Reconsidering nature and accountability: the possibilities of strategic postmodernism

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CHAPTER EIGHT

ENVIRONMENTAL ACCOUNTABILITY AND THE KYOTO PROTOCOL

The ultimate goal of the climate treaty to which the Kyoto Protocol is attached is stabilizing atmospheric concentrations of greenhouse gases at levels that will avoid “danger” to economies and ecosystems (Jacoby, Prinn & Schmalensee, 1998, p. 60).

The previous chapter situated climate change discussions within broader historical, scientific and political contexts that have been operational within this debate. Having outlined some important dimensions of the discussion in the previous chapter, I will now focus on two particular aspects, firstly the Kyoto Protocol and secondly, the Australia response to climate change and the Kyoto Protocol (this will be discussed in the following chapter). In this chapter I will explore the relationship between the Kyoto Protocol and environmental accountability, showing how the Protocol delimits the kind of responses that are possible within an international forum. I will begin by exploring the relationship between climate change and environmental accountability.

1. CLIMATE CHANGE AND ENVIRONMENTAL ACCOUNTABILITY

When we pause to consider environmental problems, their complexity forces us to simplify and to dichotomize the world into a series of either/or propositions (Cantrill, 1996, p.87).

As I have discussed in the previous chapter, international climate change debates that have been led by science and have been discussed through discourses of political and economic managerialism have been
occurring for at least the last twenty years (Opie & Elliot, 1996; Ralston-Saul, 1997). Debate framed within such discussions acknowledge that there is a need to act in a more environmentally responsible manner and a need to be held accountable for the environmental consequences of past, present and future decisions on generations that exist now and in the future (these are all key features of sustainable development set out in Agenda 21, including intra and inter-generational equity and this is also discussed within the accounting literature, by Geno (1995) and Lamberton (1998). However, such acknowledgement is also combined with a narrow view of how such accountability may take effect and what it should or would look like. The measurable, the scientific and the most ‘cost effective’ perspectives are given both explicit acknowledgement (Article 10 of the Kyoto Protocol; Sagar & Kandlikar, 1997) and are implicitly accepted within mainstream climate change literature (Peck, 1998) and mainstream environmental literature more broadly (Brundtland, 1987; Pearce, 1989). Article 10 of the Kyoto Protocol states that a Party to the agreement must formulate “cost-effective national and where appropriate, regional programmes to improve the quality if local emission factors”.

The dependence on ‘method’ as it informs the science, politics and economics of discussions such as this has been suggested in previous chapters, whereby debates of this kind assume that the impact of the artefacts of ‘culture’ on wild ‘nature’ can be catalogued, measured, targeted, controlled and ultimately solved (Harvey, 1996; Opie & Elliot, 1996). Privilege is thus offered to those dimensions of ‘climate change’

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1 Agenda 21 was agreed to at the Rio Earth Summit in 1992, being a document outlining the agenda for sustainable development into the next century.
that can fulfil such requirements, and as a result alternatives are denied visibility in much of the debate. For example, there are alternative ways of discussing climate change that may not rely on scientific evidence as a basis. It is also possible that access to scientific language may be denied (because of specificities of cultural approaches and belief systems about nature, or because of the construction of the ‘expert’ within modern scientific circles) and whereby ideas about possible ‘solutions’ may not be founded in ‘artificial’ targets, economics or science, but may be found in other less privileged ‘realities’ which may involve passion, spirituality, religion or culturally specific narratives (Peterson & Peterson, 1996). Birkin argued that these ‘other’ approaches are vital to any understanding of how reason is constituted in any given discourse. He wrote that

responding to intuition, emotion and wisdom does not entail abandoning reason. Intuition, emotion and wisdom are formative in creating values that precede reason. Reason, as communicative discourse, is the tool by which values are assayed and expressed within culture (Birkin, 1996, p.242).

This is a perspective that is supported by feminist critiques of science whereby scientific representation of nature are implicated in the continued objectification of the environment as a set of categorised parts, which approach fails to recognise nature as a dynamic subject, with lived, active, dynamic dimensions that are constitutive of complex realities (Figlio, 1996; Harding, 1998). Figlio has argued that this way of viewing

nature carries the weight of a destruction of emotional dimensionality (1996, p. 75).

The climate change debate, although limited to narrowly deterministic discourses on which policy decisions about environmental
accountability are being made (Oravec & Cantrill, 1996), combines both the importance of the global dimension of the issue and the importance of the more local interpretations of the problem (defined by geo-political and national boundaries, so may not be local in terms of bio-regions, townships, cultural groups and so on). Although this may appear promising as it challenges the either/or nature of modernist discourse and it combines both the local and the global (an important element of strategic postmodern theory as suggested by Lemert, 1997 and Gare, 1995), the discourses that inform both are not significantly different as each combines the same emphasis on method based science, ‘cost-benefit’ economics and ‘interest based’ politics.

Press (1994) argued this is one of the main problems associated with the development of democratic principles in the age of ecology, because the time-lines of most of our political systems are short in order to facilitate democratic participation, whilst the time-line associated with environmental decline stretches into the lives of future generations. This means that at a national level the tools used to analyse global debates such as climate change, are predictably short sighted. These have been influenced heavily by industries associated with the burning of fossil fuels, mining, car manufacturers and other non-government organisations such as Greenpeace and Friends of the Earth (Gelbspan, 1997). At an international level, the inequities of global power place more influence in the hands of the United States, the European Union and Japan than other interested nations, with many claiming that they will not make international agreements legally binding until after the United States Congress has done so. Chatterjee & Finger reported that

At the final INC² meeting in April in New York, everybody bowed down to US pressure. Previously, a US government commission had
concluded that the USA could actually adapt to and mitigate the consequences of climate change, and furthermore win a strategic advantage by doing this (1994, p.44).

This reflects a pragmatic approach to environmental negotiations, but it is also reflective of the way that the actual issue (global environmental decline) can become an almost irrelevant backdrop to the complex and abstracted political, scientific and economic approaches to the problem. In the example provided by Chatterjee and Finger (1994), the perspective supported by the United States places faith in the ability of technology to handle the problem, which is indicative of an assumption that humans have superior knowledge of nature and can 'beat' the effects of climate change through this (Katz, 1995). Not only is it assumed that this is possible, it is also assumed that a competitive advantage can be gained from such an approach. This competitive advantage rests on the idea that the United States will develop the climate change beating technology, and other nations will be forced to buy it from them. This links some key ideas, firstly that human are separate from nature and superior to it; secondly, we do not have to value any dimension of natural processes beyond the effect that it has on human life; thirdly, environmental catastrophes present another opportunity to solidify the dominance of one nation over another through 'essential' technological developments, perpetuating global inequity. Livingston wrote that this kind of techno-fix approach to global environmental issues is a further objectification of nature and it is entirely out of control, the human technomachine guzzles and lurches and vomits and rips its random crazy course over the face of the once blue planet, as though some filthy barbaric fist were drunkenly swiping with a gigantic paint roller across an ancient tapestry (1981, p.20).

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2 Intergovernmental Negotiating Committee, set up in December 1990 and dissolved in February 1995, being replaced by the Conference of the Parties (COP).
The literary turn of Livingston’s (1981) description, makes it apparent how dominant approaches (like that of the United States Government) have obscured the lived dimension of the experience of climate change at both a human and non-human level (Cantrill, 1996; Oudshoorn, 1996; Peterson & Peterson, 1996; Soper, 1996; Soule, 1996) and presents a form of representation in which the notion of nature as a picture of objects arises (Figlio, 1996, p. 74).

In this sense, nature as a lived subject becomes an economic ‘object’ and political ‘object’, an ‘object’ that needs to be managed through policy. In relation to this Manes (1996) has argued that “living nature is under siege”, whereas ‘managed’ nature may be reaching proportions not seen before as a result of debates such as this one (Zimmerman, 1994; Peterson & Peterson, 1996; Harvey, 1996).

In the following section I will contextualise the Kyoto Protocol, showing how it developed and under what conditions it may take effect.

2. THE KYOTO PROTOCOL: CHRONOLOGY OF EVENTS

As this chapter is concerned with ‘representations’ of environmental accountability within the Kyoto Protocol, it is important to have some grounding in the process, meetings and international conferences that led up to this debate. The ‘chronology of events’ (Table 1; see also Appendix 2) sets the scene through which the Kyoto Protocol was negotiated, this Protocol being significant because it was the first attempt to set greenhouse gas emission targets with legally binding significance. This is one of the most publicised attempts to acknowledge
national and international accountability for the environmental effects of current social, economic and political structures, policies and decision making and as such, is significant in understanding, challenging and developing notions of international environmental accountability.

Briefly, The Third Conference of the Parties (COP3, from which the Kyoto Protocol emerged in December 1997) is the third international meeting of the Convention on Climate Change, set up in Rio de Janeiro in 1992 in order to construct policy responses to a growing body of scientific evidence that suggested the human impact on global climate was significant. The evidence was provided predominantly by the Intergovernmental Panel on Climate Change in two reports, the first in 1990 and the second in 1995. This was discussed in the previous chapter. The aim of these meetings has been to formulate a way in which respective governments can be held accountable for each signatory nation's greenhouse gas emissions in the formulation of the Kyoto Protocol.

This is quite obviously a difficult task, as the energy and industrial make-up of each signatory nation's economy is vastly different. Along with this, the level of importance placed on environmental issues within respective communities also differs (Cantrill, 1996) as do the ways that different cultures have come to represent nature and integrate nature into belief systems (Soper, 1996). It is however, the first of these that has been considered to be of 'real' concern within international climate change debate, as numerous studies have proposed that the measurable value we place on the environment should determine the amount and ways in which we are prepared to be accountable for our actions toward it (Brundtland, 1987; Pearce, 1989; this is also discussed in Harvey, 1996). This approach presupposes the ability to
categorise and quantify nature, placing a quantifiable or monetary value on the willingness to preserve it and quantifying the consequences of the outcome of this process - particularly in relation to the economy.

Lehman (1996) has argued that such principles are inadequate, because they link the environment unproblematically to the institutions of capitalism without exploring the effect that each has on the other. He wrote that the approach has

linked with the institutions of capitalism without recognising that
nature has value to people which cannot always be explained in
numerical terms (Lehman, 1996, p. 674).

Although global warming has 'global' consequences, each nation has claimed that they have contributed 'differently' to the problem and should thus be held accountable in a differentiated manner, proportional to the effect such accountability would have on the national economy and also the contribution that the structure of that economy has made to climate change. It is clearly written within the Kyoto Protocol that the adoption of procedures, policies and measures should be “in accordance with national circumstances” (Article 2 (1), Kyoto Protocol, p.2). This is also repeated in Article 2 (4), where it is stated that the recommendations should be implemented “taking into account the national circumstances and potential effects”.

Initially greenhouse gas reduction targets were to be voluntary, and throughout the process governments (from 1979-1995, see Table 1) had shied away from the commitment to legally binding agreements. They argued that they would be too difficult to negotiate, too difficult to implement and too distorted to 'really address the issues (O'Riordan & Jager, 1996). Instead, the agreements were to have symbolic value and be implemented in good faith, rather than as a result of possible legal
action. Throughout this time, there were mounting arguments that these agreements should have legal significance, particularly from non-governmental environmental organisations who provided evidence that governments were failing to fulfil their 'in good faith' agreements and that greenhouse gases were increasing in all nations that were party to the agreement (Gelbspan, 1997). There was also much concern about 'other' nation's willingness to join in the effort to control greenhouse gas emissions, if a precedent was not established by the parties to the original agreements (Chatterjee & Finger, 1994; Hogarth, 24/6/97; Easterbrook, 1997; Gelbspan, 1997; Hammitt, 1997; Dunn, 1998).

Concerns about these 'other' nations is one of the most widely cited reasons for not ratifying the current agreement and it is largely believed that the agreement will mean nothing if these countries do not engage in attempts to reduce greenhouse gases (Dunn, 1998). As Hogarth reported in the Sydney Morning Herald, the

big wild card for future events after Kyoto is the developing nations, with the Third World contribution to greenhouse gas pollution set to rise to 52% of the global total by 2020 (24/11/97, p. 5).

The effect of this is by no means insignificant, but the presentation of this information has generally ignored the disproportionate per capita reliance on fossil fuels in the 'developed' world. The United States alone, which counts for less than 5% of the global population, is responsible for approximately 25% of total global greenhouse gas emissions (Kronick 1999). It also ignores the benefits and 'advances' enabled in the developed world through a reliance on fossil fuels and to deny the 'other' parts of the world the same advantages raises a question requiring serious ethical contemplation (Chatterjee & Finger, 1994). The

3 Non-signatory nations, largely described as 'developing' or 'industrialising' within the literature.
Kyoto Protocol has attempted to handle the complexities of this by allowing the parties to the agreement to enter into relationships with 'other' nations that encourage shifts away from greenhouse gas producing technology in partial fulfilment of their commitments (these are outlined in Article 12 of the Kyoto Protocol and are called Clean Development Mechanisms). Although the actual details of this arrangement are yet to be finalised, there has been a recognition of the need to address greenhouse gas emissions in nations beyond those that are party to the agreement.

With the inclusion of a mechanism such as this one, the Third Conference of the Parties signed the Kyoto Protocol with legally binding significance. Even so, the Protocol needs to be ratified by at least 55 countries, responsible for at least 55 percent of the total carbon emissions of the Annex I countries to become legally binding (these are listed in Appendix 1). As at the 9th of April, 1999, only Antigua and Barbuda, Bahamas, El Salvador, Fiji, Maldives, Panama, Trinidad and Tobago, and Tuvalu had ratified the agreement (none of which had made commitments within the Protocol to reduce or stabilise emissions because they were not included in Annex I countries but were included in the negotiations; Appendix 9 shows the current state of signatories and ratification). Without the ratification of the document there is no legally binding ground for accountability, although parties to the agreement have implemented some policy changes and measurement procedures (as evidenced by the establishment of the Australian Greenhouse Office, the development of the Australian Carbon Accounting System and the generation of the Australian National Greenhouse Strategy, all of which will be discussed in the following chapter), these are open to significant manipulation if the agreement is not ratified. It has been argued that this enables large emitters such as Australia to continue to be associated with the international concern
over climate change, without significantly shifting the dependence that
the nation has on greenhouse gas producing technology (Doyle &
Kellow, 1992; Hogarth, 13/12/97; Horden, 17/5/99).

The overall aim of the Kyoto Protocol is to reduce the amount of
greenhouse gases emitted into the atmosphere by 'developed' nations to
1990 levels (or below) within the period of 2008 to 2012. In order to
encourage national environmental accountability for greenhouse gas
emissions, science led initiatives (predominantly in the form of the IPCC
but also in counter-scientific discourse⁴) and economic modelling (based
on scientific methodologies, an example of which is MEGABARE and
this will be discussed in the following chapter) have provided the
foundation on which discussion has taken place (Jager & O’Riordan,
1996; Frank, 1997).

Although time-lines and chronologies can over-simplify the information
that is provided and this does not pay sufficient attention to the issues
just raised, they can facilitate an understanding of background
information; Table 1 on page 285 shows the events that led to the
development of the Kyoto Protocol. It is with this particular document
and Australia's response to it, that the 'logic' of climate change debates
is exposed to be a process of conflicting and competing discourses,
vying to solidify 'meaning' within limited and functionalist terms. This
comes at the expense of alternative approaches and as the result of
exclusions. I will now consider the broad implications of the Kyoto
Protocol on the construction of discourses of environmental
accountability (this will be followed in the next chapter by an analysis of
Australia's responses to the Kyoto Protocol).

⁴ Counter scientific discourse was used to create discourses of skepticism in climate
change debates. This was generally sponsored by large emitting corporations, such as
those involved in the oil and gas industry (Gelbspan, 1997; Hogarth & Dayton,
24/22/97).
Chapter 8

1979: First World Climate Conference. World Climate Programme (WCP) endorsed.

1988: Toronto Conference. First major international meeting on climate change, bringing governments and scientists together. Industrialised countries volunteer to cut carbon dioxide emissions by 20% by the year 2005. United Nations Intergovernmental Panel on Climate Change (IPCC) established requiring international climate scientists to review and report on the science, impacts and responses to climate change.


November - Second World Climate Conference calls for negotiations on a Framework Convention on Climate Change (FCCC).

December - UN General Assembly Resolution 45/212 established the Intergovernmental Negotiating Committee on a Framework Convention on Climate Change (INC) to be developed by June 1992.


1992: FCCC was opened for signature at the Rio Earth Summit. As at 20th July, 1998 the FCCC had been ratified by 175 nations.


21st September - Developed country parties begin submitting national communications describing their climate change strategies. Alliance of Small Island States (AOSIS) formed to lobby for a legally binding protocol.

1995: February - INC is dissolved. Conference of the Parties (COP) becomes the Convention’s ultimate authority.

March - COP1 is held 28 March - 7 April, Berlin. Delegates from 117 parties, 53 observer states, and 2000 observers and journalists attend. Convention found to be too weak. Parties agreed to 'Berlin Mandate' to negotiate a Protocol or other legal agreement by COP3 containing specific emissions limitations and reductions.

December - IPCC releases its Second Assessment Report. 2000 scientists conclude that the balance of evidence suggests a discernible human influence on climate change.

1996: July - COP2 is held 8 - 19 June, Geneva. Parties agree to develop legally binding commitments in COP3. Emissions trading suggested for the agreement.

1997: December- COP3 is held 1-10 December, Kyoto. Adoption of legally binding greenhouse gas emissions targets for all industrialised nations, the Kyoto Protocol. Includes provisions for emissions trading between countries. Notably, under the Protocol Japan must reduce emissions by 6%, USA by 7%, the EU by 8%, by 2010 against 1990 levels. Three countries were allowed to increase their emissions, Norway by 1%, Australia by 8%, and Iceland by 10%.

Table 1: A chronology of events leading to the signing of the Kyoto Protocol
3. CONSIDERING THE TEXT: TAMING NATURE?

A brief analysis of the Kyoto agreement indicates the meta-narratives of nature (discussed extensively in chapter five) that are perpetuated within the construction of international environmental accountability in regard to climate change. As I have stated previously international climate change discussions have emphasised the role of procedural accountability, through national implementation of greenhouse gas policies and measures in order to fulfil the requirements set out in the Protocol. In this sense, climate change is constructed as 'manageable' and 'measurable' through instruments of the market and national policy initiatives which further enables discourses of nature from an anthropocentric humanist position. This privileges a human viewpoint. Jagtenberg & McKie argued that this involves the bracketing out of phenomena - and through the construction of nature as other. In these processes, political agency is denied other species, as is their basic right to exist as knowable in texts (1997, p.52).

In this sense, global attempts to encourage accountability for the impact of culture on nature in the past and the possibility of this in the future, is constructed in opposition to the greater objectives of culture. For example, nature is seen to threaten material prosperity, nature poses a challenge to economic growth and nature resists development. Nature can be controlled through shifts in cultural technology (for example, shifts to sustainable forestry, agriculture, to renewable energy, from fuel inefficient cars to more efficient cars), and nature can be measured by complicated mathematical models (computer aided technology that reads climatic data, weather balloons that read high altitude climatic conditions, detailed analysis of Arctic and Antarctic iceberg age and rates of melting). In light of this, the kind of
accountability encouraged by the Kyoto Protocol is designed to have minimal impact on the status quo, particularly those associated with 'scientific' knowledge claims, market economic structures and political organisations that engage liberal democratic ideals (O'Riordan & Jordan, 1996). Article 2 of the Protocol sets out the policies and measures that need to be elaborated in accordance with national circumstances in order to fulfil the obligations set out in the document. I will now consider these in light of the type of accountability that is facilitated and the types of assumptions that are made in regard to 'nature' within each of the parts.

3.1 Article 2 (a) (i)

Article 2 (a) (i) states that a Party to the agreement must enhance energy efficient industries and sectors of the national economy. This is to be indicated to the Conference of the Parties by revealing the policies and measures taken within respective nations to encourage this shift. No recommendations are made about what kinds of policies would be suitable or necessary, leaving much interpretation to the individual parties. Accountability in this sense will be facilitated through an exchange of accounts of not only the policy initiatives, but also the outcome of these policies (this is obviously difficult to measure, but may include such things as legislating car emissions testing).

Undoubtedly shifts towards economic sectors with lower reliance on inefficient fuel sources will have a beneficial effect, but the outcomes may be short-lived and do not challenge the relationship between nature and capital, nature and economy, or the assumption that the economy is the best place to manifest environmental change. Shifting sectors of the economy towards energy efficiency is only achievable in any 'real' terms if it is substantial rather than incremental. In light of
the approach adopted by the Protocol, there is no guarantee that such a shift will turn back the effects of climate change, or even stabilise them for that matter, because the year used as a benchmark (1990) is by no means reflective of a 'sustainable reality' even if it is achieved. Fitzgerald (1992) argued against this approach, because when placed next to the other aim of economic growth, such shifts will be offset by increased consumption and production within the economy. He wrote that

if economic growth continues, any reduction in pollution per-unit of output, and any energy conservation measures will never be enough...because of the exponential nature of growth, even if we cut the amount of pollution per unit of production by 30%, but continue with growth at just 3% per annum, then in only 13 years we will again be producing as much pollution as before the cut (Fitzgerald, 1992, p.219).

Hopwood (1990) argued that the extension of the language and discourses of efficiency (in economic terms) has been pervasive, with value for money and cost-effectiveness being the core ideological constructs that are manifesting change within organisations. These can be seen to be operating within the suggestion made in this section of the Protocol, wherein the shift towards an energy efficient economy is naturalised, and is made to seem obvious and absolute. However, on closer inspection it inserts the economy as the major tool through which change is assumed to be best manifested. Despite the evidence to the contrary this meta-narrative remains relatively unscrutinised and it has "retained its dominating influence as a guide for political action by default" (Gare, 1995, p.25). Smith and Sauer-Thompson (1998) argued that this is an approach that largely ignores the neo-classical economic roots of environmental decline, and that the very same agents that were acting rationally within a market which has led to destructive relationships with nature, are the very same ones that are expected to act rationally to preserve it. This requires adjustments to the current
economic framework, but the underlying assumptions remain unchallenged. Changing the energy make up of the economy is privileged over changes to the objectives of national economies. Growth and development remain unchallengable presuppositions and they are assumed to be able to be compatible with environmental objectives.

3.2 Article 2 (a) (ii)

Article 2 (a) (ii) encourages Parties to enhance “sinks and reservoirs” and to engage in sustainable forestry management practices and reforestation. This is a description of the ecosystems that absorb carbon dioxide in the atmosphere as opposed to the ‘sources’ which are the greenhouse gas producing dimensions. Within this discourse, forestry ecosystems are seen to be an essential factor in the formula for climate change abatement because widespread deforestation has been a major cause of atmospheric warming. Although such an approach will have an effect on greenhouse gases and it is an important factor in abating the ongoing rise of carbon dioxide in the atmosphere, it implies that forestry practices can be managed successfully by the same institutions that have been party to their rapid decline. It also effaces the reason that rapid deforestation has occurred, and ignores the question of why deforestation is more prevalent as a source of income in certain countries and not others.

In order to facilitate the procedural dimension of this in terms of international accountability, information is to be passed between nations mapping and cataloguing the respective sources and sinks at a point in time (such as the Australian National Greenhouse Inventory). This is very much like the double entry system that exists in accounting, whereby sources should be balanced by sinks in order to have a benign effect on the atmosphere. Although in theory this may
lead to the recognition of natural assets such as forests, it presupposes that the effect of both sources and sinks can be measured reliably. This is a belief that has come under considerable scrutiny (Doyle & Kellow, 1992; O'Riordan & Jager, 1996).

This approach also obscures other reasons for the preservation of forests, such as the intrinsic value of forests. Justification for sustainable forestry management lies squarely in the role forests can play in soaking up unwanted carbon emissions and the belief that to do otherwise would have a negative effect on the continued survival of the human species. The multi-dimensionality of forestry systems is also ignored within the Protocol, and these do not play a part in the interpretation of 'sinks and reservoirs' as it appears in the Kyoto Protocol. The replanting of generic 'sinks' is encouraged, and the fact that species' diversity and the benefits of different types of forests goes unmentioned implies that the more cost effective plantation forests can do the same 'job' as old growth forests. The emphasis placed on sustainable forest management also perpetuates the belief that humans know how to orchestrate forests to work at an optimal level. This implies that we know what are acceptable/unacceptable forestry statistics, what kinds of forests should be encouraged, what kinds are disposable, what species should flourish and what species are benign or irrelevant and it also perpetuates the more damaging assumption that "humans can control the awesome power of nature" (Lehman, 1996, p.669).

3.3 Article 2 (a) (iii)

Article 2 (a) (iii) encourages the promotion of sustainable agriculture. This is similar to the suggestion in the previous section though it differs in focus. As agriculture is an essential part of life-processes,
sustainable agriculture is a logical suggestion. It does imply however that we 'know' how agriculture can be sustainable, even in light of an increasing global population where food and water resources will be increasingly under pressure. These pressures combined with an increasingly competitive produce market that is dominated by agribusiness (such as Monsanto) and the increased use of pesticides and insecticides to produce the types of produce in the quantities that make them economically viable for the producers (and the market for these chemicals is expanding globally). These are not necessarily irreparable constraints, but they will require ongoing commitments not just to the way agriculture is conducted but also require shifts in the way that produce is bought and sold in the marketplace. As Lehman argued

sustainability relies on the market which itself is dependent on capitalism and private ownership of property. Now it is problematic that the market can speak for other communities, future generations who haven't spoken, or who have yet to be born (1996, p.671).

3.4 Article 2 (a) (iv)

Article 2 (a) (iv) calls for Parties to encourage research and promotion of new forms of energy and environmentally sound technology. Again the idea that human development (technology) can 'beat' nature at its own game is operative (discussed previously in relation to the United States' belief that climate change actually presents them with the potential to gain another competitive advantage on the rest of the world). Accountability is facilitated through the exchange of technological ideas between nations and can be discharged nationally by incentive based policies to encourage research and development (these need not actualise). There is no challenge offered to patterns of consumption or political economies that rely heavily on maintaining 'consumptive
cultures' (Jagtenberg, 1996). Such an objective is known broadly within the environmental literature as a "technological fix" (Katz, 1995), and although this occupies a central place in most policy initiatives, it has been argued that

(when our policy is to use nature to our best advantage, we end up with a series of so-called "responsible interventions" that manipulate natural processes to create the most pleasant human experiences possible. When our policy is to restore and repair a degraded natural environment, we end up with an inauthentic copy of the original. The technological "fix" of nature merely produces artefacts for the satisfaction of human interests (Katz, 1995, p. 167).

3.5 Article 2 (a) (v)

Article 2 (a) (v) challenges Parties to remove market imperfections, like tax and duty exemptions in greenhouse gas generating sectors. Again the market is constructed as a means by which environmentally accountable behaviour can be encouraged, perpetuating the notion that environmental abuse is the result of imperfect markets (Lehman, 1996). Although broad based economic incentives may encourage a shift away from greenhouse gas producing industries and practices, there is concern about the underlying philosophy that suggests "the environment in which we live can be constrained within the artificial constructs of "the market"" (Gibson, 1996, p.665).

For these to have any effect on the stabilisation of greenhouse gases and more importantly on the ways that we relate to nature and the discourses we use to constitute it and challenge its meaning and relevance to our communities, broad market regulation and change need to be instigated. However, this too is an artifice, relegating political and environmental conflict to ever-shifting categories of secondary
issues such as taxation and regulation, holding primary signifiers such as materialism, greater prosperity and ever expanding growth stable in national and international policy development (Walker, 1989). As Gibson (1996) has argued, these need to rely on mechanisms that cannot be interpreted to be ‘selling the environment’ in the way that tradeable emissions permits can be. She also warns against any mechanisms to fulfil international accountability requirements that legitimate and normalise the relationship between production, economic activity, the ‘nature’ of the corporation and environmental destruction.

3.6 Other Articles to the Agreement.

Article 2 (a) (vi) (vii) (viii) requires Parties to develop policies and measures to limit emissions. The kinds of policies and measures are not identified, but these should be encouraged at national and regional levels in respect to relevant sectors of the economy.

Article 2 (b) states that the parties must co-operate with each other to enhance the individual and collective effectiveness of the agreement. This requires parties to “take steps to share their experiences and exchange information on such policies and measures, including developing ways of improving their comparability, transparency and effectiveness”. The actual ways that such exchanges are to be facilitated is still a matter of negotiation that will be considered in the Conferences that follow the one at Kyoto.

Articles 7 and 8 indicate the information that is required on a yearly basis to indicate that the measures and policies implemented by national governments are meeting the objectives of the Protocol (reducing emissions to the agreed to, albeit differentiated targets). This includes an annual inventory of anthropogenic emissions, with
supplementary explanatory information in order to show how the information was derived. Nations are also required to incorporate an annual communication to demonstrate the steps being taken, in terms of policy changes and commitments and measurement techniques, to meet their agreed targets (Article 7 (2)). This does not have to be statistic and is more likely to be a description of steps being taken to ensure compliance. Article 8 (2) states that an “expert review team shall be co-ordinated by the secretariat”, whereby the information provided may be subject to tests of accuracy. The experts are required to report back to the conference, assessing the commitment, success and problems of implementation (Article 8 (3)). Although these monitoring processes had not been entirely agreed to at the time of signing the Protocol, they were established as important and will provide the focus of debate in the future.

Parties to the Kyoto Protocol agree to develop and encourage the aforementioned mechanisms to abate climate change. It is obvious that these are open to national interpretation. What is less obvious are the ways that these mechanisms of accountability maintain the construction of nature as separate and at odds with culture, and culture as separate and at odds with nature. This is done in a number of ways.

Firstly, nature is seen to be an obstacle to further economic growth and material prosperity, but the obstacle is one that can be overcome through effective management (as indicated by Article 2(a) (i)(ii)(iii)(iv) and (v)).

Secondly, nature is considered in compartments (as a function of multiple gases in this case, with corresponding effects on other compartments of nature such as sea level) whereby the dynamic
interconnectedness and unpredictability of nature is obscured. For example, Article 5 (1) requires information specifically associated with anthropogenic greenhouse gas changes, reproducing the assumption that nature and culture are separate and oppositional from each other and not mutually inter-dependent.

Thirdly, nature is seen to present a challenge to the survival of the human species rather than the human species presenting a challenge to the survival of all human and non-human life. This can be evidenced by the heavy reliance on changes in economic sectors, rather than shifts in cultural attitudes towards nature (Article 2).

And fourthly, greenhouse gases are presented as the contributor to climate change, whereas the institutions and organisations, systems that produce these are left unconsidered, thus greenhouse gases must be reduced yet the reasons for the production of these greenhouse gases remains outside of the debate. In other words, it is assumed that the gases are produced by inefficient technologies, not the social processes that have created, maintained and privileged these processes.

I will now consider the implications of the main features of the Protocol on international environmental accountability, paying particular attention to the mechanisms through which the agreement is to be met.

4. CONSIDERING THE IMPLICATIONS OF THE KYOTO PROTOCOL: DELIMITING ENVIRONMENTAL ACCOUNTABILITY

The main features of the Kyoto Protocol are broadly summarised as follows. The limitations of these features are also discussed:
4.1 Targets

All parties to the agreement have negotiated differentiated greenhouse gas targets depending on national circumstances (these are listed in Appendix 1). Almost all signatories have agreed to reduce greenhouse gas emissions below 1990 levels, with New Zealand, the Russian Federation and the Ukraine being allowed to stabilise at 1990 levels, with three nations being allowed to increase emissions on 1990 levels, including Norway (increase of 1%), Australia (increase of 8%) and Iceland (increase of 10%). These targets are quantified percentages based on information that has been measured and estimated surrounding each nation’s emissions per capita and 1990 levels have been selected as the benchmark on which all targets have been based. The aim is to reduce emissions globally by approximately 5.2% on 1990 levels.

Although negotiating any such agreement is an achievement, the Protocol falsely represents the year 1990 as being sustainable. Subak argued that “the decision to centre the baseline on the year 1990 was largely a matter of political convenience” (1996, p. 53), a view supported by Chatterjee & Finger (1994). This also glosses over the technical deficiencies associated with ‘counting’ emissions which have been developed through national greenhouse inventory programs, the methodologies of which vary and are contingent on national information systems, definitional complexities oftentimes take on a political dimension (Jager & O’Riordan, 1996, I will explore this in relation to the MEGABARE model adopted by Australia in the following chapter). Although Article 5 (2) of the Protocol states that methodologies for “estimating” greenhouse gas emissions are to be in harmony with those agreed to by the Conference of the Parties, and that where these methodologies are not used, supplementary information can be
provided in order to create international comparability, this does not mean that the information provided by any of the parties will be 'accurate'. It does however, ensure that one of the essential features of procedural accountability will be operational, in that information across countries and between periods will be comparable.

One of the major problems is that the disclosure of information does not suggest the level of estimation that has gone into the production of the 1990 rate or the target rate, whether both at the level of actual emissions and the level that reductions will effect respective economies (O'Riordan & Jordan, 1996). The climatic dimension of nature is tamed within limited parameters, that speak 'reasonably' about the 'truth' of this environmental issue, whilst denying the ambiguity, contestability, inequitable distributions of power and the political might of certain nations. For example, many nations are holding back on making legally enforceable commitments until the United States Congress agrees to ratify. As this is considered highly unlikely, the response of the United States has driven most of the outcomes thus far (Hogarth & Skelton, 2/12/97). Industrial power has also affected the process. The influence of the fossil fuel industry on the outcomes has been widely reported and will be discussed in more detail in the following chapter (see Gelbspan, 1997). Gelbspan studied the impact of the United States of America's oil and coal lobbies on environmental policy. He argued that

(t)he financial resources available to the oil and coal lobbies are almost without limit. In fact, long before the climate issue surfaced, they already had...over the last six years the coal and oil industries have spent millions of dollars to wage a propaganda campaign to downplay the threat of climate change (1997, p. 33).

The effects of this kind of lobbying potential are not limited just to the United States, but are also prevalent in other countries, such as the
United Kingdom (The Confederation of British Industry have actively lobbied the government not to introduce a carbon tax and have sought to debunk the scientific findings of the IPCC, see O'Riordan & Jager, 1996) and Australia (including organisations set up specifically to co-ordinate industry lobbying power in organisations such as the Electricity Supply Association, the Australian Aluminium Association, the Australian Coal Association and the Australian Industry Greenhouse Network).

Inequitable distribution of social power will also effect the outcome of these targets. This may be affected by the ability to organise in an effective way, inequitable distribution of financial resources to present alternative arguments, or the inability to mount arguments within the strict parameters of scientific and neo-classical economic discourse. O'Riordan and Jager have argued that

> because the north (European, North American) shaped the scientific agenda, so its biases influenced the agreements that were reached as to the severity of the problem, the timing of the response, the acceptability of the solutions and even the determinants of a cost benefit analysis (1996, p. 66).

I will explore the issues that arose in the development of the Australia emissions targets in the next chapter, indicating the way that this matrix of power relations is operating to frame Australian discourses on climate change and international accountability for greenhouse gas emissions.

### 4.2 Flexibility Mechanisms

Through much deliberation, the Protocol established the need for flexible means through which targets could be obtained. This was in
recognition of the 'differentiated' circumstances of each nation that was party to the agreement, and acknowledged a need for a level of openness so that nations could meet their targets in the most cost-effective way. These included Joint Fulfilment (Article 4), Joint Implementation (Article 6), the Clean Development Mechanism (Article 12) Emissions Trading (Article 17) (refer to appendix 4 for a description of these).

Joint Fulfilment allows parties to enter into agreements with other signatories to redistribute amongst the group the total reductions that have been set. These are to be negotiated among the group and the contract is to be approved by the secretariat and becomes enforceable under the Protocol. This had occurred in the setting of emissions targets for the European Union (which was also called a bubble group) and was included in order to offer the same choice to other parties to the Protocol. This allows parties to offset some of the costs of meeting their commitments if there can be exchanges between groups that enable such savings. For example, if it is cheaper to plant 'sinks' in one nation than in another (because of labour costs or land usage is more conducive), and the contracting parties agree to some other payment for this offset (such as trade arrangements or assistance with technological developments), then the parties are free to contract. The parties must collectively meet the stated objectives.

Joint Implementation allows the transfer of emissions reduction units between nations. One party may finance or sponsor a reduction project in another party's territory in exchange for some of the greenhouse gas reductions resulting from the project. Again this would occur if it was considered cheaper than meeting the target independently. This can only occur if the arrangement can prove that it will provide climate benefits beyond those that would normally have occurred.
Clean Development Mechanisms is designed to promote sustainable development in non-Annex I countries, whereby an Annex I country can sponsor a project in a non-Annex I country (such as Vietnam) in order to offset some of the cost of compliance. This is in line with the argument presented by countries that non-Annex I countries also need to be involved in the process and that it may be cheaper to encourage cleaner ‘development’ in these countries than it would be to adjust sectors of the economy in the Annex I countries.

Emissions Trading has been built into the Protocol to enable an elaborate system of buying and selling rights to emit. Domestic emissions targets would be adjusted according to the trade of emissions permits.

These are market based incentives through which nations are allowed to meet their respective emissions targets, whereby the trading or joint fulfilment of emissions requirements are designed in order to limit the effects of climate change policies on a nation’s economic growth. Although the principles and guidelines to such arrangements were not finalised at Kyoto, the market based approach to environmental issues was further entrenched, maintaining the dominance of grand narratives such as progress, growth and development mentioned previously. There has been some discussion of this within the accounting literature, suggesting that tradeable emissions permits set up a discourse in which people are granted the ‘right to pollute’ and ultimately finding justification for the destruction of nature (Lehman, 1996; Wambsganss & Sanford, 1996; Milne, 1996). It also creates an ‘arms length’ approach where the complexities of climate change are subsumed by debate about the complexities of the ‘market’. This approach is evidenced by Wambsganss and Sanford who argued that

the market mechanism will establish an “arms length” value for
pollution and it encourages efficiency for the production of power and
the appliances (sic) that use it (1996, p. 644).

Although details of these mechanism are still not finalised, it is an
approach favoured because it creates an ‘option’ to trade emissions, and
utilises the neo-classical view of the market. This is said to support the
most efficient and cost-effective approach to emissions reductions
(Barrett, 1998; Ott, 1998). Although ‘efficiency’ may appropriately affect
the ways nations should be allowed to meet their targets, it should not
be the only ground on which this should take place. Milne has argued
that

failing to consider the program’s equity, sustainability and ethical
implications provides only a very incomplete and partisan perspective.
Preferring the program on the grounds of efficiency does not necessarily
mean it is fair, sustainable or morally acceptable (1996, p. 683).

This adopts a neo-classical view of environmental issues, whereby
market imperfections are considered to be responsible for
environmental degradation and can be solved by variations in market
regulation (Gibson, 1996; Lehman, 1996; Milne, 1996) . Although such
an approach may go some way toward meeting both a nation’s economic
objectives and their international environmental obligations, these
approaches obscure the role that economic growth has played in the
destruction of the environment. This also serves to efface the role that
neo-classical economic principles have played in the organisation of
social and political attitudes towards the environment as a ‘scarce
resource’ or a ‘commodity’ not unlike any other object that needs to be
negotiated in the market (such as a house, or shares of a company),
rather than dynamic and living.
4.3 Policies and Measures

These are to be developed in accordance with national circumstances, but all nations that are Parties to the agreement must maintain a national greenhouse inventory providing detailed information about sources and sinks of emissions. This is to be made publicly available and also is to be submitted annually to the Conference of the Parties so as to facilitate the exchange of information amongst other signatories. As I have stated previously, the methodologies that inform this differ from country to country leaving them open to political manipulation, indicating a range of subjectivities that contribute to the 'objective' representation of this data. Each nation is also required to develop and report on policy initiatives that are undertaken in order to meet the emissions targets that have been agreed to. These are obviously a product of complex political processes in which not all dimensions of the debate and policy suggestions will be represented. Policies must include commitments to sustainable agriculture, support for energy efficient research and development. They must also display a commitment to reforestation (sinks) and waste management.

The approach does little to challenge the acceptability of environmental decline as part of an increasingly global capital market. Essential elements of the construction of the crisis are obscured in the solution. The following quote suggests some of these exclusions and challenges the dominance of the market approach to global environmental issues.

Neither Northern consumption, nor global economic reform, nor the role of transnational corporations, nor nuclear energy, nor the dangers of biotechnology (were addressed)...Instead free trade and its promoters came to be seen as the solution to the global ecological crisis (Chatterjee & Finger, 1994, p.40).
These policies will be a function of diverse experiences of power, speaking position and interests, whereby environmental accountability is relegated to the margins of debate, and the foreground is played through discourses of economic viability and constrained by (un)contested concepts such as economic growth, competitive advantage, jobs and lifestyle. As such, environmental policies that deal with the greenhouse effect will be limited to those policies that do not threaten or challenge the current orientation of a nation-state (Gare, 1995).

4.4 Non-compliance

For all the talk of regulating emissions into the environment, the Kyoto Protocol remains unresolved on issues of non-compliance. Article 18 states that at the next meeting the parties shall "approve appropriate and effective procedures and mechanism to determine and to address cases of non-compliance...including the development of an indicative list of consequences, taking into account the cause, type, degree and frequency of non-compliance". It is also possible that parties to the agreement can remove themselves at any time after a period of three years (Article 27) if they no longer want to be tied to their targets. Non-compliance within this sense is defined narrowly, in terms of regulatory discipline such as fines, legal obligation or trade embargoes. Non-compliance also takes on dimensions of the market, which obscures the effect such non-compliance may have on the environment through the continuation of global warming (on species other than humans, the consequences of this that are born by other nations as a result and the effect on future generations).

The effects of global warming as an environmental event that has consequences for the viability of life is not discussed in terms that
would make this an incentive to comply. The alternative notion that the only way people act to promote environmental preservation is through some sort of short-term monetary penalty is an absurd thought in comparison to the real prospect of large scale environmental catastrophe.

It has been argued that the

giving of an account is not enough for an accountability relationship to exist; there has to be a process for holding the accountor to account for actions taken and consequences incurred (Burritt & Welch, 1997, p. 533).

This is an element that appears to be lacking in the Kyoto Protocol at this stage. Where it has been discussed, financial, regulatory or trade related penalties have been proposed for lack of compliance. Although these have garnered mainstream acceptability as a significant deterrent or disciplinary practice, these are inadequate mechanisms when we consider that the consequences of non-compliance may be irreversible, thus rendering these compliance mechanisms to be totally inadequate. The renegotiation and re-imagination of the role, the importance and significance of nature is necessary within cultural narratives, so that nature is not automatically equated with the economy, science, jobs, resources or competitive advantage. The assumption that these are somehow adequate representations of the importance of nature needs to be challenged so that the struggle for environmentally conscious behaviour does not re-invoke limited views of nature (nature as resource; nature as machine; nature as other; nature as passive; nature as measurable; nature as a limitation to greater goals of material well being).
4.5 Ratification

The Protocol may be made redundant and prove to be a purely symbolic exercise, paying 'lip-service' to the concerns of an increasingly environmentally conscious community because of the general reluctance to ratify the agreement. This process means that the Kyoto Protocol only enters into force if 55 Parties to the FCCC ratify the Protocol or if Annex I countries representing at least 55% of total Annex I carbon dioxide emissions for 1990, ratify the Protocol. Although representing the process as an example of participatory democracy, in which nations are given autonomy to make a decision about whether or not to commit to the agreement in a legal sense, this obscures the fact that the largest emitter (the United States) has and continues to set the global agenda on climate change.

The Parties to this agreement are required to instigate policies to achieve the emissions targets they agreed to and measure the effect of such policies in order to fulfil the accountability function that is set out in the agreement. As such Parties

shall take steps to share their experience and exchange information on such policies and measures, including developing ways of improving their comparability, transparency and effectiveness (Kyoto Protocol, Article 2.1(a), 1997).

5. THE KYOTO PROTOCOL: FACILITATING ENVIRONMENTAL ACCOUNTABILITY, OR RE-INScribing THE STATUS QUO?

The protocol calls for developed countries to reduce emissions of greenhouse gases (GHG's) on average by 5.2% below 1990 levels by the years 2008-2012 (Malin, 1998, p. 33).

The approach adopted in the Kyoto negotiations facilitates a recognition
of the environment, and the need for environmentally responsible and accountable behaviour, but it does not provide a challenge to the underlying assumptions that inform the current socio-political framework. These arrangements do not challenge the presupposition that we need to identify, name and define the 'laws of nature' and that in doing so we can create technological shifts beyond these laws in the pursuit of human emancipation from nature (one of the dominant constructions of modernist thought, Harvey, 1996). Harvey suggested the project of modernism sets up a system of thought whereby

(i)t was only through discovery of the "true laws" of nature that we could learn to "work with nature as nature does" in ways beneficial to our species being (1996, p. 123).

This is an approach that has come under much criticism from branches of radical ecology as it assumes an anthropocentric position and frames nature within mechanistic metaphors (Merchant, 1980; Williams, 1980; Zimmerman, 1994). It has also been criticised in contemporary reappraisals of philosophies of science (Figlio, 1996) and another area of critique has emerged within contemporary feminism(s). These critiques focus particularly on the idea that the overarching 'laws of nature' presuppose the homogeneity and universality of nature itself and do not consider the 'differences' that may mark experiences of and within nature (Barret & Phillips, 1992). As such, the modernist project, lingering and evidenced in international environmental debates which maintains and relies on a series of presuppositions that are left outside the bounds of consideration.

At this level, it has been argued that accountants can play a unique role in monitoring by reporting on the compliance of nations that are party to international agreements on environmental issues and improving the transparency and accountability of the policies invoked to meet
environmental objectives (Burritt, 1995). Although this may be true, such an approach obscures the assumptions that underpin notions of environmental accountability and the implicit and explicit roles these assumptions play in the construction of international environmental agreements and documents such as the Kyoto Protocol. Failure to consider this will only serve to (re)invoke orthodox and modernist images of nature as a site that can be controlled and pacified such that it does not disrupt prevailing meta-narratives of progress, development and profit (Gare, 1995). Accounting and notions of accountability are thus assumed to be a neutral site that can facilitate environmentally responsible behaviour. This is indeed problematic when these same grand-narratives have been implicated in the current environmental crisis and have been under serious challenge from within ecological discourses (discussed in chapter 2, 3, 5 and 6 and also by Zimmerman, 1994; Gare, 1995; Harvey, 1996). On this point, Smith wrote that

\[(t)he\ pragmatism\ of\ the\ environmental\ policy\ establishment\ is\ doubly\ inimical\ to\ a\ vital\ environmentalism.\ Ideologically\ committed\ to\ the\ conventional\ assumption\ of\ an external\ nature,\ albeit\ a\ damaged\ but\ fixable\ nature,\ they\ are\ equally\ dedicated\ to\ reproducing\ the\ very\ social\ conditions\ of\ production, consumption and 'development' that have given rise to environmental conditions in the first place\ (1996, p. 40).\]

The alleged neutrality of a scientific, quantified, modelled approach to the issues of climate change is integral to the maintenance of arms length approaches to environmental issues whereby passion and lived experience is ridiculed, yet abstract targets, quantifications and models are celebrated (discussed in chapters 2, 3, 5 and 6 and also by Jagtenberg & McKie, 1997). This belies the complex issues of power, knowledge, control and 'situatedness' that have been discussed in previous chapters and serves to control the imagery invoked when discussing issues of accountability and the environment (Gray, 1998). Beck (1996) clearly articulated some of the problems that are bound up
with trans-national environmental issues and the ability to develop global movements that can address these emerging dilemmas. In particular he noted that

the global definition of ecological questions leads to a perversion of 'nature conservation' into its opposite, a kind of world-management. This then sets up new monopolies of knowledge - the hi-tech 'global circulation models' of the Intergovernmental Panel for Climate Change (IPCC), with their inbuilt forms of politics and their demands for disciplinary interpretation and control (especially of the natural and computer sciences) (Beck, 1996, p. 6).

Such control and exclusion is necessary in order to maintain current systems of thought and action within established terrain and it secures the future of certain realities whilst denying the existence of others. As science aims to predict, "it encompasses and formulates nature in the process of representation" and "implies a nature that is inanimate or without autonomy" (Figlio, 1996, p. 72) within scientific technologies. A good example of this is the heavy dependence of climate change science on the formulation and testing of mathematical models to predict changing weather patterns, wherein dimensions of nature become part of a fantastic series of mathematical equations. What was an environmental issue of potentially catastrophic proportions (these mathematical models estimate climate change to increase anywhere from 1 degree to 3 degrees in the next 100 years) is transformed into a great mathematical problem, wherein the multiplicity of nature (being formulated into an equation) is effaced and the multi-dimensionality of lived experience cannot be represented.

The Kyoto Protocol also assumes many of these metaphors of nature, in that scientific evidence is used as the basis of constraining activity (as opposed to other belief systems that operate in constraining behaviour such as indigenous narratives, religious frameworks, bio-regional...
narratives and so on). Discussion of the moral or ethical component of accountability is notably absent, and nature is seen through the controlling imagery of science and economics, as though these are constitutive of the natural order of things (Jagtenberg & McKie, 1997).

6. A PRIVILEGED REALITY: QUANTIFYING ENVIRONMENTAL ACCOUNTABILITY

Although these practices and processes may provide insights into climate change they are far from neutral and are not ideologically sterile. Such approaches to environmental issues have been criticised within postmodern literature as they are party to the privileging of a depersonalised approach to the implementation of strategies. It has been argued that this is integral to the maintenance of the status quo because to personalise environmental issues is to make them come to life (Cantrill & Oravec, 1996) and to describe nature in language that is more representative of its lived dimension would challenge the long standing metaphors of nature as a machine (Merchant, 1980). Such an approach would encourage a radical reappraisal of our approach to environmental issues and to all knowledge construction within the dominant meta-narratives of reason, rationality and truth (Ralston-Saul, 1997; Harvey, 1996). Hayles argued that the disembodied approach to scientific reason, at work within the constructions of climate change means that

(t)he positionality of human mindbody is largely erased, as are the language, culture and belief systems of the observers (1996, p. 49).

Hayles goes on to suggest that “embodiment matters” (1996, p. 49) as it challenges many of the assumptions that he sees as being constitutive of a disenfranchised response to nature and to environmental 'problem
solving'. Nature becomes fragmented parts, solutions are developed with particular parts in focus, but the overall picture remains intact, obscured and ridiculed from view as people go about 'sensibly' fixing the problem. Undoubtedly, the construction of such a narrow framework within which discussion is deemed legitimate comes at a cost. It has been argued that such a framework inadequately represents the interpretation and modes of analysis that influence the human and non-human experience of life within complex cultural contexts: experiences that cannot be spoken of or about via static quantifications or within homogeneous qualitative information - yet they can be invalidated and obscured as annoyances to the 'logical' progression of debates such as this one. Such quantification leads to a situation in which political agency is denied to other species, as is their right to exist as knowable subjects in texts (Jagtenberg & McKie, 1997, p. 52).

Accountability in this context can serve to legitimate a techo-rationalist society by mimicking the already established dimensions of valid knowledge. In other words accountability could actually legitimate the very structures that have contributed to a world now facing unstable climate conditions and an unpredictable environmental future. If the only way we can seek to be accountable for the exploitation perpetrated against static ideas of the 'natural' is by re-circulating the images of nature in bite sized chunks, such a carbon dioxide emissions, or as carbon sinks, then the future is bleak. Such a model rests on fragmented, disconnected nature under the guise of manageability and legitimate scientific rationality, it relies heavily on the denial of the ethical or cultural possibilities of accountability - which may in the end, be the only sufficient grounds to build a movement that can shake entrenched inequities within our communities and in relation to nature.
7. CONCLUSION(S)

The Kyoto Protocol is a groundbreaking step towards international accountability for greenhouse gas emissions. It sets out targets for the nations that are signatories and encourages the exchange of accounts about how and what policies and measures each nation is undertaking in order to achieve their targets. However, the failure of the Protocol to set out steps to be taken in the case of non-compliance, and also the complexities associated with ratifying the Protocol make the potential for it to instigate actual change to greenhouse gas emissions difficult to determine. In this chapter I have identified the ways that the Protocol has functioned to frame 'meaning' in terms of science and neo-classical economics, both of which have been challenged because of the effect that this has on organising meanings of nature and obscuring recognition of the potentially catastrophic consequences of global warming. Environmental accountability in this sense is undermined, because accountability takes on the uni-dimensional approach adopted in the Protocol which emphasises the procedural and measurable dimensions of accountability over the multiple 'other' possibilities including the ethical and moral aspects.

In the following chapter I will explore some of the issues that have been identified in this chapter in the context of Australia's negotiations at the Kyoto Protocol and also the measures and policies that have been adopted in order to discharge their accountability.