture. This *broad* interpretation of sustainable development is described by Jacobs (1999: 37) as "[being] not just an environmental concept, but a general one, describing a new goal of economic and social life". The *narrow* scope of interpretation is a position typically adopted by green lobby groups, whilst the conservative, *broad* interpretation is typically associated with government and business. Concerns that the *broad* conceptualisation of sustainable development has shifted the focus beyond the environment to a position where the advocacy of general progress and concerns for social sustainability are raised to positions of priority give rise to an important source of tension which exists in terms of the practical definition of sustainable development.

Whilst various combinations of interpretation of the above four contested ideas of sustainable development could be regarded by different constituencies as being valid models for practical implementation, two extreme taxonomic profiles are described by Jacobs (1999) as the *conservative* and *radical* models of sustainable development. The weak, non-egalitarian, top-down and narrow interpretation of sustainable development combine to form a *conservative model*, which is typically espoused by national

governments and business. The *radical model*, which assumes its taxonomic profile through contrasting interpretations of the four contested core ideas of sustainable development, is typically adopted (*inter alia*) by environmental activists and development oriented community organisations.

Through reference to the described taxonomy of sustainable development and the extreme models according to which the concept is allied in practice, it is now possible to define the taxonomic profiles of new generation approaches to environmental assessment (eg. SEA) and enlightened anthropocentrism. These have been previously described as existing in dialectical relationship with one another through their common grounding in the principles of sustainable development. Depending on the alignment of these profiles, the validity of this relationship in terms of its practical impact on decision-making, for example pertaining to policy formulation and implementation, would either be strengthened or weakened. The question in this regard is whether the relationship exists at only the conceptual *first level* of interpretation of sustainable development, or whether it extends to the practical *second level* of interpretation as well?

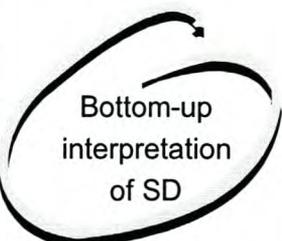
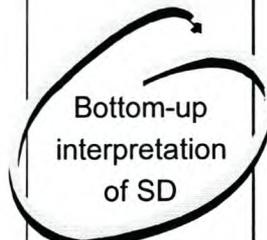
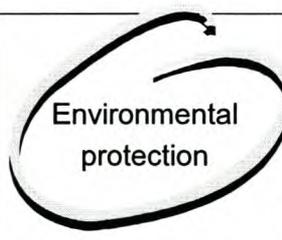
### **5.5.3 Taxonomies of SEA and enlightened anthropocentrism**

Thérivel and Partidário (1996: 5) describe the *strategic* component of SEA as referring to the set of objectives and principles that shape the vision and development intentions of policies, plans and programmes. In the case of the guidelines for SEA practice in South Africa (DEAT, 2000), these are represented by the 10 key principles listed in Table 5.2, which are shown to be clustered about the four core ideas of sustainable development and the associated faultlines of contestation defined by Jacobs (1999). Three principles (i.e. that SEA '*identifies environmental opportunities and constraints*', '*sets criteria for levels of environmental quality/limits of acceptable change*', and '*includes concepts of precaution and continuous improvement*') are clustered about the core idea relating to the *degree of environmental protection* required for sustainable development; five principles are clustered about the core idea of *participation*; and one principle is shown to be associated with the core idea relating to the *scope of subject area* covered by the concept of sustainable development.

*Caring for the earth* (IUCN, 1991) proposes nine principles as a basis for sustainable living. These principles relate not only to the justification of sustainable development, but also to its implementation through concrete actions (Hattingh, 2000: 6). They are also consistent with, and capture, Norton's (1984) views on the practical philosophy of enlightened anthropocentrism. Similar to the grouping of the principles of SEA, they are clustered in Table 5.2 about the four contested core ideas of sustainable development. Four principles (i.e. that '*the vitality and diversity of the earth should be conserved*', '*the exhaustion of non-renewable resources should be minimised*', '*development should be kept within the carrying capacity of the earth*' and '*respect and care for the community of life now and in the future*') are shown to be associated with the core idea relating to the *degree of environmental protection* required for sustainable development; three principles are associated with the core idea of *equity*; one principle is shown to be associated with the core idea relating to *participation*, and one principle is associated with the *scope of the subject area* covered by the concept of sustainable development.

**Table 5.2: Taxonomy of sustainable development (SD):  
Profiles of SEA and enlightened anthropocentrism**

Core ideas of SD <i>(after Jacobs, 1999)</i>	Principles of SEA <i>(after DEAT, 2000)</i>	Opposing interpretations of SD <i>(after Jacobs, 1999)</i>	Principles of enlightened anthropocentrism <i>(after IUCN et al., 1991)</i>	Opposing interpretations of SD
Degree of environmental protection	SEA identifies environmental opportunities and constraints	Strong interpretation of SD	Conserving the vitality and diversity of the earth  Minimizing the exhaustion of non-renewable resources	Strong interpretation of SD
	SEA sets the criteria for levels of environmental quality/limits of acceptable change  SEA includes concepts of precaution & continuous improvement	Weak interpretation of SD	Keeping within the carrying capacity of the earth  Respect and care for the community of life - a duty to care for other people and all forms of life, now and in the future	Weak interpretation of SD
Equity	No explicit equity principle; however, SEA principles are set in the context of the National Environmental Management Act, 1998 (NEMA), which advocates development that is socially sustainable (DEAT, 2000: 14)	Egalitarian conception of SD	Improving the quality of life	Egalitarian conception of SD
		Non-egalitarian conception of SD	Forming a world alliance to implement sustainability on a global scale  Changing personal attitudes and practices, in accordance with an ethics for sustainable living	Non-egalitarian conception of SD

Core ideas of SD <i>(after Jacobs, 1999)</i>	Principles of SEA <i>(after DEAT, 2000)</i>	Opposing interpretations of SD <i>(after Jacobs, 1999)</i>	Principles of enlightened anthropocentrism <i>(after IUCN et al., 1991)</i>	Opposing interpretations of SD
Participation	<p><i>SEA is a participative process</i></p> <p><i>SEA is part of a tiered approach</i></p> <p><i>SEA is set within context of alternative scenarios</i></p>	 <p>Bottom-up interpretation of SD</p>	<p><i>Enabling communities to care for their own environments</i></p>	 <p>Bottom-up interpretation of SD</p>
	<p><i>SEA begins with conceptualisation</i></p> <p><i>SEA is flexible, adaptable to planning and sectoral development cycle</i></p>	<p>Top-down interpretation of SD</p>		<p>Top-down interpretation of SD</p>
Scope of subject area	<p><i>Scope of SEA determined within wider context of environmental processes</i></p>	 <p>Environmental protection</p>	<p><i>Forming a national framework for the integration of development and conservation</i></p>	 <p>Environmental protection</p>
		<p>Social development</p>		<p>Social development</p>

An appraisal of the three SEA principles clustered about the core idea of *environmental protection* (Table 5.2) indicates a taxonomic association with the *strong* interpretation of sustainable development. The requirement that both quantity and quality of resources

should be maintained and enhanced in the long term is an explicitly stated principle of SEA, and is aligned with the *strong* commitment to maintaining current levels of natural capital stock and living within the carrying capacity of the biosphere. In this regard, there is a definite emphasis on environmental capacity being the point of departure in terms of defining the constraints and opportunities that the environment places on development (Rossouw *et al.*, 2000: 4). Spatiotemporal scale is thus an important taxonomic determinant of SEA, which perceives environmental protection in the context of a community-oriented scale, dealing with aspects of a culture's interaction with the greater ecological community (*vide* Norton, 1995a: 55-56). This time scale corresponds to an ecological time scale (conceivably, more than 100 years) on which multiple generations of human communities relate to populations of other species sharing the same habitat (Norton, 1995a: 57).<sup>220</sup>

The *strong* position on *environmental protection* that is expressed in the sub-set of principles for SEA is somewhat of an anomaly given the 'developing country' status of South Africa, and the alignment of national policy with the development imperative and resource substitutability concept articulated, for example, in *Our common future*. In this respect, the taxonomy of SEA that aligns it with the 'dark green' approach to sustainability defined by Thérivel and Partidário (2000: 276) is one that is also quite at odds with the SEA philosophy elsewhere in the world - which exhibits greater alignment with the 'light green/ecological modernisation' approach to sustainable development (Thérivel and Partidário, 2000: 277); i.e. alignment with the *development* philosophy articulated in *Our common future*.

As stated by Hattingh (2000: 2), the National Environmental Management Act (NEMA) - in which SEA in South Africa may ultimately find its statutory context - clearly subscribes to this latter conceptualisation of sustainable development.<sup>221</sup> Thus, despite policy

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<sup>220</sup> This is different to EIA, for example, which typically deals with environmental protection issues arising from locally developed values that express the preferences of individuals located in the context of established limits and rules (eg. regulations, market conditions) according to which individual transactions take place; eg. development projects considered in the context of say a 5-10 year time horizon.

<sup>221</sup> South Africa is a country that has only recently emerged from a long history of racially discriminating policies (apartheid, racially separate development) that have left the majority of the population struggling participants in

commitments to environmental protection, the socio-economic conditions in South Africa indicate that the priorities of government are likely to more easily lean towards responding to immediate social needs rather than to any other environmental imperative.<sup>222, 223</sup> It is a situation about which, for example, Norton (1986c: 283) acknowledges that it is difficult to take the long view required of sustainable development policies, and the extent to which the principles of SEA will be effective in practice in terms of forcing this long view is likely to be an evolving rather than immediate phenomenon.

The four principles of enlightened anthropocentrism that are clustered in Table 5.2 about the core idea of *environmental protection* have a similar taxonomic definition to the SEA principles with which they are shown to be associated. For example, the notion of conserving the vitality and diversity of the earth, the principle of alertness to the carrying capacity of the earth and the long range view concerning the duty to care for humans and all forms of life are clearly associated with the *strong* interpretation of sustainable development. In this respect, Holling's (1992) views on adaptive environmental assessment and management provide useful reinforcement of the enlightened anthropocentric taxonomy regarding the protection of ecologically significant processes (keystone processes). The *strong* view concerning these

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a third world subsistence economy. Given this political history, it is not surprising that the present democratically elected government finds itself in a position where it is required to deliver on expectations for massive social reconstruction and economic development. To this effect, national imperatives that focus on the most pressing problems facing the country include strategies for poverty relief, rural development and job creation. Directing the government response to these imperatives are new policy instruments such as the *Reconstruction and Development Programme* (RDP) - the implementation of which is critical for maintenance of government legitimacy (Lewis, 1999) - and the *Growth, Employment and Redistribution Policy* or GEAR (Republic of South Africa, 1996), which sets out the government's macroeconomic strategy for enhancing economic growth and employment creation by freeing financial resources for *development*.

<sup>222</sup> Neither the RDP White Paper (which describes the programme's implementation strategy) nor GEAR makes obvious provision for environmental issues (i.e. beyond the social aspects of the environment, which focus mainly on promoting intra- rather than inter-generational equity).

<sup>223</sup> It is stated in the *Draft White Paper on the Energy Policy of the Republic of South Africa*, for example, that in the post-oil-crisis era the "Limits to growth" school of thought has receded (Department of Minerals and Energy, 1998: 17). In this context, the energy policy response which emerges is one of revised strategy which is focused quite strongly on reduction of supply risk through securing greater diversification and flexibility in the primary energy supply base (sources and types) of mainly non-renewable resources for energy generation. Although there is attention given to the long-term issue of developing renewable energy resources, this does not indicate a strong commitment to *reducing dependency on* (or *promoting intergenerational equity* in terms of access to) non-renewable energy resource such as crude oil and gas (Department of Minerals and Energy, 1998: 21, 26, 66).

processes is that they should be maintained in order to ensure that renewal capital (eg. regeneration potential of existing plant species) is maintained (Holling, 1992: 478, 482). Recourse to scientific method - *inter alia*, the science of ecology - is a principle shared by both enlightened anthropocentrism and SEA in order to determine the levels of resilience of such keystone processes to anthropogenic perturbation; i.e. the amount and type of economic activity that natural ecosystems are capable of supporting (*vide* Sections 2.3.3.2 and 3.4.3).

The notion of *equity* is not explicitly stated by DEAT (2000) as a principle of SEA, but is shown in Table 5.2 to flow from the principles supporting the National Environmental Management Act (NEMA, 1998) - in which SEA finds its contextual setting - which clearly advocate development that is socially sustainable/equitable.<sup>224</sup> As described by Hattingh (in prep.) the first principle of NEMA is that environmental management must put people and their needs at the forefront and must serve their interests fairly (*vide* DEAT, 1999: 6), and, therefore, it clearly finds its taxonomic definition in the *egalitarian* conception of sustainable development, as indicated in Table 5.2. Similarly, the principles of *equity* implicit in enlightened anthropocentrism promote a global *egalitarianism* fashioned according to the Leopoldian evolutionary ideal which supports the fitness of the global community (Section 3.4.2); i.e. a fitness that requires some limitation on freedom of individual actions of, for example, developed countries, through the curtailment of their high levels of resource consumption. In promoting an *egalitarian* view on human interests into the indefinite future, enlightened anthropocentrism recognises the enabling condition for this, which is the maintenance of the integrity of ecosystems and ecosystem processes necessary to sustain human life.

The application of SEA in South Africa moves beyond the *top-down* approach to *participation*, through which governments have traditionally retained control of the sustainable development agenda, and directed this largely through technocratic strategy (Davidson, 2000: 30-31). The SEA principles pertaining to *participation* have a strong *bottom-up* emphasis (Table 5.2), which clearly identifies its associated taxonomic

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<sup>224</sup> The principle of equity in SEA is receiving increasing international attention, as described in Gosling's (1999: 1) interpretation of its evolution in the UK.

position around this core idea of sustainable development.<sup>225</sup> The *participation* that is invited through SEA is also intended to function differently to the general provision incorporated, for example, in NEMA, which according to Hattingh (in prep.) is evident in the structures that the Act provides for an *adversarial* mode of participation - through which the right to argue 'for' or 'against' proposed development, or act as 'whistle-blower' in the case of breaches in environmental law, is strongly supported. As previously stated, the South African conceptualisation of SEA is that it is a process that assumes no prior formulation of 'development intention', which reduces the risk of adversarial participatory conflict as long as its main pillar of participatory visioning is employed effectively; i.e. the requirement that the aim of participatory dialogue ultimately finds expression in the use of *we-*, and not multiple (adversarial) *I-languages*.

Enlightened anthropocentrism holds a similar taxonomic position to SEA insofar as *bottom-up* participation is viewed as a necessary principle that empowers communities to direct decisions pertaining to their environment. The values that inform community discourse around sustainable development are experienced in a context and scale that is typically multi-generational - they emerge across multiple generations in a culture - and in this respect they can be described as 'constitutional-type' values (Norton, 1995a: 54). The process through which these 'constitutional-type' values are defined ['citizen', as opposed to 'consumer', values (*vide* Sagoff, 1988: 8)] requires that there is acknowledgement of the multiple ways in which communities justify them through a *bottom-up* mode of participation. Enlightened anthropocentrism assumes that convergence (articulated in *we-language*) around the 'constitutional' values that guide sustainable development is unlikely to be secured through *top-down* approaches, which includes in this definition, the narrowness of participation permitted by theoretical monism (Section 3.4.1).

The principle of SEA, according to which its *scope* is determined within the wider context of environmental processes, clearly has its emphasis on the relatively *narrow*

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<sup>225</sup> As discussed by Norton and Ulanowicz (1992: 244-249) environmental problems are rarely clearly formulated when they first emerge in public discourse, which requires an interactive (cyclical 'bottom-up') public process in which public values guide the modelling of solutions; i.e. the process precedes technocratic directive.

priority of *environmental protection* as the dominant motivation for sustainable development. Similar to the alignment of other SEA principles with the *strong* position on the *degree of environmental protection* necessary for sustainable development, this is perhaps surprising, given South Africa's developing country status. In this respect, it might have reasonably been assumed that SEA would take a much *broader* interpretation of sustainable development, to include human needs and preferences as central to the achievement of sustainable development. The position of enlightened anthropocentrism with respect to the *scope* of environmental protection necessary for sustainable development is similarly characterised by a relatively *narrow* emphasis on the maintenance of the vitality and functioning of the natural environment, which enables the perpetuation of human culture and consciousness. Whilst the *broader* issues of human needs and preferences are not considered to be an unimportant aspect of enlightened anthropocentrism, these are assumed to be dependent in the first instance on intact and functional ecosystems, and assume their secondary position of priority accordingly.

From the above analysis, it can, therefore, be concluded that the disciplines of environmental assessment (its new generation approaches) and environmental ethics (enlightened anthropocentrism) show a common alignment with regard to their grounding in the key (contested) principles of sustainable development. Significantly, the related taxonomic profiles of both disciplines reflect what Jacobs (1999) defines as a *radical model* of the concept's practical interpretation, which implies a strong, egalitarian, bottom-up and broad interpretation of sustainable development at the level of implementation of sustainable development. The significance of this will now be described in terms of the potential for the dialectical relationship between environmental assessment and environmental ethics to support the realisation of the ideals of sustainable development.

## **5.6 THE DIALECTICAL RELATIONSHIP BETWEEN ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTAL ETHICS: ITS POTENTIAL TO SUPPORT THE REALISATION OF THE IDEALS OF SUSTAINABLE DEVELOPMENT**

In the introduction to the dissertation it is suggested that sustainable development offers the potential to arrest the current pathology in the human-environment relationship. However, from the discussion in this concluding chapter, it is clear that this cannot assume its validity merely from a global allegiance to the *idea* of sustainable development; i.e. an allegiance restricted only to a shared *theoretical level* of understanding of what is implied by the concept. Importantly, there is a requirement that this should be extended to a common appreciation of the *practical interpretation* of sustainable development.

The *radical model* of sustainable development, in which both new generation approaches to environmental assessment and enlightened anthropocentrism are located, places a particular emphasis on participative democracy, and in this respect, the current trajectories of both disciplines strongly promote the type of *bottom-up* participation that is implied by this model. Approaches to environmental assessment, such as SEA, and the practical ethics of enlightened anthropocentrism respect the autonomy of the subjective human cultural value sphere, and elevate the associated *I-languages*, through which subjective human values are articulated, to a level that is no longer subordinate to the *it-language* of scientific materialism. Importantly, the disciplines are capable of dealing with the potential for linguistic incoherency, which might accompany the invitation of participative democracy by focussing on the inter-subjective *we-language* of shared sustainability ideals, which are defensible, in multiple *I-languages*, through reference to divergent environmental values and moral positions.

Sustainable development, according to the *radical model*, does not imply a diminished appreciation of the objective human cultural value sphere, represented, for example, by the value attached to science and its objective methods. If anything, the practice of SEA and the philosophy of enlightened anthropocentrism attach an increased importance to

science as an essential medium for achieving the ideals of sustainable development. For example, it is recognised in SEA that there is a need for continued advancement in scientific understanding of the capacity and thresholds (also indicators), within which the environment is capable of delivering environmental services necessary for human survival and improving the quality of life. Similarly, the objectivity of ecological science is an important underpinning principle of enlightened anthropocentrism, which perceives its role in promoting the perpetuation of human consciousness into the indefinite future, through the understanding of ecosystem management that it provides to present generations, which, as a consequence, can pass on to future generations functional ecological reserves necessary to sustain human consciousness.

Importantly, the *radical model* of sustainable development offers the potential to integrate the subjective and objective human cultural value spheres, not only at a conceptual level, but also in practice. In this respect, the revealed dialectical relationship between environmental assessment and environmental ethics can make an important contribution through application of its practical philosophical principles and instruments, which can be employed to support decision-making around issues of sustainable development. The alternative, which is a continued allegiance to the *conservative model* of sustainable development, leaves the world more or less in its current pathological state (Hattingh, 2001: 7). This state is one that is characterised by the dominance of scientific materialism and the persistence of short-term economic policies and individualistic preferences of societies that subscribe to this conservative model, which are depleting the environmental resource base upon which the persistence of human consciousness depends.

The *radical model* of sustainable development and the related taxonomies of environmental assessment and environmental ethics reject conservatism, and open up the possibility for the emergence of a new intersubjective moral disposition concerning human perception and valuation of the environment. This is unlikely to manifest as a narrowly defined new ideology, based on a single conceptualisation of sustainable development, but will be successful only if it is continually open to dialogue and accommodation of different values and positions relevant to sustainability - particularly

in the multiple contexts in which these arise. It is also unlikely to manifest through business-as-usual, and it is here that the possibility for revolution arises. In the Kuhnian tradition of revolution, the new paradigm of human-environment relationship that may emerge through global allegiance to the *radical model* of sustainable development will be one that displaces the present *conservative model*, and makes possible the realisation of the concept's adequately justified ideals.

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