Articulating Ecological Injustices of Nuclear Energy

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I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

Signature: …………………………………………………..

Abstract

Harms produced by nuclear energy include the accident risks of population displacement, deaths, cancers, genetic, teratogenetic (affecting embryo and foetus) and psycho-social effects; increased radiation exposure to workers, locals and future generations from nuclear plants, uranium mines and waste storage facilities; thermal and toxic tailings pollution from nuclear plants and uranium mines; and other unknown long-term effects of increasing levels of background radiation. Historically, most greens have opposed nuclear energy alongside nuclear weapons. Recently, however, significant green spokespeople have combined with industry and governments in emphasising the need for nuclear energy in response to climate change. Based upon my experiences in the struggle against the Hinkley C nuclear power plant in Somerset, UK, this thesis contests the dominant framings of the debate. I suggest that arguments for nuclear energy are made possible by reductive understandings of the issue making it difficult to apprehend the significance of harms reinforced by nuclear energy. Taking an ecological approach I show how dominant discourses presuppose a hierarchical separation of science/politics, reinforced by and reinforcing the separation of nature/culture. These hierarchical separations depoliticise and naturalise harms produced by both nuclear energy and dominant forms of social organisation. As a result, these harms are difficult to communicate and contest as relevant to the discussion of our common futures. In this thesis I argue that we might more effectively convey the significance of these harms if we articulate them as injustices. Building upon the theory and practice of justice and liberation struggles I develop a heuristic framework for articulating injustices based around three intersecting images of politics as distribution, recognition and representation. I suggest articulating injustices of nuclear energy as i) the deprivation of basic necessities due to unequal distributions of burdens as well as goods; ii) the disrespect for ecological integrity due to desire for control of inevitable unpredictability in interaction; and iii) the denial of multiple authorities through monopolisation of rational speech and action and disengaged forms of knowledge production. Expressing harms of nuclear energy by way of this three-fold articulation of injustices politicises nuclear energy, climate change, and the dominant forms of social organisation, opening these up to political contestation to more effectively take 'all affected' into account before we reconsider how we might live together.

Table of Contents

List of Tables

Acknowledgements

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Thanks to the courageous and sane people with whom I have organised, walked, leafleted, petitioned, protested, risked arrest, occupied, camped, and dreamed, both around Hinkley C, and in green, social justice, and anarchist movements more generally, however these might be defined.

Thanks to all my family and friends; to those who have accepted my tears, supplied cups of tea and hugs, and those who shared their troubles in return; to those with whom I have shared the cooking and eating of meals; with whom I have run, climbed, cycled, skipped, and danced; and with whom I have wandered the moors, forests and seashores - thanks for perspective, joy, and balance; and thanks most of all to those who have encouraged me to speak, who have believed that I have something worthwhile to say, who have helped me to fight my own self-doubt, and told me to 'get on with it!'

Finally, thanks to the Devon springtime, to the sunshine, the wind, and rain, the fantastic skies, the birds, the trees, the blossom, the green shoots, and the damp earth, for giving me solace in these final months. Too much clumsy and awkward articulation remains in this, and there will be plenty of 'errors,' but I hope that some may be fertile.

Preface

As a child in Wales, growing up by a stream and the river Severn, with goats and chickens and many alder trees (but next to a very fast and busy trunk road), with a green German mother, and 'red-with-green spots' father, I developed a sensitivity to ecological and social justice problems. As a teen I worked on a pig farm. Increasingly I wanted to experience life in the city. Later, a fair bit into my twenties, I began to think about translating my 'socio-ecological' sensitivity into other aspects of my life. I was working as a care assistant in an old peoples' home while studying for my masters in International Relations, and this provided another backdrop to my politicisation as I began to discover the conceptual tools available in critical theoretical traditions, for both social (including feminist understandings of intersectionality) and environmental or ecological justice, and I slowly began to find language to express those sensitivities.

Encouraged to do a PhD, although also gently chided by my masters' dissertation supervisor that I would never manage it if I did not have confidence in my own voice, my first proposal proclaimed that it would study how British and German environmental movements engaged with issues of social justice. However, this did not quite feel right. I was determined to explore the intersections between ecological damage and social injustice. Ecofeminism was often disparaged and neglected due to 'essentialism' but I disagreed with its critics; it gave voice to vital connections which were not addressed elsewhere. I did not find my focus until I had become more involved in the green movement, with Climate Camp, and at the COP15 protests and World Peoples' Summit on Climate Change in Copenhagen, Earth First! gatherings, and the particularly local struggle against Hinkley C, in Somerset. As I became more actively involved in the latter I suddenly had to explain and defend my position to some sceptical friends and family, including many passionate and actively involved greens. I also spoke to random strangers on train journeys, at protests and meetings and the general public in the street when holding a weekly stall to gather signatures for petitions and raise local awareness.

And yet, for all of my study and my growing knowledge of the issue, I found that in too many cases I could not speak from my heart about this problem of nuclear energy, I could not articulate what I felt to be the underlying concerns. I had to learn to repeat the facts and figures of a reductive science

and economics, and while this was important and useful, I felt that by only doing this I was betraying something else that was important. The problem was incredibly complex and I could empathise with those green friends who had decided that nuclear energy was perhaps a 'least-worst' option. However, I knew that my intuitions about the injustices it would perpetuate, to both humans and nonhuman nature, were about more than simply 'naïve and wishful emotions,' or 'ingrained political ideology,' or an 'inability to get my head around the facts and figures,' and they were not idealist, but realist in a way which does not shy away from the capacity of each and every one of us to do harm. This was an anarchist and ecofeminist awareness of the inherent politics of life, but it was difficult to convey without being pigeonholed and dismissed. And so this thesis became about finding the language to express and articulate injustices of nuclear energy. I have tried to find a way of communicating the harms of nuclear energy and much of contemporary life, to help us to use the connections and the continuities but also revel in the differences between our common lives, and to encourage us to be brave enough to care, and to speak up.

Introduction

As a result of three meltdowns at the Fukushima Daiichi nuclear power reactors in March 2011 over a hundred thousand people had to leave their homes, and local farming and fishing industries were badly affected by contamination (Bird, 2013; WNA, 2014). Official figures point to more than a thousand deaths resulting from evacuation after the accident (WNA, 2014). While attempting to regain control of the situation the Japanese government was forced to raise the acceptable legal radiation exposure for workers at the nuclear plants, with ongoing hazardous conditions and sinking morale (Demetriou, 2011; McCurry, 2013). The initial explosions and subsequent difficulties in controlling groundwater leaks over the past three years have led to substantial radioactive contamination of both land and sea, with contamination reported as far away as the west coast of the US, and full long-term effects upon human and nonhuman health as yet unknown (McCurry, 2012; Ryall, 2013; Amos, 2014; McNeill, 2014).

Supporters of nuclear energy, with some environmental campaigners amongst them, characterise the initial incident as a very low probability accident resulting from the tsunami, a force of nature, the effects of which have, moreover, been successfully controlled and minimised. Some also argue that reactions and responses regarding the risks of radiation are overblown and in themselves exacerbate the situation. Yet there have already been significant effects upon both human and nonhuman lives, and the full long-term costs remain unknown. As will become clear in this thesis, thinking about the politics of nuclear energy fundamentally challenges our assumptions about what is unfortunate, or justifiable according to dominant conceptions of nature and society. This has important implications for our understanding of *injustice*. While harms of nuclear energy may be justified as the inevitable and necessary side-effects of the way things are and they thereby become naturalised according to dominant conceptions of nature and society, these harms are not 'natural' or necessary at all, but socially produced and avoidable. This thesis will demonstrate how harms of nuclear energy, including the disproportionate effects of uranium mining upon indigenous peoples' lands worldwide, or the displaced effects of nuclear waste and the accompanying risks upon future generations, may be articulated as injustices, resulting from unjust and

unnecessary social relations both within the human world, and between humans and nonhumans.

At point of writing, the UK government remains resolute in its insistence that nuclear energy must play a substantial role in the country's future energy mix. Hinkley C, the first of the government's planned new nuclear power plants, has been given planning permission, most of the capital costs have been underwritten by loans guaranteed by the Treasury, and a fixed price for nuclear energy for at least the next thirty years has been agreed. There have been extensive efforts from many locals and concerned people from across the UK and Europe to contest and resist the project, with representations at consultations, a number of legal challenges and sizeable protests, demonstrations and direct action. The series of failures at the Fukushima Daiichi nuclear power plants after the tsunami in March 2011 negatively affected attitudes to nuclear energy worldwide as they signalled a troubling reminder of both the environmental and social reasons for public anti-nuclear concern. However, neither this, nor the on-going and escalating problems at the Japanese site over the past few years have impacted significantly upon UK policy. An overwhelming consensus has emerged in consecutive governments with cross-party support. Nuclear energy is justified as necessary on the basis of carbon emissions reduction requirements in the context of climate change, concerns about the 'energy gap,' and the need to ensure security of energy supplies and sustain economic development.

This 'need for nuclear' has been reinforced by prominent spokespeople and advocates from the green movement. In the recent film *Pandora's Promise* (2013), Stewart Brand pointed to the depth of the split in the environmental movement when he said:

> The question is often asked, 'Can you be an environmentalist and be pronuclear?' I would turn that around and say, 'In light of climate change, can you be an environmentalist and not be pronuclear?'

Climate change and the urgency of reducing carbon emissions, combined with the challenges which renewable forms of energy and efficiency pose to existing infrastructures and ways of life, have caused many greens to break with the perceived traditional anti-nuclear tendencies of environmentalism due to a sense that there is no realistic alternative. Nuclear energy is considered the

lesser evil in contrast to the looming catastrophic global impacts of continued reliance upon fossil fuels.

This thesis emerges from my personal concerns in the struggle against Hinkley C, and within green politics more widely. It stems from my own observations and experiences of the difficulties of articulating the significance of harms of nuclear energy according to the dominant discursive framings which influence both sides of the debate. The dominant discourses[1] tend to separate out and prioritise carbon emissions reduction and national economic development and security over other problems, and implicitly rely upon abstract techno-scientific and economic expert knowledge to control, predict and ascribe meaning to our collective futures. This has the effect that multiple existing and potential harms to human and nonhuman nature, in the present and in the future, in this country and in other countries, are difficult to articulate as important and politically relevant.

Dominant discourses emphasise particular, reductive understandings of science, economics and security which naturalise harms into single-issues that tend to be pitted against each other. The split in the green movement seems to be suggestive of a deeper problem whereby important early green insights about the causes of the harms of nuclear energy have failed to penetrate the prevailing discourses, thereby failing to challenge the neglect of the social and political implications of these harms. My concern with articulation emerged from a sense that these significant harms are symptomatic of entrenched power disparities which are mutually reinforcing. Such power disparities and harms are not 'natural', nor are they unfortunate, yet justifiable, side-effects; they are socially produced and avoidable, and they therefore require articulation as injustices. Following Stuart Hall (1996), I understand articulation in the two-fold sense of i) saying and ii) joining. By this I mean finding a language which firstly, helps to provide the words with which to more clearly communicate these harms

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[1] I use the term 'dominant discourses' in this thesis as shorthand for the prevailing discourses, which subscribe to reductive understandings of 'science' and 'economics' as separate from 'politics,' and which perpetuate implicit assumptions about the separation of nature/culture. Such discourses permeate industry, science and government as well as the arguments of both pro- and many anti-nuclear green spokespeople. My intention is to contest these dominant framings of debates and practices which are engaged in by a multiplicity of different actors. While for the broad purposes of discussion I generalise about these dominant discourses, my intention is not to negate the important differences between the social actors that engage with them. Like Dryzek (2005: 9), I understand discourses as powerfully politically constructive of meaning and relationship, influencing our definitions of legitimate knowledge as well as constituting and reproducing material political realities (see also Foucault, 1980).

as injustices, and secondly, helps to bring these injustices into contingent connection with each other as relevant to our understanding of political community.

These injustices, and the intersections between them, have been difficult to articulate according to dominant discourses which naturalise the status quo and make such harms appear to be regrettable, but justifiable side-effects. Concerns about the ways in which nuclear energy blocks other solutions to the problems we face, centralising power and knowledge, limiting more empowering and decentralised adaptation and resilience to climate change and other ecological problems, and keeping us upon the path of high consumption, are dismissed as politically biased, detracting from a 'cool' and 'rational' appraisal of the problems we face. While some risk and harm is often acknowledged, it is pitted against other harms considered to be greater (the global impacts of fossil fuels, or significant disruption to economic growth), and consequently the harms of nuclear energy are justified and normalised by the insistence that there is no alternative.

In consultations and debates over nuclear energy in the UK and elsewhere, concerns about the effects of uranium mining on those in other countries, of the waste upon future generations, and of the risks of a serious accident or other still unknown impacts are often dismissed or set aside with reference to improvements in science and technology – better forms of mining, future developments to deal with the waste, new safer designs in reactor technology (Bickerstaff et al., 2008; DECC, 2011a; Blowers, 2011). Too much concern about the long-term and unknown effects and risks of raising levels of background radiation upon human and nonhuman health is not admitted as valid, but seen as emotional, irrational and unduly fearful due to a lack of causal proof or statistically significant connections between cancers and low-level radiation (e.g. Jha & Boseley, 2010; Monbiot, 2011d; Kelly, 2011). Risk of a disaster such as Fukushima is 'managed' and mitigated by robust risk assessments and persistent doubters are deemed sensationalist (ONR, 2011; Menon, 2012). The harms are therefore considered minimal, unfortunate and unavoidable side-effects of the way things are and remain difficult to articulate as injustices according to the dominant logics.

Green discourses in support of nuclear energy succumb to these dominant framings of the problems, capitulating to a sense that there is no

alternative. In addition, because raising concerns about harms to humans and nonhumans across time and space and in situations of scientific uncertainty, and raising possibilities of alternative less harmful ways of living is so difficult within the mainstream discourses, those opposing nuclear energy often do so according to the dominant terms, emphasising the promises of science and technology and the 'neutral', 'non-biased facts' rather than 'emotional' or 'politically biased' concerns about low-level radiation, risks of disaster, or alternative ways of living. Arguments made according to the dominant framings are very vulnerable to capitulation however, for the supposed neutrality of these discourses has the tendency to reinforce the status quo and further limit and weaken a sense that there are alternative ways of viewing the problem, blocking awareness of harms or enabling their justification within narrow dominant framings of the possibilities. Thus the harms remain naturalised or justified within the status quo, and a sense that they are actually *injustices*, resulting from unjust and unnecessary social relations both within the human world, and between humans and nonhumans, goes astray, is lost, and gains no political traction.

It is this problem of the neglect of multiple injustices produced by nuclear energy and the difficulty of articulating these within the dominant discursive framings, which forms the starting point of my thesis. My two-part research question arising from this problem is therefore: *how might we better understand, i) the injustices produced by nuclear energy, and ii) how these injustices intersect?* I argue that the injustices of nuclear energy and their intersections can best be articulated in terms of three images of politics: distribution, recognition and representation. These articulations can give us a clearer picture of the politics of nuclear energy, with important implications for (green) politics.

While my research responds first and foremost to the political problem of articulating injustices of nuclear energy, it also responds to a lacuna in political theory. Much valuable critical political theory, that of Iris Young (1990), Nancy Fraser (1997, 2008), David Schlosberg (2007), for example, focuses upon struggles for justice and emphasises the importance of attending to the concerns of actual resistance struggles 'on the ground.' The emphasis in such struggles is upon achieving justice, but resistance is always rooted in experiences and senses of injustice. As both Judith Shklar (1990) and Vittorio Bufacchi (2012) have pointed out however, the conceptualisation of injustices

themselves has received less academic attention and remains under-theorised. My research intends to make some headway in addressing this. In particular, this thesis has three main research objectives. First of all, I aim to develop an open, heuristic framework which can assist in understanding and articulating different injustices. Second, I develop and ground the articulations emerging from this framework in the political struggle over nuclear energy. Third, I consider the political efficacy of this framework for articulating injustices and contesting dominant discourses around nuclear energy.

I take an *ecological approach* to understanding the thesis problem and to developing the heuristic framework for articulating injustices. Before saying more about the framework and the objectives of the thesis, it may be helpful to give the reader some early indication of this ecological approach which I develop in Part I of the thesis, and how it underlies my overall argument about articulating injustices in Part II. The framework which I develop is particularly suited, yet need not necessarily be tied to this ecological approach which specifies my own ontological and normative commitments. I began with an ecofeminist sensibility to the intersections between environmental problems and social injustice, but my ecological analysis of the problem of nuclear energy was deepened as I engaged more thoroughly with both the problem and the theoretical literature which I used to build my conceptual framework. In developing my approach I am indebted to ecofeminist inspired thinking, particularly the work of Val Plumwood (1993, 2002) and Bruno Latour (2004), who offer insightful analysis of the constitutive, at times contradictory,[2] symbolic hierarchical separations of science/politics, and nature/culture, separations which perpetuate and exacerbate injustices to both human and nonhuman nature.

An ecological approach to challenging the problematic divide between humans and 'nature' emphasises the situated, embodied and relational, as well as the political character of all knowledge and requires sensitivity to both the differences and the continuities between entities (Plumwood, 1993). As such, the term 'articulation' is especially suited for the task which this thesis attempts,

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[2] As Rogers (2008: 299) has pointed out, the associations of 'nature' and 'culture' (for example, of the rational mind with 'culture' and 'man', and of bodily emotions with 'nature' and 'woman') while deeply ingrained, are intersectional rather than fixed, and tend to be 'unhinged and rearticulated to suit the needs of the moment.' As Latour (2004), Plumwood (1993, 2002) and others have shown, throughout western history, some have been able to use the power of these hierarchical separations for their own benefit and at the expense of others.

due to the double meaning of expressing and linking noted above, but also, as Stuart Hall (1996) emphasises, due to the process-sensitive, socially and historically contingent character of the intelligibility it offers. Ecological analysis reveals the ways in which the human/nature divide and related reductive separations serve to reinforce entrenched power disparities, which conceal and perpetuate injustices. These discursive power dynamics can be seen to underlie the dominant discourses of nuclear energy which depoliticize the issue in crucial ways. This depoliticization needs to be addressed if adequate contestation is to occur.

Articulating harms as injustices is a form of politicization. While harms might be accepted and justified within cost-benefit analyses, articulating such harms as injustices draws attention to a form of suffering which is socially produced and unnecessary, rather than accidental and 'natural', and which can and should therefore be addressed. By articulating injustices to both human and nonhuman nature I seek to tackle the problematic and complexly constitutive separations of science/politics, and nature/culture so as to more adequately take into account the interests of 'all affected' in the politics of nuclear energy (Barnett, 2012: 681). In this thesis I draw upon 'all affected,' in a pragmatic sense, as an indefinite, 'animating political intuition' of affectedness that is sensitive to 'situations in and through which felt senses of "justice violated" are generated, experienced and articulated as political claims' (Barnett, 2012: 682, 684). The importance of the ecological approach to taking all affected into account in this thesis lies in its attempt to move beyond the hierarchical and contradictory separations of science/politics and nature/culture in order to bring out a fuller understanding of what is at stake in the politics of nuclear energy: *injustices*, and consequently other possibilities for both human and nonhuman life.

To return to my research objectives, the first of these is to develop a heuristic framework which can assist in understanding and articulating different injustices. It is important to emphasise the reflexive process with which I have approached the development of this thesis. As a whole, this thesis engages in critical political theory of the kind which emphasises a reflective engagement with practice, as described by James Tully (2002). It begins by reflecting upon the problem of nuclear energy, through a critical survey of the governing discourses and the manner in which they have been contested. Rather than

14

develop a normative theory (of justice, for example), the aim is to redescribe the problem in a way which is helpful for those struggling within it, in an attempt to reveal possibilities for transformation. This is done by drawing out and unmasking that which has been taken for granted or deemed necessary. Uncovering the contingent, historically and spatially situated character of social relations helps to expand our understanding of the problem and the possibilities for change.

As part of this heuristic framework, I identify three different yet intersecting images of politics: *distribution*, *recognition*, and *representation*. I take the expression of 'images' from James Ingram (2008) who discusses 'images of politics' as emerging from predominantly unspoken assumptions regarding the composition of politics. These three images of politics that I draw upon involve distinct ways of thinking about politics and justice in political theory and they are also apparent in the historical theory and practice of liberation and justice struggles. Implicit in understandings of politics as distribution is the assumption that politics is about 'who gets what.' In recognition the underlying assumption is that politics is about 'who counts as what.' While in thinking about representation, politics is generally assumed to be about 'who speaks with authority.'

I consider each of these images of politics as important for articulating different yet intersecting injustices. In particular I draw upon David Schlosberg (2007). Following Nancy Fraser (1997), he begins to draw some insights from justice theory together to consider their usefulness for understanding the US Environmental Justice and Global Justice movements. In his sensitivity to the claims made by those resisting injustices, Schlosberg helps to link theory and practice and demonstrates the importance of acknowledging these different ways of thinking about politics in the multiple yet linked claims of social movements. While his work predominantly discusses justice, it offers a 'shared toolbox' which I use to develop my own conceptual framework in two ways: i) deepening the articulation of *injustices*, and ii) attempting to do so *ecologically,* i.e. seeking to directly confront the problematic separation of humans and 'nature' and thereby more clearly revealing the complex intersections between injustices to both humans and nonhumans beyond the separations of science/politics and nature/culture.

My second research objective, to situate the development of my heuristic framework in the struggle to articulate injustices of nuclear energy emerges from my ecological and feminist commitment to an expressly situated and grounded form of knowledge development, drawing upon my own felt experiences and intuitions in anti-nuclear and green politics. I developed the framework in reflexive process between theory and practice and my intention has been to use this framework to make sense of injustices of nuclear energy vis-à-vis the dominant discourses. While there is a rich literature on the politics of nuclear energy, it rarely frames the problem in terms of *injustice,* and there has been no attempt to consider how injustices produced by nuclear energy challenge the depoliticising separation of nature/culture.

Much has been written in the social sciences about the emergence of the 'risk society' in industrial modernity that seeks to explain and understand public resistance to certain technologies, including nuclear energy, in terms of social, political and environmental impacts. Here there is acknowledgement of the importance of resistance and the problems with dismissing it as basic public ignorance or unreasonable technophobia (Beck, 1995; Bauer, 1995; Touraine, 1995; Wynne, 2011). In political philosophy and International Relations some work considers the politics of nuclear energy, appealing to democratic norms of transparency and accountability (Stoett, 2003; Blowers, 2010; Bickerstaff et al., 2008; Pidgeon et al., 2008), distributive justice and participation (Shrader-Frechette, 2002; Endres, 2009; Blowers, 2011; Toke, 2013c) and emphasising the importance of considering neglected perspectives as well as the ethical impacts of the whole nuclear production process, including uranium mining (Plumwood, 1984; Martin, 2007; Hecht, 2012). Such work raises vital aspects of nuclear energy which remain bracketed and neglected in mainstream discussions of the issue. The attention which such work draws to moral and ethical concerns, as well as sustainability, points to the importance of ecologically fine-tuning the articulation of these as politically-relevant *injustices* which do not adhere to the dominant discursive separation of nature/culture.

The thesis problem emerged from my own experiences in the struggle against new nuclear power at Hinkley C, from the difficulties I and others experienced in making our concerns heard and understood according to the terms of the prevailing discourses. Reductive understandings of science and economics and the dismissal of a broader understanding of politics in most

discussions both disempowered and subordinated significant concerns. At best, the dominant framings relegated our doubts to 'secondary' ethical issues which could in any case be shown by utilitarian cost-benefit or risk-probability calculations to be 'overdramatizing' the issue, or at worst our concerns were viewed as 'ideological', 'naïve', 'emotional', 'irrational', or 'idealistic' in contrast to a naturalised and normalised status quo. The politics of nuclear energy therefore lends itself particularly well to an ecological reformulation which challenges the hegemonic power of the pervasive separation of science/politics that relies upon the governing separation of nature/culture. In addition, early green movements developed partly as one and the same with the first anti-nuclear movements, making an ecological approach particularly suited to the quest to articulate injustices of nuclear energy. By grounding the development of my heuristic framework in my own situated experiences of the struggle against nuclear energy I take seriously the ecological emphasis upon fostering knowledge which is situated and developed out of practical relations and experiences.

So, as discussed, the first two objectives of my thesis involve the development of an ecologically grounded framework to enable a clearer articulation of injustices of nuclear energy, drawing on my experiences in the struggle against nuclear energy and building on three images of politics emerging from historical struggles against injustice. I argue that by redescribing and articulating the harms of nuclear energy as ecological injustices we can make these harms better heard and understood as relevant to political community (which includes the work of science and economics), at the same time as challenging the hegemonic separation of nature/culture which limits our understanding of the scope and character of politics and reinforces and perpetuates ecological injustices. The strength of the articulations according to this choice of framework lies in the reflexive grounding in both the theory and practice of struggles against injustice. Grounding in theory provides a wealth of literature and potential tools and concepts from which to draw possible articulations, while grounding in practice increases the likelihood that such articulations are practically familiar and accessible in the everyday process of struggle. Rethinking each of these images of politics in ecological terms helps provide the apparatus with which to articulate injustices which are currently difficult to communicate as relevant within the limited terms of nuclear debates

and decision-making due to the separations of science/politics and nature/culture.

The third and final objective of this thesis is to evaluate the political efficacy of the articulations of injustices which my framework highlights, primarily for contesting dominant discourses and decision-making on nuclear energy, and tentatively, for (green) politics more broadly. I do this by considering the transformative potential as well as the limits of each mode of articulation, and in particular I emphasise the importance of considering intersections between the multiple injustices to which these articulations draw our attention. I developed this particular framework with the intuition that although analytically distinct, distribution, recognition and representation intersect with each other in important ways.

A few provisional points can be made at this juncture. The scope of this thesis is very wide and multifaceted because of the consideration of three established literatures in political theory around distribution, recognition and representation; the challenge of extending thinking about these in ways which go beyond the separation of nature/culture; and the need to engage with the complex and on-going problems of nuclear energy. Given this extensive and ambitious scope, the framework developed is preliminary. I contend, however, that it demonstrates the usefulness of linking up the different literatures and articulating injustices in terms of the three images of politics. This thesis demonstrates the importance of articulating and thinking about the intersections between multiple injustices to human and nonhuman nature across space and time, and the importance of developing a language which enables such linking to occur. While not claiming to present a comprehensive account of injustices of nuclear energy, I maintain that the account enabled by my framework helps to contest the dominant framings of the issue by providing a thicker description of the effects of nuclear energy so that we might better consider the injustices which are at stake. In the process, the framework is intended to help to more plainly reveal some of the key power disparities underlying discourses and decision-making on nuclear energy and to clarify how neglecting these can be counter-productive to the wider concerns of green politics. Importantly, it does this in a manner which challenges the problematic separations of science/politics and nature/culture. Inherent in my ecological approach is the understanding that this integration means that injustices to both human and

nonhuman nature should be understood as indicators which require consideration not 'only' as a matter of morality or ethics, but also as a matter of existential prudence affecting the precarious futures of many on earth.

The formal structure of my thesis (see Table 1) is comprised of two parts. Part I, consisting of Chapters One and Two, presents the research problem, and the literature which I use to i) explain my ecological approach (which in part emerges from the problem), ii) gather the ingredients for the framework for articulating injustices, and iii) set out the bare bones of that framework. Part II, consisting of Chapters Three, Four, and Five, develops this framework, which is guided by the ecological approach set out in Part I. In each of the chapters in Part II I aim to: i) consider the relevant literature in justice and green theory in order to rethink what is at stake in that particular image of politics from an ecological point of view; ii) articulate injustices of nuclear energy in terms of that image of politics; and iii) evaluate the political efficacy, i.e. the transformative possibilities and limits of each articulation, again from an ecological point of view. In Part I, the ecological approach, that emerges from

Table 1: Formal thesis structure

	Aims	Steps taken
Part I : Diagnosis		
Ch. 1	Reflect on the problem and consider conditions of possibility within it	Surveys practices and discourses of nuclear energy: i) in the present, ii) in the past, iii) in early ecologically inspired struggles against nuclear energy
Ch. 2	Explain the ecological approach which underlies the thesis and outline my heuristic framework.	Completes diagnosis of the problem and clarifies i) ecological approach to address problem, ii) components of heuristic framework to facilitate articulation of injustices, iii) articulation and efficacy.
Part II : Redescription		
Ch. 3	Articulate distributive injustices of nuclear energy and consider efficacy of articulation	Draws on literature of politics as distribution to i) rethink what is at stake in ecological terms, ii) suggest a language to articulate injustices of nuclear energy, iii) evaluate political efficacy of this articulation
Ch. 4	Articulate recognition-based injustices of nuclear energy and consider efficacy of articulation	Draws on literature of politics as recognition to i) rethink what is at stake in ecological terms, ii) suggest a language to articulate injustices of nuclear energy, iii) evaluate political efficacy of this articulation
Ch. 5	Articulate representation-based injustices of nuclear energy and consider efficacy of articulation	Draws on literature on politics as representation to i) rethink what is at stake in ecological terms, ii) suggest a language to articulate injustices of nuclear energy, iii) evaluate political efficacy of this articulation

my analysis of the problem, encompasses my non-arbitrary, yet contingent, ontological and normative commitments, namely an ecofeminist concern with taking the interests of all affected by socially produced, entrenched and unjust power disparities - including human and nonhuman nature - into account. In Part II, the images of politics as distribution, recognition and representation provide a heuristic framework through which I articulate injustices according to my ecological commitments. I maintain that this framework is particularly suited to an approach which is sensitive to the ecological intersections between injustices and addressing the hegemonic separation of nature/culture.

The substance of my thesis proceeds as follows:

In Chapter One I consider the environmental pro-nuclear case and the prevailing debates over nuclear energy. I give a brief historical overview of the politics of nuclear energy at state and international levels, and I consider the challenges of the ecological and anti-nuclear movements of the 1960s and 1970s. I argue that despite the anti-nuclear roots and commitments of green movements, in the past and present, the debates and discourses have been dominated by reductive understandings of science and economics, and that some green support for nuclear energy is nothing new. Historically, the dominant discourses have neglected and devalued important concerns about the links between significant socially produced harms to both humans and nonhuman nature, which were expressed by early ecological and anti-nuclear movements and which continue to motivate many global and environmental justice movements today. I argue that the mainstream framing of the problems of nuclear energy and climate change reinforces the dominant forms of political organisation at the same time as it blocks understanding of other realities, tending to pit those struggling against harms produced by the dominant forms of social organisation against each other. The early anti-nuclear and green movements highlighted important ecological insights but these have not penetrated the dominant discourses.

In Chapter Two, I draw upon the work of Val Plumwood, Bruno Latour, and others, to redescribe the problem and clarify the ecological approach which aims to move beyond the limiting hierarchical separation of science/politics that is embedded in the separation of nature/culture. This ecological approach

emphasises the inherent politics of all knowledge. This approach insists upon asking 'how many (and who) are we?' a question which must not be short-circuited by the next question 'how can we live together?' In the politics of nuclear energy, the latter has short-circuited the former by way of the hierarchical division of science/politics where scientific and economic facts about 'what is' have been used to abort political contestation of 'what could be' and the power relations which constitute political community. In order to better take knowledge and interests of all affected in the politics of common life into account I suggest that we need to more clearly articulate *injustices* which are perpetuated by the separation of nature/culture. Inspired by the work of David Schlosberg, and the theory and practice of justice and liberation struggles, I develop a heuristic framework based around three images of politics as distribution, recognition and representation. Rather than focus upon concepts of justice my work is explicitly concerned with articulating injustices in an ecologically sensitive manner, beyond the limiting separation of nature/culture. In developing my heuristic framework I address the questions of 'how many (and who) we are' in order to reopen the possibilities for answering the question of 'how we might live together.' I seek to enable contingent, practice-sensitive articulations of injustices which may also be politically effective in resisting the fragmentation and naturalisation of harms of nuclear energy in the dominant discourses.

In Chapter Three I argue that we can understand distributive injustices of nuclear energy as *deprivation of basic necessities.* Basic necessities can be broadly understood as the healthy and sustaining conditions for being. Deprivation of basic necessities is caused by the unequal distribution of burdens as well as goods, across time, space and the human/nature divide. This includes the compounding of such unequal distributions with other forms of deprivation under the dominant forms of social organisation. In the politics of nuclear energy some humans in the present reap the benefits of nuclear energy production thereby depriving future generations, those in other countries and aspects of nonhuman nature of basic necessities, of healthy and sustaining conditions for life, by exposing them to the dangerous long-term legacy of high-level radioactive wastes, the harms of uranium mining, and other risks of nuclear disaster. Importantly, those who are thus deprived are more likely to also suffer other forms of deprivation under current conditions. There is

transformative potential in the commensurability of distributive articulations with dominant discourses of cost-benefit analyses which can expose the correlations between deprivation of basic necessities and thus highlight striking distributive injustices across time and space. However, although a relational understanding of distribution helps to expose the limits for both human and nonhuman nature to sustain the burdens as well as the goods of contemporary life, such articulation cannot in and of itself challenge the dominant conceptions of what constitute 'basic necessities', nor comprehensively challenge the neglect of both future generations and nonhuman nature from understandings of political community. Contestation of the meaning of deprivation of basic necessities, as well as who or what can be understood to suffer such injustices, requires concomitant articulations of injustices in terms of the politics of recognition, while contestation of the authority of such meanings requires an understanding of the politics of representation.

In Chapter Four I argue that we can articulate recognition-based injustices as *disrespect for integrity.* Integrity accounts for both continuities and differences between selves and others (human and nonhuman) and implies inevitable vulnerabilities and dependencies. Disrespect for integrity is caused by the desire for independence from and control of inevitable unpredictability in human and nonhuman interactions. In the politics of nuclear energy some humans (industry and government experts) deny human fallibility and vulnerability to nuclear risk, disrespecting the ecological integrity of both themselves and others with assumptions about the controllability of nuclear energy and the possibilities of minimising risk through control and coercive protective measures. There is transformative potential in this articulation as it challenges existing conceptions of the relations between selves and others, forcing as much attention upon the dominant self as upon the subordinate other. This enables contestation of identity and meaning and encourages awareness of the illusion of independence and control perpetuated by relations of domination. Such awareness can help to bring other possibilities for self/other relations into view. However, such awareness must be wary of the inevitable desire to overcome unpredictability in interaction; because of ongoing continuities and differences between entities in interaction alienation cannot be overcome. To guard against the desire to overcome alienation and/or deny dependencies and vulnerabilities, we need combined and sustained attention

also to distributive injustices which contest the ever present potential for deprivation of basic necessities, and we need to attend to representation-based injustices.

In Chapter Five I argue that we can understand representation-based injustices of nuclear energy as *denial of multiple authorities*. I emphasise a more decentred, situated and multiple understanding of authorities that involves some power of authoring and determining one's own narrative and existence in representative processes involving both speech and action. Denial of authority is caused by the assertion of particular, disengaged forms of authority over others. In the politics of nuclear energy the denial of multiple authorities plays out in the monopolisation and authoritarian use of the ostensibly 'objective' and 'apolitical' knowledge claims and practices of technocrats and many nuclear (and other) scientists which deny the socially, politically and ecologically situated multiple authorities of others, both human and nonhuman. The transformative potential of articulating representation-based injustices as denial of multiple authorities lies in its commensurability with widespread discourses of democracy, and in emphasising the situated, embodied and partial character of all speech and action. This can help to unmask dominant monopolising representations which are non-reflexive in their claims of authority over others. There are potentials for a reimagining of science and democratisation of common life to expose the possibilities of both constructive and destructive collaboration. However, resources lie overwhelmingly with those who have an interest in maintaining dominant structures and discourses, and encouraging the representation of multiple authorities can run the risk of reinforcing these if not combined with articulation of other injustices. The idea of a neutral and non-political science bolsters the status quo by masking underlying resource disparities and failing to engender the necessary reflexivity and responsibility about scientists' and other authorities' own roles in perpetuating dominant self-other relations. It is precisely because of the inherent political implications of knowledge production that the idea of 'neutral' authorities in science and economics must be unmasked, and then negotiated with the help of concomitant attention to both distributive and recognition-based injustices.

Taken together we see that articulating and contesting these injustices involves an understanding of all three images of politics as they intersect with and relate to each other. These intersections become clear as I consider the

transformative potential of each articulation at the end of each of the three substantive theoretical chapters in Part II. Deprivation of basic necessities, disrespect for integrity and denial of authority have a tendency to be mutually reinforcing. Emphasising the ecological perspective throughout, and the importance of attending to the continuities and differences between human and nonhuman nature in 'environmental' and 'social' injustices, I argue that understanding and tackling one aspect of potential injustices is insufficient, limited and will tend to be counter-productive if the others are not also taken into account. Articulating injustices in relation to each other can provide important political efficacy and potential for solidarity. I consider the broader implications of my framework for the politics of nuclear energy and green politics in general in my conclusion to the thesis.

PART I

[W]e did not just stumble by some freak technological accident into the ecological mess we have made, and it will take more than a few bright boys and better toys to get us out of it

<div align="right">(Plumwood, 2002: 8)</div>

Chapter One
Politics of Nuclear Energy

> The tiny risk imposed by nuclear power has both obscured and invoked the far greater risk imposed by coal. Scare stories about nuclear power are a gift to the coal industry. Where they are taken seriously by politicians – as they have been in Japan – and cause a switch from nuclear to coal, they kill people.
>
> (Monbiot, 2013)

Both Japan and Germany have increased their reliance upon coal in large part due to recent moves away from nuclear energy.[3] This strengthens the position of those who argue that we must choose nuclear energy as the lesser of two evils if we are concerned about both people and environment in the context of climate change. The prevalence of fear and mistrust about nuclear energy has been described as a sign of 'displacement', a fixation 'on something small to avoid engaging with something big' (Monbiot, 2013). There is persuasive force behind the comparisons of nuclear and coal, not least because this restrictive choice is backed up by powerful political discursive structures which constitute it as reality. However, as I seek to show in Part I of this thesis, there are deeper displacements at work here. Weighing up a limited choice of options according to limited dominant understandings of science and economics displaces confrontation with the inherent politics of these, and seriously hinders our understanding of significant, political harms produced by both nuclear energy and the dominant forms of social organisation.

In this chapter I seek to describe the research problem of the thesis. This is the problem of communicating harms of nuclear energy which are difficult to understand as significant according to the dominant discourses. I draw upon the current debates and the history of nuclear energy to show how the dominant discourses separate out and valorise scientific and economic facts and figures as forms of knowledge distinct from and more legitimate than political knowledge about the power relations which constitute political community. This separation normalises problematic political power relations perpetuated by nuclear energy, for this technology cannot be understood separately from the dominant forms of social and political organisation which produced it. It should therefore begin to become clear in this chapter that continuing to try to understand the problem of nuclear energy according to scientific and economic knowledge understood to be distinct from political knowledge inhibits our

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[3] For Germany, see Nicola & Andresen, 2012, and for Japan, see Inajima, 2013.

understanding of the conditions and possibilities with which we are confronted. This is because this way of framing the problem reinforces dominant forms of political organisation (such as imperatives of capitalist state security and economic growth) at the same time as it fragments and blocks understanding of other realities, tending to pit those struggling against harms produced by the dominant forms of social organisation against each other.

In section one of this chapter I consider the trend for some environmentalists to support nuclear energy in response to climate change and I evaluate prevailing tendencies in debates for and against this form of energy. I claim that conceptions of science and economics as separate from politics tend to dominate disagreements over 'the need for nuclear'. While engaging according to the terms of the dominant discourses appears to be a strategic necessity, I argue that this is limiting, particularly for those opposing nuclear energy as a solution to climate change and other ecological crises we face, because it disables political critique, reinforcing the dominant status quo which is able to pose as neutral and above politics. This hinders the contestation of nuclear energy as an inherently political issue.

In section two, I give a brief historical overview of the politics of nuclear energy at state and international levels. This enables me to highlight the dominant discourses of capitalist state security and scientific and economic development that reinforce the position of nuclear energy at the same time as nuclear energy in turn reinforces such discourses. These discourses are powerfully constitutive and rely upon the separation of democratic politics from understandings of science and economics, a separation which has also influenced the ways in which environmentalists have engaged with the issue of nuclear energy. Debates in the past demonstrate similar tendencies to those now, with an emphasis upon scientific expert knowledge at the expense of communicating and understanding the politics of the issue. Tracing the history up to the present day enables me to show how the urgency surrounding climate change and the discussion of this in terms of scientific and economic facts understood to be 'above' politics, has reinforced the dominant discourses of capitalist state security and economic growth, weakening and fragmenting challenges to the political status quo.

In section three I consider challenges to the political status quo which emerged in the intersecting social movements of the 1960s and 1970s. A key

aspect of these movements, although not always thoroughgoing or clearly communicated, was an ecological critique which emphasised the politically produced links between ecological damage and social injustices. Many of the diverse counterculture movements of this time converged around nuclear energy as symptomatic of the ways in which the dominant discourses perpetuated harms to both humans and 'nature' as a whole. The linking of the problems of social injustice and damage to nonhuman nature is still apparent in most green party principles as well as the rationales of many other grassroots activists worldwide. I argue that although this linking critique has failed to penetrate dominant discourses, particularly those concerning nuclear energy, it constitutes a vital form of knowledge and political critique which pays attention to the ecological and political character of relations across the culture/nature divide, the neglect of which severely limits our understanding of the problems we face. This paves the way for Chapter Two where I clarify how the perpetuation of the science/politics divide reinforces the prevailing separation of nature/culture and I suggest an ecological approach to addressing this separation and finding other perspectives on the problem.

Debating 'the need for nuclear'

As the nuclear disaster at Fukushima had barely begun to unfold, environmental and social justice campaigner and long-time nuclear sceptic, George Monbiot (2011a), deepened and publicly exposed a split in UK (and international) green politics by declaring that this event had finally 'made [him] stop worrying and love nuclear power'. Shocking as this may have seemed for many, the ambiguities within environmental politics over nuclear energy began well before Monbiot's declaration. Environmentalists such as Mark Lynas, 'reformed' GM crop saboteur, Stewart Brand, promoter of the NASA planet earth image of the 1960s, James Lovelock, author of the Gaia hypothesis, and others, all made strong statements in support of nuclear energy over the course of the last ten years. Environmentalists for Nuclear Energy (EFN), with Lovelock as their patron, have argued that environmentalist opposition to nuclear energy has been the 'greatest misunderstanding and mistake of the century' (EFN, 2012; see also Scurlock, 2010). These spokespeople and the arguments they make have considerable influence within the green movement and in my own circle of

acquaintances many have become convinced by arguments about the lesser evil in the context of climate change.

Even Peter Harper and Paul Allen of the Centre for Alternative Technology (CAT) in Wales, a leading (predominantly radical and ecological) institution for alternative living, renewable energy and energy efficiency, stated at a conference hosted by Lovelock in 2004, that '[t]he worst possible nuclear disasters are not as bad as the worst possible climate change disasters', and that there was need for debate in the UK over whether a limited replacement of existing nuclear power stations might be necessary, given the dual challenge of the 'energy gap' and reducing carbon emissions (Scurlock, 2010: 216; Vidal, 2004; Brown, 2004).[4] More recently, not long after the fifth IPCC report (2013) stated with 95% certainty that humans have caused current global warming, four prominent climate and atmospheric scientists penned an open letter 'to those influencing environmental policy but opposed to nuclear power' to request that they do an about turn and demonstrate their 'real concern about risks from climate damage by calling for the development and deployment of advanced nuclear energy' (Caldeira et al., 2013).

In what follows I begin to illustrate the thesis problem, showing how a certain kind of emphasis upon science and economics predominates in contemporary discussions over nuclear energy. In the context of the sense of urgency surrounding climate change, and the important role which science has played in bringing climate change to international attention, nuclear energy tends to be debated with the implicit assumption that scientific facts and figures are distinct from and more legitimate than political knowledge of the issue. Emphasis upon the facts and figures is also apparent in the ways in which the economics of nuclear energy are debated, also in terms which naturalise the economic status quo and legitimise statistical economic knowledge over more obviously political concerns about the entrenched power imbalances and inequalities of political economy. Given this structuring of the dominant discourses it is understandable that campaigners on both sides rely upon these assumptions to give force and legitimacy to their arguments. However, this has a tendency to backfire for it reinforces the dominant framings which ultimately

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[4] At this point in time, George Monbiot had continued to stress that 'there is an alternative', refusing to be constrained by the moral calculation arguments which point out that there are more deaths and risks from coal than from nuclear, arguing that this was a false choice, that alternatives exist and that giving nuclear the green light would be detrimental to these alternatives (Monbiot, 2004).

work against a more linked up, ecological understanding of the problem. This limits the possibilities for challenging the political status quo and finding solutions to the problems we face. It perpetuates the illusion that the dominant discourses provide the only rational and objective response.

The issue of climate change and the urgent need to reduce carbon emissions is fundamental to the 'conversion' of environmentalists to nuclear energy. Caldeira et al. (2013) emphasise 'the need to sharply reduce greenhouse gas emissions', while Lynas (2013) has also conceded that it is only because of climate change that he is advocating nuclear energy. The emphasis upon climate change and carbon emissions reduction is combined with a conviction that other forms of energy production are not up to the task. Pro-nuclear environmentalists do not completely deny certain harmful effects of nuclear energy, but rather weigh them up and play them down against other harms. Monbiot (2011a) argues that '[i]f other forms of energy production caused no damage, these [nuclear] impacts would weigh more heavily'. Various arguments about the intermittent character of renewable energy, the dependence of renewables and efficiency technologies upon the environmentally destructive 'rare earth' mining industry, the problems of unregulated proliferation of decentralised renewables, and most of all, of course, the comparatively devastating effects of fossil fuels, are discussed (Monbiot, 2011b; Kidd, 2010; see also Parry & Douglas, 2011). Underlying the avowed pragmatism of the 'lesser of many evils' in the face of climate change argument are two dominant tendencies in the discursive formation of the issues. These are, firstly, the emphasis upon scientific progress, particularly quantifiable scientific facts and the promise of future scientific development of technology, and secondly, the emphasis upon economic facts and figures and the imperatives of economic growth combined with varying degrees of neoliberalism.

For example, beginning with the focus upon science, Mark Lynas (2008) has described his 'Damascene conversion' to the cause of nuclear energy as a discovery that 'the Green case against nuclear power is based largely on myth and dogma', that nuclear power 'is, without exception, dirty, dangerous and unnecessary – was *untrue. Science has moved on. The old figures just don't*

stack up anymore' (emphasis added).[5] He cites the Intergovernmental Panel on Climate Change (IPCC) to argue that

> nuclear is just as low-carbon a power source as wind and solar: the world's operating nuclear reactors save the planet from 2 billion extra tonnes of carbon dioxide per year, which would have been emitted had coal been used instead (Lynas, 2008).

Lynas (2008) admits that the dangers of nuclear energy still exist, but making reference to the Chernobyl disaster, he emphasises that the 'mainstream science' of the World Health Organisation (WHO) and the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) cite a much lower death toll (28 initial deaths and several thousands of cases of nonfatal thyroid cancer) than Greenpeace (60,000 dead already with a further 140,000 deaths in the future) (Greenpeace, 2006). Therefore, '[o]n a deaths per gigawatt-year basis, nuclear is safer than coal and oil (Lynas, 2008). George Monbiot (2011b) too weighs up numbers of deaths from nuclear energy and deaths from coal: 'Chinese coal mining alone kills as many people every week as the worst nuclear power accident in history – the Chernobyl explosion – has done in 25 years'.

 Just as measuring action against climate change in terms of carbon emissions reduction provides an apparently clear, straightforward and therefore seductive way of assessing progress or change in tackling the problem, engaging in moral calculations which quantify deaths according to energy source seems to provide a straightforward way to introduce the issues of concern for environment and people into knowledge frameworks and decision making dominated by quantitative thinking and the understanding that 'science' and legitimate knowledge production must be free from 'politics', where politics has become a dirty word involving bias and a lack of objectivity. The sense of urgency surrounding climate change, emphasis upon carbon emissions, and the general trend to understand issues in quantifiable terms amenable to utilitarian cost-benefit analyses has the effect of radically disadvantaging the key arguments of those engaging on the techno-scientific plane against it, for concerns about uncertainty, safety and risk are much more difficult to quantify or measure in this way. The moral calculations reduce and simplify the problem

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[5] Lynas (2013) recounts on BBC Hardtalk how scientists had pointed out to him that if he respected the consensus on climate change, then he should also respect the consensus on other scientific 'controversies' such as that on the impacts of radiation and risks of nuclear energy, or on genetically modified crops.

and create a depoliticised either/or choice abstracted from historical and local (political) contexts and conditions.

Like Lynas, Monbiot (2011d) has railed against green and anti-nuclear advocates over the ways in which they have wielded science: '[n]uclear opponents have a moral duty to get their facts straight'. He has expressed dismay at 'cherry-picking' of 'the science' by campaigners against nuclear energy, also going into detail on the controversy over the numbers of deaths from Chernobyl (Monbiot, 2011c). Monbiot (2011c) characterises anti-nuclear activist reliance upon uncertainties within the scientific establishment over links between low-level radiation and certain cancers as analogous to the 'cherry-picking' of climate sceptics, declaring that the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) 'is the equivalent of the Intergovernmental Panel on Climate Change'. This is symptomatic of the reliance of environmentalists and green thinkers in general upon scientific facts and institutions to provide action-motivating and legitimate evidence for environmental problems in a world which requires 'hard' and 'strong' (read quantifiable) evidence if change and regulation are to get in the way of profit or in any way seriously challenge the status quo.

Not least because of the vehemence of these debates, it is understandable that those opposing nuclear energy at times appear to have no choice but to formulate their counter-arguments on the same terms. However, as I seek to demonstrate with the following examples, this can backfire. While engaging according to the terms of the dominant discourses is at times a pragmatic necessity, and of course, quantifiable knowledge must remain an important part of how we make sense of the world, an emphasis upon this alone at the expense of other forms of knowledge means that important aspects of the problem remain unacknowledged. From a green point of view, not only is it not always successful, but it reinforces the illusion that the dominant discourses are as 'neutral' and 'objective' as they claim to be, and detracts from and weakens the force and legitimacy of important political knowledge about the inherent power relations that affect how we live together, political knowledge which underlies green anti-nuclear engagement.

In debate with George Monbiot on Democracy Now! (2011) Helen Caldicott, a veteran anti-nuclear campaigner fights back by using this sense that scientific knowledge is more legitimate knowledge to her advantage,

emphasising her own credentials as a 'physician, highly trained. I was on the faculty at Harvard Medical School'. In the debate and her later written response (2011) she emphasises concerns about internal emitters and radiation and the consensus that no dose of radiation is safe, however small, including background radiation. She cites the Yablokov et al. (2009) report which translates the compilation and synthesis of thousands of Slavic publications and emphasises that we still don't know the full extent of the damage from Chernobyl because of the long time-frames and extensive land mass involved. Yet Monbiot dismisses this, emphasising instead the Anglo-American dominated scientific consensus, and pointing out that although the report was published by the New York Academy of Sciences, reviews have been critical, and the Academy has since distanced itself from it (Monbiot, 2011d). This standoff over the scientific evidence points to the problems for anti-nuclear opponents when they engage in this debate which is predominantly structured around a division between 'reputable' and legitimate science and 'disreputable' politics, and when those on both sides of political deliberation draw upon scientific knowledge as settled 'fact' as a means of cutting through uncertainties and by-passing politics (Latour, 2004).

This example also highlights the power disparities where one side is able to more successfully draw upon the consensus of the status quo and claim neutrality and therefore also emotional calm. Monbiot (2011d) takes the moral and scientific high ground arguing that '[i]f we don't stick to the facts, if we don't subject all claims to the same degree of scepticism, we could make a bad situation worse'. At the end of the debate on Democracy Now! (2011) Monbiot's implacable emphasis upon the scientific consensus stands in stark contrast to Caldicott, who having faltered over some of the facts, concludes with obvious emotion 'Have you ever tried to help a child dying of leukaemia, George? It's beyond comprehension.'

Science is considered legitimate knowledge because it is understood to be separate from bias, politics, ideology and emotions. Engaging in this debate solely on its own terms puts those concerned about the effects of nuclear energy in a weaker position because scientific research which supports the status quo is able to pose as neutral, while that which does not is marked as political and tends to suffer from lack of funding and status (cf. Plumwood, 2002; Martin, 1986a). This is illustrated in Mark Lynas' (2013) suspicion of any

scientific research carried out by scientists who are transparent about their critical political leanings, and is apparent also in the history of scientific developments and research (Haraway, 1988; Martin, 1986a, 1986b; Plumwood, 2002). But as will become clearer in Chapter Two, such separation of science and politics bars any discussion of the implications of science and of its entanglement in industry and governance upon the power relations which make up political community. It blocks public deliberation over the type of political community in which we can and might live, which is particularly important in the context of climate change and widespread ecological degradation.

The reliance upon scientific consensus and 'scientific fact' understood to be separate from politics is also bolstered in pro-nuclear arguments by an emphasis upon the potential of science to develop technology which can help us to deal with the problems we face. Caldeira et al. (2013) recognise that 'today's nuclear plants are far from perfect', but are pushing for 'advanced nuclear energy', and argue that '[f]ortunately, passive safety systems and other advances can make new plants much safer'. This advanced science means that 'modern nuclear technology can reduce proliferation risks and solve the waste disposal problem by burning current waste and using fuel more efficiently' (Caldeira et al., 2013).

Responding according to the terms of the dominant discourse, anti-nuclear advocates also emphasise scientific and technological potential, pushing for the scientific development of wind, solar, tidal and other forms of renewable and efficiency technologies. However, once more the discussion of these in terms which use the legitimising shorthand of scientific and technological progress to add force to arguments can lead to accusations of 'double standards'. Monbiot (2011b) recounts a debate with Caroline Lucas, Green Party MP for Brighton Pavilion, in which he describes her response as 'wildly illogical':

> [w]hen I raised the issue of the feed-in tariff, she pointed out that the difference between subsidising nuclear power and subsidising solar power is that nuclear is a mature technology and solar is not. In that case, I asked, would she support research into thorium reactors, which could provide a much safer and cheaper means of producing nuclear power? No, she told me, because thorium reactors are not a proven technology. Words fail me.

While the politics of technology is partially present, but mostly implicit, in Lucas' case about the incumbency of nuclear energy, this unveiling of the politics of the

issue is not thoroughgoing and for the strength of her argument she instead relies implicitly upon the technological promise of solar power. When challenged with another argument about technological promise (that of thorium) Monbiot pounces upon the weak point in her over-reliance upon the science, and the idea of '*proven* technology' (which also points to the rigours of free market economic testing, see below) contradicts her previous point, thereby weakening her overall case (see also Rustin, 2011).

Engaging in the dominant terms of the debate with an emphasis upon scientific fact and proof as well as scientific and technological promise has a tendency to backfire because the 'neutral' language tends to work in favour of the dominant discourse of technological progress upon which nuclear advocates rely. This obscures underlying unavoidably political problems. The double-bind here is difficult to escape however, because pointing out the inherent politics marks out those with an anti-nuclear stance as explicitly political and therefore with markedly less legitimate knowledge of the issue according to the dominant understandings.

The Monbiot-Lucas example just given also points to the ways in which the debate is not only heavily dominated by abstracted discussions of science and technology considered to be above and separate from politics, but that these are intertwined with similar tendencies in discussions of economics and cost, as well as the assumptions and imperatives of economic growth. The question of whether or not nuclear power can realistically help with carbon emissions reduction is highly fought over in terms of a predominantly abstracted economic discourse. Caldeira et al. (2013) argue that '[i]nnovation and economies of scale can make new power plants even cheaper than existing plants'. But those arguing against nuclear energy argue that it will be too costly. The EPR to be built at Hinkley has run into problems elsewhere '[o]riginally priced at €3bn, the Finnish reactor's cost is estimated to be at least €5.7bn, and the French reactor is doing just as badly' (Dorfman, 2011; see also Thomas et al., 2007).

Opponents of nuclear energy also argue that a high strike price, the price the government will guarantee for power generated by Hinkley C, goes against EU regulations, providing an indirect or 'backdoor' subsidy, which will unfavourably advantage nuclear energy vis-à-vis renewables (Mitchell & Woodman, 2006; Toke, 2013a, 2013b). The question of whether state support

is illegal and will distort competition is currently being considered in Brussels. The UK government argues that the contract with EDF should not qualify as aid, and does not contravene EU treaties (Chazan & Barker, 2013). However, anti-nuclear proponents argue that despite the insistence that the British government is not subsidising new nuclear it will inevitably require public money of some kind, because no nuclear reactor has ever been built, never mind decommissioned without state funding (Thomas et al., 2007; see also Sovacool & Valentine, 2012). They point out that 'Britain's nuclear waste bill is still growing too: liability estimates have grown from £50bn in the mid-2000s to as much as £80bn at present' (Dorfman, 2011; see also Mason, 2010).

Yet the economic arguments against nuclear energy are countered with the point that renewables too require huge amounts of investment. While in some ways the decentralised character of many renewables enables a better fit with neoliberal market forces and it has been argued that

> at least with wind and solar power, it is possible to see the cost curve dropping to the break-even point in the near future. Nuclear power, by contrast, may never be able to convince investors to put their money down without government guarantees (Noyes, 2011).

The important point here however, as in the Monbiot-Lucas example above, is that to argue only on the basis of cost and market forces, and to rely, in particular on arguments against state subsidies within the dominant neoliberal discourses is counter-productive. As Monbiot's (2011b) expression of frustration over Lucas' dismissal of support for thorium illustrates, such arguments, if only engaged in at the abstract level, may undermine greens' own hopes about the influence of state power in encouraging investment and development in renewables.

Simply weighing up the economics as separate from politics once more leaves the door open to accusations of double standards, exposing problems with green support for the feed-in tariff financial incentive to encourage the uptake of renewable electricity-generating technologies, yet opposition to support for nuclear energy. In 2011, this cost 41p per kilowatt hour, yet the estimated cost of nuclear energy was at 8.3p per kilowatt hour (Monbiot, 2011b). This figure excludes the back-end costs of storing radioactive nuclear waste which are often assumed to be dealt with by better and cheaper technology, displacing and discounting them into the future, and it also excludes insurance against the risk of high-impact disasters. However, the point here is

that such figures distil information and abstract it from the inherent history and politics of the issue. It is not enough for anti-nuclear greens to argue simply on the basis of cost in a manner understood to be above politics. Although the economic system has become 'naturalised' and the market is seen as a neutral, independent force, economics and cost cannot be understood separately from politics; the power relations which make up political community. It is important that the historical political intertwining of politics and economics is clearly understood. This includes the concern that historically, nuclear power has absorbed and continues to absorb exorbitant amounts of public money for political reasons (see next section), and has and will continue to divert investment away from what is required for renewables and energy efficiency, transmission and storage solutions to be developed (Mitchell & Woodman, 2006; Thomas et al., 2007; Sovacool & Valentine, 2012; Elliott, 2010b).

In this respect, drawing attention to political knowledge of the issue must include questions about the power relations which make up political community: who benefits from the support given to different technological solutions; whose technology counts and is deemed worthy of support; whether a type of technology supports existing unjust and unecological tendencies in the status quo or whether it encourages other possibilities; does it require highly centralised control, thereby diminishing individual and community autonomy or does it enable decentralisation and empowerment of local communities? The reliance upon abstracted arguments about cost and economic efficiency in anti-nuclear arguments carries with it the danger of reinforcing what Fisher (2009) terms the 'capitalist realism' which pervades dominant neoliberal discourses. This realism implicitly relies upon the nature/culture separation which naturalises market forces, making them appear inevitable and unchangeable. As a result, harms and inequalities produced by these dynamics are also naturalised and seen as unavoidable side-effects, therefore remaining unchallenged or implicitly uncontestable.

As I have pointed out, what is apparent amongst the environmentalists who have become supportive of nuclear energy is a conviction about the urgency of the problem of climate change and a tendency to want to quantifiably measure various effects and provide definitive 'true' and scientifically 'objective' solutions to problems. The temptation to use facts and figures and the promises of science or the economy to cut through the complex and difficult business of

politics is understandable. But those on the other side of the debate are also convinced by and wield certain scientific, economic and technical facts and figures. The effect is such, that the question of whether or not nuclear power can or should realistically help with carbon emissions reduction and meeting energy needs takes place on a predominantly technical and economic plane, with facts and figures bandied backwards and forwards ad infinitum.

The different potential abstract economic scenarios and statistics combined with diverse claims about the potentials of existing and developing technologies is bewildering and disempowering for lay people, particularly when divorced from concrete social and political realities. Dorfman (2011) attempts to bring a measure of politics, the social relation of trust, back into the polarised abstract scientific and economic discussions arguing that

> Since we're not all energy technology practitioners, it may come down to who you trust. As Andrew Warren, the director of the Association for the Conservation of Energy asks: given that Germany has the confidence to go down a non-nuclear route with the same carbon objective as the UK, have EDF and Huhne really got it so right, and has Europe's most successful economy really got it so wrong?

But ultimately this too resorts to the terms of the dominant reductive economic rationalist discourse, for in other words, we ought to trust the country which has been judged most successful in abstract economic terms. Such economic arguments are not to be dismissed, for they take the terms of the debate as they stand and make a best effort to compete on those terms – a pragmatic necessity at times. However, they can also just as easily be dismissed. The German public is renowned for its strong anti-nuclear sentiment. As the history of official thinking about resistance to nuclear energy also demonstrates (see next section), such 'sentiment' or 'feelings' are generally associated with 'fear' and considered an 'irrational', emotional and therefore unduly biased and inaccurate response (e.g. see Kelly, 2011). Merkel may be seen as cynically responding to the 'irrational fear of nuclear energy [which] runs deep in Germany', during by-elections which were crucial for her government (Johnson, 2011). This type of argument reinforces the neoliberal understanding that it is politics meddling in economic affairs causing distortions, rather than acknowledging that economics and politics are inseparable. Thus the

comparison to Germany is liable to backfire on its own terms.[6] That Germany, having shut down its nuclear power plants, is now burning more brown coal (lignite, worst for CO_2 emissions) as a result (Nicola & Andresen, 2012; Anderson, 2014), adds fuel to the fire of those who emphasise an either/or choice between nuclear and fossil fuels in the face of climate change and highlights the problems with single-issue campaigning and policy-making.

Arguing simply on the basis of cost and within the dominant neoliberal economic discourse also fails to challenge the underlying political problem of assumptions about the possibilities of endless economic growth. As Monbiot (2011e) himself admits (belatedly, after triggering much green consternation with his provocations earlier in the year)

> even if we can accept an expansion of infrastructure, the technocentric, carbon-counting vision I've favoured runs into trouble. The problem is that it seeks to accommodate a system that cannot be accommodated: a system that demands perpetual economic growth. We could, as Zero Carbon Britain envisages, become carbon-free by 2030. Growth then ensures that we have to address the problem all over again by 2050, 2070 and thereon after.

Yet climate scientists James Hansen, Ken Caldeira and others (Caldeira et al., 2013) simply underline the imperatives of economic growth: '[g]lobal demand for energy is growing rapidly and must continue to grow to provide the needs of developing economies'. They insist in this context that renewable energy sources 'cannot scale up fast enough to deliver cheap and reliable power at the scale the global economy requires' (Caldeira et al., 2013).

Implicit within the discourses described is an emphasis upon that which is deemed 'rational', associated with the power of abstract, quantifiable scientific and economic facts and figures, and that which is deemed 'irrational', associated with the unreasonable disregard or clouding of 'objective' science and economics with emotions and political bias. As the next section will show, historically, and up to the present in the immediate aftermath of Fukushima, anti-nuclear protestors have been characterised as irrational or unreasonable, unable to objectively judge risk probabilities in contrast to government scientific advisors and industry experts (Jha & Boseley, 2010; Allison, 2009; see also

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[6] Other attempts to use the example of Germany include the insistence that Angela Merkel is a *scientist*, and therefore a more legitimate political decision-maker in these matters (e.g. *The Guardian*, 2013). Again, however, this shores up the divide between scientific knowledge and political knowledge, masking the politics of the former and degrading the status of the latter.

Sunstein, 2002a).[7] This is also clearly apparent in the arguments of those greens that have come out in favour of nuclear energy. For example, Caldeira et al. (2013) assert that

> Quantitative analyses show that the risks associated with the expanded use of nuclear energy are orders of magnitude smaller than the risks associated with fossil fuels. No energy system is without downsides. We ask only that energy system decisions be based on facts, and not on emotions and biases that do not apply to 21st century nuclear technology.

Once more the narrative of unquestionably positive scientific progress is clear, and within the dominant terms of debate which emphasise the imperatives of a neutral and objective science above political values, this may come across as wholly convincing. As Chapter Two will show however, politically and emotionally sensitive knowledge is not 'irrational' at all. To argue that 21st century technology is somehow miraculously detached from political circumstance fails to understand the socially and politically situated character of all science and technology.

With the polarization of the nuclear energy issue, the sense of urgency over climate change, and the scientific and economic complexities and uncertainties, it is easy to understand why relying upon the apparent legitimacy of abstracted apparently unbiased scientific and economic knowledge is appealing and convincing for some. Drawing upon scientific and economic 'facts' appears to 'solve' and cut a more efficient line through the more time-consuming and unpredictable processes of politics, where judging 'right' and 'wrong' courses of action is a challenging process. I have tried to show here how the consideration and attempted contestation of the nuclear energy issue in such limited terms is counter-productive, because i) it reinforces the dominant understanding that scientific and economic knowledge can be considered separately from politics, and that the existing scientific and economic status quo

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[7] Sunstein suggests 'that probability neglect offers a new, if partial, explanation for the division between experts and ordinary people in thinking about social hazards—one that raises fresh questions about claims of rival rationality. Of course, it is true that experts have their own biases; they are often wrong. The point is not that experts are always right, but that when ordinary people disagree with experts, it is often not because of competing value judgments, but instead because ordinary people are more subject to probability neglect' (Sunstein 2002a: 84). This type of argument does not take into account power imbalances, and the ways in which people are more risk averse when not in a position of power over an issue. This is not a sign of a lower form of rationality but a different form of rationality based on social position (Fischer, 2005). Sandman's study of risk managers who were much more risk averse when asked to imagine themselves as fathers instead of businessmen and engineers, is a case in point (Fischer, 2005: 59).

is 'natural' and 'unchangeable,' and ii) it reinforces the sense that political knowledge, of the power relations which influence how we live together, is of less value, thereby reinforcing the neglect of important knowledge of socially produced harms of nuclear energy, and blocking serious consideration of alternatives. In what follows I consider nuclear energy in historical context, to gain a clearer picture of this problem.

Tracing the history of dominant discourses of nuclear energy

Emerging as a by-product of the atomic bomb, nuclear energy was developed through close cooperation between state, scientific and industry elites, with high levels of secrecy and minimal public engagement. Even before the advent of neoliberal ideas the tendency for the issue to be discussed in abstracted scientific and technological terms with minimal engagement with democratic politics and an emphasis upon national economic development and scientific progress was well established. Tracing the history of the politics of nuclear energy from the context of the cold war and hopes of the scientific and technological progress of modernity, through to the decline of the industry in many countries after the liberalisation of energy markets and the high-profile disasters of Three Mile Island and Chernobyl in the 1970s and 1980s, right up to the prospects of a 'nuclear renaissance' in the early 2000s, shows that the emphasis upon reductive understandings of economics and science is evident throughout its history and has underpinned dominant discourses of state security. In particular, nuclear energy highlights the synergies and tensions between free market, liberal rhetoric and aspiration and national state security concerns both during and after the cold war, and more recently with climate change.

Given the industry's early promises of endless cheap energy, it appeared an attractive proposition during this time, with support including early green campaigners and many on the left. Although the recent promoters of nuclear energy discussed in the previous section often perceive and portray themselves as 'new radicals', shaking up an old orthodoxy (Kingsnorth, 2012), support for or ambiguity over nuclear energy is not new amongst those concerned about green issues, nor is the focus and emphasis upon the 'real' scientific and economic 'facts' of the matter. Tracing the history of nuclear energy shows why particular 'neutral' understandings of science and economics have come to

dominate green discussions, but also demonstrates the limits to the efficacy of this from an ecological point of view, not only because it continues to exclude and devalue important and inalienable aspects of the politics of the issue, but because in the process this reinforces dominant discourses of capitalist state security and economic growth at the expense of the cultivation of alternatives.

In the United States and elsewhere there had been an upsurge in anti-nuclear feeling in response to the horrors of Hiroshima and Nagasaki at the end of the Second World War. At this time the link between nuclear reactors and nuclear weapons was relatively apparent. The first nuclear reactors at Calder Hall in the UK and those built as part of the Manhattan Project in the United States were built in order to supply weapons-grade plutonium (Wynne, 2011; Roberts, 1999). With Eisenhower's international 'Atoms for Peace' program and promises from the nuclear industry and scientists about unlimited and affordable energy, this link was complicated though never fully broken (Camilleri, 1984). Early claims of the nuclear industry and supportive governments coincided with popular imaginations about the advancement of civilisation and the development of science and technology to overcome the bounds of the 'natural' world (Wynne, 2011). The industry's promises of energy which was 'too cheap to meter' had seductive appeal (Strauss, 1954, in Sovacool & Valentine, 2012; Herring, 2005).

The Atoms for Peace program combined the idea of creating a market for exporting American nuclear technology with that of the moral duty of the United States (and other Western nuclear countries, notably France and Britain) to transform the world by, for example, eliminating famine and converting Africa 'into another Europe' (Weart, 1988: 159; Sovacool & Valentine, 2012; Camilleri, 1984). Certain countries, such as South Korea and Pakistan, even Iran up until its revolution in 1979, developed strongly in this area from participation in the program, which also played a key part in the politics of the cold war (Camilleri, 1984; Sovacool & Valentine, 2012).

Many saw emancipatory possibilities of industrial development to increase and enable better distribution of resources and an enhanced quality of life for all (Sovacool & Valentine, 2012: 70; Herring, 2005). Nuclear energy was promoted as a solution for the Third World in order to meet the vast future potential energy needs of the rural poor (Sovacool & Valentine, 2012). Such countries often saw the advantages in energy security and national

independence which technological development in this area seemed to promise. Electrification was viewed as an important ingredient of modernization in the Second World too, where the Soviet nuclear industry said 'Let the atom be a worker, not a soldier' (Sovacool & Valentine, 2012: 138). The Soviet Union's 'Peaceful Atom' project was three times the size of the United States' program in terms of funding, disseminating nuclear materials and knowledge to communist states such as China, Cuba and Vietnam (Sovacool & Valentine, 2012).[8]

The idea of big technological development in general, and nuclear energy in particular, as symbolic of modern progress and industrialization and capable of being harnessed by the socialist project was attractive for many on the left, but also within strands of the green movement when compared with other more obviously destructive and intrusive means of energy production (Herring, 2005). Within the peace and nuclear disarmament movement too there were some such as Professor John Fremlin in the UK, who, although campaigning for nuclear disarmament, supported nuclear energy as a potential means of alleviating energy conflicts and avoiding war (Herring, 2005: 156; Hudson 2005; Scurlock, 2010). The emergence of the 'national security state' in the late 1940s was very much driven by the idea of 'economic security' drawing the liberal left into nationalist projects by resonating with ideas of 'personal freedom' and 'social equality' tied to individuals' desires for personal and 'social' security, and mediating between intra- and international politics as the US promoted and naturalised 'a certain vision of economic order, both internally and internationally', a commitment to capital accumulation (Latham, 1997: 144-146; Neocleous, 2006: 379-380).

The link between national and economic security exposes the power politics lying behind the ostensibly uneasy and contradictory tension between nationalist realist security narratives, and those of liberalisation and the free market – a combination which throws up especially stark double-standards when we consider the historical intertwining of national and international nuclear security and the development of the global nuclear industry (Camilleri, 1984; Hecht, 2002, 2003; Sovacool & Valentine, 2012). The sensitive nature of the materials to be traded in the international nuclear energy markets necessitated

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[8] Funding far outweighed the lack of actual resources and the technical difficulties which the Soviet nuclear energy project experienced in the early years (Sovacool & Valentine, 2012: 129).

the founding of the International Atomic Energy Agency (IAEA). Operational by 1957, it had 'a mandate to spread nuclear power to the south' (Stoett, 2003: 103). The Washington Export-Import Bank released funding for constructing and fuelling 42 exported nuclear power projects, and made direct loans mostly to South Korea, Taiwan and the Philippines (Stoett, 2003: 103; Camilleri, 1984: 240). As some of the more outlandish promises surrounding nuclear energy failed to materialise in the 1960s and 1970s, industry and governments around the world maintained a veneer of technological competence, exclusivity and legitimacy through concerted public relations campaigns designed to persuade the public that nuclear energy was essential for development and national security, and an answer to the 'energy crisis' following the Oil Shocks of the 1970s (Stoett, 2003: 103-4; Camilleri, 1984: 132; Hilgartner et al., 1983).

Resistance to nuclear energy was sporadic and weak in the early years in Britain, but early concerns were especially apparent at local levels. Since the birth of nuclear energy there had been 'profound, but concealed ambivalence towards nuclear technology amongst the public' (Herring, 2005: 199). The fact that authorities refused to acknowledge fears as valid reinforced their reputations as unresponsive and arrogant organizations (Herring, 2005). Both governments and the nuclear industry put much effort into researching the psychological causes of 'irrational' and 'undue anxieties and fears' and 'abnormal emotional response', 'consigning […] critics to the psychiatric couch' (Hilgartner et al., 1983: 100). In 1957, the World Health Organization (cited in Hilgartner et al., 1983: 102) convened the Study Group on 'Mental Health Aspects of the Peaceful Uses of Atomic Energy' with the aim of making

> a valuable and concrete contribution to the adaptation of mankind to the advent of atomic power, making it indeed as painless and as unharmful as possible and allowing man to reap a rich harvest from the seed that his inventive genius has sown (Hilgartner et al., 1983: 102).

The impact of the Windscale accident in Britain (1957) was studied in this manner, with one British study group member, Lord Ritchie Calder (cited in Hilgartner et al., 1983: 103) documenting the 'factual and reassuring' nature of press coverage in the first two days following the fire. On the third day, however, after milk was deemed unfit for human consumption and was disposed of in the sea, Calder (1962, cited in Hilgartner et al., 1983: 103) wrote

> the headlines exploded . . . As we studied the third day's headlines, Hans Hoff [chairman of the study group and director of the Psychiatric

University Hospital and Neurological Institute in Vienna] said to me, 'Obviously all the editors were breast fed.' It was, to him, a perfect example of 'regression'.

Although deadly serious, these reports used crude Freudian (and highly gendered and masculinist) analysis which trivialised people's genuine concerns about the unknown long-term effects of radiation upon people and the environment.

The more mainstream environmental organisations were ambivalent about nuclear energy to begin with. In the early 1970s the newly formed Friends of the Earth in the UK was predominantly in favour of nuclear power (Burke, cited in Herring, 2005: 160). Within the mainstream movement in the UK there was not much concern or attention to nuclear energy. Unlike in the United States, Australia, France and Germany there was no mass campaign and most environmentalists were far more concerned with debates about the 'Limits to Growth' and the 'Blueprint for Survival' (Herring, 2005: 155). Debates over nuclear energy in the UK green movement bear similarities to contemporary debates - weighing nuclear energy up against coal and engaging in the issue in a highly technical manner. There was some debate in the Conservation Society newsletter, with those opposing nuclear energy raising the problem of waste and the legacy for future generations in particular, while those supporting emphasised the greater dangers of fossil fuels and other methods of power production (Herring, 2005: 155-6). Similarly, in the 1960s and early 1970s in the United States, conservationists were more concerned with opposing large hydro-electric dams and achieving conservation of large tracts of wilderness through the founding of national parks. Dam projects were criticised for their intrusive disruption of river systems, while nuclear energy was seen as more self-contained and benign. Support for the 'peaceful atom' did begin to waver, however, in the US and elsewhere, when sites of specific interest to the conservation lobby were chosen (Wills 2001, cited in Herring, 2005: 39).

Concerns about the proliferation of nuclear weapons in the non-Western world were exacerbated by India's testing of the 'Smiling Buddha' in 1974, enabled originally through export of nuclear technology from Canada (Stoett, 2003, Sovacool & Valentine, 2012). In 1979, the fallout from the accident at Three Mile Island in the United States brought many personal stories of the after-effects upon peoples' health, livelihoods and the local animal and plant life

to national and international media attention, despite official denial of the seriousness of the incident (Herring, 2005; Hollyday, 1991). After Three Mile Island officials stalled two days on advice to evacuate pregnant women and young children. They later forced the resignation of the state's secretary of health who had issued the advice, and who had also highlighted 'misstatements' in the Kemeny Commission investigating the incident, remaining highly concerned about the long-term health effects of the accident (Hollyday, 1991:148-9).

In the years following the disaster at Three Mile Island, the Thatcher government in the UK was very careful about public concerns over nuclear power and anxious to avoid conflict. According to leaked cabinet minutes, the government believed it 'might make more rapid progress towards its objective by a low-profile approach, which avoided putting government in a position of confrontation with … protestors' (O'Riordan et al., 1988, cited in Dryzek et al., 2003: 62). This approach entailed symbolic inclusion of opposition groups in planning inquiries, thereby reducing confrontation and legitimizing decisions (Dryzek et al., 2003). While there were limited possibilities for inclusion in public consultations in the UK this tended to encourage adherence to the restrictive scientific and rationalist engagement with the issue, at the expense of important aspects of the politics of nuclear energy, perpetuating and reinforcing the understanding that the dominant narratives were 'neutral' and 'objective', while those resisting were 'biased' and 'political' (Herring, 2005).

The public inquiries themselves were weighted against opposition to nuclear energy. At Windscale in 1977, objectors were required to bear the 'burden of proof' in the challenge against the government which played the role of 'both promoter and judge' of the development proposals (Dryzek et al., 2003: 62, Wynne, 2011: 92). Submissions were obliged to be of a technical and legalistic nature, which restricted the range of social actors able to participate in the debate. An OECD report (1979: 68, in Dryzek et al., 2003: 62) following the Windscale Inquiry concluded that this had worked against public engagement and served to 'depoliticise and decrease public debate'.[9] In responding in this way, the authorities failed to answer persistent questions which dated back to

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[9] See also Saward on this (1992: 89): 'the role of the objecting value and expert groups was a more or less symbolic or token one … objectors were co-opted into advisory and informational roles at the inquiry but the origins, structure and processes of the Inquiry militated against their views receiving a full and considered hearing' (in Dryzek et al 2003: 62-63).

the first nuclear inquiry at Bradwell in 1956, that 'why, if nuclear power stations were so safe, were they built in remote areas? And why [if low-level radiation posed no risk] were there such detailed emergency measures in the event of any release of radioactivity?' (Herring, 2005: 199). Friends of the Earth were 'stung' by their experience at the Windscale Inquiry where considerable resources, time and effort were invested. In the subsequent 1983 Sizewell B inquiry of the early 1980s they then limited their participation to safety issues, having come to the conclusion that the inquiries were acts of co-optation to neutralise opposition (Dryzek et al., 2003: 63). The government pre-empted the results of the 1983 Sizewell B Inquiry, demonstrating its commitment to nuclear power development 'through its financial investment in the proposal process, and the Central Electricity Generating Board had even ordered parts for Sizewell B before the Inquiry had concluded' (Dryzek et al., 2003: 63).

As is clear from governments' and other social actors' support for nuclear energy throughout this period, dominant discourses of scientific and technological modernization and economic development linked to nation building and national security greatly reinforced the case for nuclear energy (Sovacool & Valentine, 2012). This, combined with the scientific and technological complexities of the issue served to depoliticise and further disempower those who sought to raise the social, political and ecological problems of the technology. This was the case even within social movement organisations. According to Tom Burke (cited in Herring, 2005: 160), the Friends of the Earth position of being mostly in favour of nuclear power only changed when they became convinced by the arguments of Amory Lovins from the U.S., and Walt Patterson, a nuclear physicist from Canada, who 'understood the technical arguments and convinced us'. It is noteworthy that in the earliest days of the industry, intellectual dissent came most strongly from within the industry, from those with concerns over too rapid industrial expansion, reactor choice and the potential economic problems (Herring, 2005; Hilgartner et al., 1983). This reflects the extent to which nuclear energy was an issue predominantly confined to experts, an issue of scientific knowledge that appeared to be beyond the scope or relevance of politics and the power relations which structure political community.

In the UK, Ernst Schumacher was one of the earliest to draw attention to the scientific and technological uncertainties of nuclear energy (Herring, 2005:

80-81, see also Schumacher, 1973). It was not until the early 1970s that literature emerging from the U.S. began to counter a general lack of awareness about safety hazards and potential dangers of emissions from reactors. Scientific dissent over safe levels of radiation then became a rallying point for opposition by the public (Herring, 2010: 47). The work of Ernest Sternglass about the widespread effects of low-level radiation from nuclear fallout upon children made headway in the media but was deemed sensationalist and exaggerating by many. However, the inquiry into that report by Gofman and Tamplin, commissioned, yet later suppressed by the U.S. Atomic Energy Commission (AEC), was respected by most, including Walt Patterson, who had by then become a key player in Friends of the Earth in the UK (Herring, 2005: 160-61). Patterson remained dubious about emphasising radiation issues as a campaigning tactic, and insisted that Friends of the Earth was not 'anti-nuclear per se' (Herring, 2005: 160-161).

Both Friends of the Earth and the Conservation Society in the UK were extremely careful to present a rationalist, neutral scientific and technologically informed stance, opposing the specific type of reactor being proposed rather than the risks of nuclear technology per se. There was 'an implicit assumption that only those with scientific and technological knowledge - preferably a PhD in nuclear physics - could speak competently and credibly about scientific issues' (Herring, 2005: 130). This meant that especially in the UK, those concerned with aspects of nuclear energy which were excluded by the apparently 'objective' and 'neutral' approaches, for example impacts of uranium mining, long-term nuclear waste and the risks of accidents upon environment and people, concern for those outside of the national community, and concerns about the present and future political and democratic implications of such centralised and dangerous power production, had great difficulty in raising them.

According to opinion polls, the only factor consistently associated with anti-nuclear opinion has been gender; 'women in all countries, in all time periods, were consistently more anti-nuclear than men' (Herring 2005: 28; see also Keller, Visschers & Siegrist, 2012). The nuclear industry has made a concerted effort to address this, with targeted advertising and the engagement of prominent female spokespeople (e.g. see Nelson 1984; Hilgartner et al., 1983). Within the anti-nuclear and green movements worldwide women have

played leading organising roles at the grassroots. However they have tended to be disproportionately marginalised in official movement literature and pronouncements. Exceptions, such as Alice Stewart and Rosalie Bertell, as well as Helen Caldicott discussed above, worked in the area of health - deemed a more acceptable domain for women (Herring, 2005).

Historically, the tendency to assume that 'men expressed "facts" while women expressed "emotions"' persisted even in more radical circles and publications (Herring, 2005: 130). The 1978 autumn edition of Undercurrents (cited in Herring, 2005: 130) a radical 'eco-freak' magazine, contained a 'Special Issue on Women and Energy' with just one contribution on nuclear power by Irene Coates who had participated in the Windscale Inquiry. The editors introduced this article with

> We have heard the arguments for and against Windscale, most of them written by men. It is hard for a woman, faced with her feelings about nuclear energy, to be listened to seriously. A feeling response to the environment is as valid a starting point for protest and political change as an argument based on intellect or economic analysis. It is time that such responses are given the credibility they merit.

The separation of 'emotions' and 'feelings' from 'intellect' and 'analyses' has continued even where not directly and overtly attached to gender. It underlies the persistent separation of science from politics, and assumptions about the validity of scientific over political knowledge. The constrained nature of access to government and the 'origins, structures and processes' of the public inquiries (Saward, 1992: 89), as well as the dominant discourses of scientific and economic optimism of the time make it clear why such assumptions have prevailed. The cultivation of scientific expertise and the 'rational' approach was intended to avoid 'the risk of being labelled "emotional" or "lunatic" your views discredited' (Walt Patterson, cited in Herring, 2005: 130).

The exclusion of explicitly 'political' and other socially (i.e. ecologically) important aspects of the issue occurred not only in the UK, but internationally, and as much for those within state structures as outside them. In Germany, the main political parties, although debating nuclear policy from the beginning, were, as elsewhere, heavily dependent upon advice from experts of the nuclear industry and government research centres, and, due to the scientific, 'technical' framing of the problem, the debates were admitted later by insiders to be only a 'ritual "mise en scène" for the general public' (Haenscke, 1977, cited in Nelkin &

Pollak, 1980a: 141). Because nuclear energy, particularly in the aftermath of the oil crisis of 1973-74, was framed in terms of national security and economic development and therefore 'considered as implementation of general energy and military policy', there was little room for the major political parties to raise the distinctly political aspects of the issue (Nelkin & Pollack, 1980a: 128). Masking the inherent politics of nuclear energy and shoring up the illusion of neutrality which expert culture and the reliance upon abstracted scientific and economic facts and figures encourages, reinforced the existing dominant political narratives of national security in the cold war context, masking these as necessary and unavoidable.

The entwining of state security and state economic development opportunities and the tensions between state security and the free market are particularly apparent in the history of the international regulation of the nuclear industry and trade in uranium. For many years and for various international political reasons uranium mining was not classified as part of the 'nuclear' industry, nor subject to the same regulations, particularly not by uranium importing countries. This had the effect that uranium producers, especially in Africa, were written out of the nuclear picture (Hecht, 2012). Levels of regulation have been negotiated or enforced and declared licit or illicit to suit the stronger party between former colonial and postcolonial countries, such as France and Niger, or to enable the hidden continuation of business in the face of increasing anti-apartheid pressures, as was the case with the US and the UK in relation to uranium from South Africa and Namibia in the 1980s (Hecht, 2012). This applies also beyond uranium, as even after nuclear development stalled in the US in the 1980s and 1990s Westinghouse pushed the technology abroad and maintained a monopoly, often pushing old versions of technology. In the case of the Philippines, for example, a US court ruled that safety developments and restrictions applying to the technology used at Three Mile Island need not apply elsewhere (Del Callar, 1991).

A cumulative history of accidents in the course of the nuclear fuel process followed by official delayed responses and obfuscation of dangers as well as economic costs have contributed to public unease over the years. Chelyabinsk, Soviet Union (1957), Windscale, UK (1957), Three Mile Island, U.S. (1979), Saclay, France (1979), Chernobyl, Ukraine (1986), Rajasthan, India (1995), Sellafield, UK (2005), Jadugoda, India (2006), and Fukushima,

Japan (2011) are only a tiny fraction of the number of costly (in terms of either economics or human fatalities) accidents occurring worldwide (see Sovacool & Valentine, 2012: 252-65). The accident at Chernobyl in the Ukraine in 1986 was not reported to Moscow until two full days after, for fear of disrupting May Day celebrations, and even then the extent of the disaster was covered up, and only exposed after a Swedish radiation monitoring station 800 miles northwest from the plant reported abnormally high radiation levels (Sovacool & Valentine, 2012: 143).

The nuclear accident at Chernobyl, with its wide-reaching effects across Europe, and the publicity of the disaster, in part thanks to a stronger anti-nuclear and green movement at this time, proved a blow to government and industry efforts to reassure the safe and low-risk nature of nuclear energy and maintain secrecy over accidents and controversies (Rucht, 1995; Radkau, 1995; Rüdig, 2000). In some ways the incident in the Ukrainian Soviet Socialist Republic led to a 'symbolic opening' of the world nuclear industry to consideration by economists, investors and the public, with experts from the U.S., Japan and Western Europe advising and visiting nuclear plants in Eastern Europe and Asia ever since, knowing the impact on their industry should there be another serious leak or meltdown anywhere in the world (Scurlock, 2010: 32).

However this did little to change the expert culture and the continued assumptions of the 'rational' and 'neutral' character of these. Instead, failures in governance of such disasters have been characterised as a result of mismanagement to be corrected, and as political mistakes in contrast to a smooth functioning science, considered separable from political experimentation and bureaucratic bias (Renn, 1990). Despite concerted efforts to improve safety and perfect and scientifically guarantee risk management, scandals and incidents have persisted. In Britain, the on-going controversies since 1977 over the thermal oxide nuclear fuels reprocessing plant (THORP) at Sellafield (previously Windscale), have become 'global bywords for controversy, mismanagement and misinformation over the nuclear fuel cycle's most intensely problematic phase, plutonium (and uranium) extraction from spent reactor fuel' (Wynne, 2011: 1). It is now finally scheduled to close in 2018 (BBC, 2012).

It might be noted that given the extent of government and industry publicity in support of nuclear energy and secrecy regarding accidents, the level

of public debate and concern which did come about might not have occurred without the work of anti-nuclear and green movements at local, national and global levels. Despite protest and public engagement on the issue, including public debate encouraged by the predominantly pro-nuclear Labour Party and Tony Benn in particular,[10] time and again important concerns of those opposed to nuclear power were not taken seriously or thoroughly considered in decision-making in the final instance (Wynne, 2011). Concerns about nuclear energy continued to be dismissed as irrational by both government and industry, and it took the privatisation programme of Thatcher and the Conservative government in the UK to ultimately expose the economic cost of nuclear energy, and thereby limit nuclear development in the UK (Dryzek et al., 2003: 63). Although opposition can still in part be credited with having increased awareness of the risks and made the industry a less attractive proposition for investors in a liberalised market (Rucht, 1995), in the UK it is generally agreed that ultimately it was the privatisation and liberalisation of the energy industry which undermined most of all any further expansion of nuclear energy from the 1980s to early 2000s (MacKerron, 2011).

In the U.S., which has the highest number of reactors in the world, the Price-Anderson Act, also applying to nuclear weapons installations, was crucial to nuclear energy development in the early years. This ensured that the law would 'hold harmless the [nuclear] licensee and other persons indemnified' from public liability claims arising from nuclear accidents causing total damages in excess of $560 million' (Shrader-Frechette, 1980: 10). Development in the US stalled after Three Mile Island and Chernobyl, as a combination of economic privatisation and reduced state security increased public scrutiny and public opposition (Sovacool & Valentine, 2012). Although many complex and case specific factors contributed to the circumstances in each country, the levels of nuclear energy consolidation in France, China and even South Korea can be attributed at least in part to strong levels of centralisation and government control over energy production and distribution (Sovacool & Valentine, 2012).

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[10] Tony Benn (2009) has since said: 'In 1955 when Eisenhower said he was going for 'Atoms for Peace' I became a passionate supporter of it. Having been brought up on the Bible I liked the idea of swords into ploughshares. I advocated nuclear power as Minister of Technology. I was told, and believed, that nuclear power was cheap, safe and peaceful. Having been in charge of nuclear power I discovered it wasn't cheap, wasn't safe and when I left office I was told that during my period as Secretary of State for Energy, plutonium from our nuclear power stations went to the Pentagon to make nuclear weapons. So every nuclear power station in Britain is a bomb factory for America. I was utterly shaken by that. Nothing in the world would now induce me to support nuclear power. It was a mistake'.

This has led to the situation in the UK where the government, due to its 'liberalised' energy market, has been wooing and seeking to provide incentives for Chinese and French owned companies to invest in the UK energy infrastructure (Wintour, 2012; Fortson, 2013; DECC, 2014).

Already in the early 1990s, some raised the possibility that nuclear energy might have a potential role to play in addressing global warming or climate change, with arguments of the relative merits in comparison to coal and oil, and in particular the possibilities for developing countries (Heidenreich, 1991). Yet while at this time many argued that the nuclear industry had lost its legitimacy in those countries such as the UK and the US where development had stalled (Rucht, 1995; Stoett, 2003), by the mid-2000s, with emerging global scientific consensus about the severity of the problems and causes (if not the complex effects) of climate change, as well as the pressures of meeting the ever-rising energy demands of economies old and new there was talk of a 'nuclear renaissance' (Elliott, 2010a).

Hinkley C is one of the first major new infrastructure planning projects to be tested under the new fast-track planning regime brought in by the last Labour government and adapted and consolidated under the current coalition government. It has seen an emphasis upon 'consensus' at the cost of genuine consultation, and the limiting of public contributions to exclude questions already decided upon and set out in National Policy Statements (Johnstone, 2010; Blowers, 2013). The last Labour government has been characterised as 'clearly committed to an EM [ecological modernisation] approach to sustainable development' (Barry & Doran, 2006: 256; see also Hajer, 1995; and Christoff, 1996). However, in a pre-dominantly neo-liberal country such as the UK this has entailed attempts to resolve contradictions between the economy and the environment through state regulation to encourage predominantly 'resource efficiency and technological and supply-side solutions' (Barry & Doran, 2006: 259). In this respect ecological modernisation has remained 'weak' with a tendency to look to technological solutions, rely upon technocratic policy-making by scientific, economic and political elites and impose closed-end policy frameworks, rather than the more open approach, considering multiple possibilities, characteristic of 'strong' ecological modernisation, which would involve more open, participatory and democratic decision-making and broader

changes to the institutional and economic structures to integrate ecological concerns (Christoff, 1996: 490, in Barry & Doran, 2006: 255).

Nuclear energy policy in particular, has been predominantly seen as an expert, technocratic issue. The building of consensus through limited possibilities for public engagement 'where disruption or dissent is reduced to debates over the institutional modalities of governing, the accountancy calculus of risk, and the technologies of expert administration or management' (Swyngedouw, 2009: 609) has been diagnosed as symptomatic of a 'post-political' condition resulting from the hegemony of neoliberalism, particularly in the context of dominant constructions of climate change (Swyngedouw, 2010; Johnstone, 2013). The 'colonization of the political sphere by incontestable scientific truths, neoliberal inevitabilities, and technocratic administration' (MacGregor, 2013: 13) is certainly apparent.

The process has seen participants ejected from consultation meetings for insisting upon raising matters of concern (Stop Hinkley, 2012), and the slicing of the planning application process with the effect that this evades clear assessment of the project in its entirety, and the questioning of nuclear energy as an option. Prior to receiving overall planning permission from the Infrastructure Planning Commission, the preparatory works consultation at West Somerset County Council (which did not allow for consideration of whether or not we need nuclear power) allowed for the bulldozing of the site and the beginning of the building of the foundations for the plant without consideration for the impact upon the local communities and wildlife or the possibility that the power plant might not be constructed (Morris, 2011; Vidal, 2011). All of these tendencies have led many concerned to assume that, as with nuclear projects in the past (Wynne, 2011), public consultation was simply a box-ticking exercise, and the project was a foregone conclusion (The Land, 2012).

The 'green' case for nuclear energy in the UK gathered pace under Tony Blair. The 2003 Energy White paper said 'not now, but not never' and promised a full public consultation (DTI 2003, Bickerstaff et al., 2008). However, the emphasis upon climate change and ambitions to become world-leading in carbon emissions reduction, combined with concerns about energy security and the looming 'energy gap'[11] contributed to growing support for nuclear energy

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[11] The 'energy gap' is a term used by others, especially nuclear proponents (e.g. Barry, 2005; EDF 2014) and taken up in news reports (Black, 2005, in Bickerstaff et al., 2008). This is the gap between projected

with certain influential scientists, within industry and in government (Bickerstaff et al., 2008). However, the energy policy review begun by the government in 2007 was legally challenged by Greenpeace. In light of the promise of a full public consultation on the principle of the need for nuclear energy, this was ruled 'very seriously flawed', 'seriously misleading' and 'unlawful' (Royal Courts of Justice, 2007: 45; Johnstone, 2010).

In the 2003 Energy White Paper the issues of substance considered important and requiring clarification had been economics and waste. For both of these, the government only released substantial information after the brief twelve week consultation period had ended. The consultation was particularly misleading with regards to the Committee on Radioactive Waste Management (CoRWM). It implied that they envisioned no problem with accommodating waste from nuclear new build. In actual fact CoRWM's stance had been an in principle 'yes, there is a technical solution', but there should be a full and separate consultation for the new build proposals, taking into account 'social, political and ethical issues, (for example the creation of further burdens on future generations)' (Royal Courts of Justice, 2007: 42-43). CoRWM was especially keen to retain a distance from the issue of nuclear new build, due to its suggestion that geological disposal should happen 'on the principle of volunteerism', 'an expressed willingness [by a community] to participate': the decision to produce more nuclear waste might severely impact upon any willingness that did exist (CoRWM, quoted in Royal Courts of Justice, 2007: 44).

Tony Blair's response to the court ruling was that they might have to do the consultation again, but this would not change the policy (Johnstone, 2010: 96; MacKerron, 2011). There was a strong push from industry and scientists in the UK, including the Royal Academy of Engineering and the Institution of Civil Engineers, which helped strengthen an emerging consensus within government around the need for nuclear energy in the context of climate change (Leake, 2005; Bickerstaff et al., 2008). At the same time, it is important to understand the context of a global industry pushing for expansion opportunities. Notable was the government's emphasis upon the changed economic circumstances, of the recent resurgence in nuclear power and uranium prospecting in other parts of the world (DTI, 2007).

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electricity supply and demand due to obligations to reduce carbon emissions, the closing of old oil and coal-fired power stations combined with the closing of most of the country's old nuclear power stations over the next 20 years (Black, 2005; EDF, 2014a).

There was much speculation in the early 2000s about a revival of the world uranium market with renewed prospecting in Africa and India, and with Australia on the verge of reopening development at Jabiluka (Katona, 1998; Falk et al., 2006). For the first time a uranium futures market was established, replacing the previously more limited spot price market. Previously the majority of uranium trade had taken place through contracts negotiated directly between buyer and seller (Hecht, 2010a). Hinkley C had become significant for EDF as launch pad for the EPR (European Pressurized Reactor) on the global stage (Greenpeace, 2012; Shalya, 2013). Success in the UK was particularly important because EDF was struggling with overruns and mounting costs on the EPR build at Flamanville in France by the end of the 2000s. AREVA (also partially owned by the French state) had been suffering similar setbacks on the same reactor design at Olkiluoto in Finland (Mitchell & Woodman, 2006; Greenpeace, 2012; Mason, 2009; Gosden, 2013b; Bird, 2013).

By 2008 the UK government announced that including new nuclear energy in the UK's future energy mix was in the 'public interest' (BERR, 2008: 5). DECC (2009: 10) pronounced

> Nuclear power is low-carbon, economic, dependable, safe and capable of increasing diversity of energy supply and reducing our dependence on any one technology or country for our energy or fuel supplies.

In the light of the challenges which renewable forms of energy, not to mention energy use reduction, pose to the existing economic and technical, never mind political or socio-cultural, energy structures in existence, nuclear energy is being touted as an important part of the future energy mix (DECC, 2011b: 27-8).

Chris Huhne's, (Secretary of State), Regulatory Justification decision for both Areva's EPR and the Westinghouse AP1000 reactor designs cited carbon reduction in the context of the greater risks of climate change, and 'security of supply and other economic effects' (including the economic and job benefits of creating a globally competitive UK nuclear supply chain) as the two major public interest points which outweighed risks and uncertainties over radiological health detriment and waste storage and 'disposal', as well as risk (understood in economic terms) of a severe accident (DECC, 2010). National energy security is particularly emphasised: '[t]he reliable and affordable supply of electricity is essential to the daily lives of the population and the functioning of business. It is difficult to overstate the extent to which quality of life is dependent on adequate

energy supplies' and so 'a secure, low carbon energy supply is of the highest national importance' (DECC, 2010: 4). It was by means of such justification that the Energy Review Consultation Document 'leapfrogged' consultation on the substantive issue or principle of nuclear energy, and only allowed objections on particular concerns in relation to new build (Royal Courts of Justice 2007; DTI, 2006).

In the meantime, and whilst local consultations on the preliminary works for Hinkley C as well as the beginning of the overall planning inquiry were ongoing, the disaster in Japan occurred. The Tōhoku earthquake and tsunami on 11th March 2011 wreaked havoc and destruction, killing over 15,000 people with thousands more injured and missing. The earthquake and tsunami disrupted the cooling systems at Fukushima Daiichi nuclear power plant, leading to overheating, hydrogen explosions and meltdown at three nuclear reactors there (CNN, 2011; WNA, 2014). The accident was rated top level 7, (major accident) on the International Nuclear and Radiological Event Scale (INES).[12] 100,000 people were evacuated from the area and although official 'cold shutdown condition' was announced in December 2011, workers can only enter parts of the site for extremely short periods at a time and there are continuing problems with leaks of contaminated radioactive water. At time of writing the accident was raised again to INES level 3 (serious incident) as a result of uncontainable leaks of radioactive water from the site (WNA, 2014; BBC, 2013a). Over a thousand people have died as an indirect consequence of the Fukushima disaster, although once more the industry has attributed this to hesitance and inability of the government to correctly assess risks (WNA, 2014)

The Weightman Review into the safety of the UK's nuclear power plants in the aftermath of Fukushima explicitly stated that it would not address nuclear new build or energy policy issues (ONR, 2011). This meant that submissions made to the Office for Nuclear Regulation (ONR) questioning whether, in the aftermath of Fukushima, new nuclear power should be part of the UK energy mix were not considered by Dr. Weightman's reports. The government's response to the consultation on its revised draft national policy statements on energy however referred to the Weightman review as conclusive on the issue of safety in the aftermath of Fukushima (DECC, 2011a).

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[12] Event scale introduced by the IAEA in 1990. Levels 4-7 are described as accidents, ranging from an accident with local consequences (4) to major accident (7), and 1-3 described as incidents, ranging from anomaly (1) to serious (3) (IAEA, 2008).

There is evidence to suggest that following Fukushima the UK government was more concerned about the damaging effects this would have upon its policy for the development of new nuclear power stations than upon the lessons which might be learned about the safety of existing British nuclear plants. Government officials consulted with EDF, Areva, Westinghouse and the Nuclear Industry Association arguing that 'this has the potential to set the nuclear industry back globally', 'we need to ensure the anti-nuclear chaps and chapesses do not gain ground on this. We need to occupy the territory and hold it. We really need to show the safety of nuclear' and '[w]e need to all be working from the same material to get the message through to the media and the public' (DTI, 2011; Edwards, 2011). Two days after the tsunami and earthquake, while the disaster was still unfolding and there was a lack of clear understanding of what was happening as well as what was yet to come (the two major explosions had not yet occurred) the department for Business Innovation and Skills (BIS) emphasised that the situation was not as dramatic as the media was making out, that radiation release had been controlled and the reactor had been protected: 'a good industry response showing the safety of nuclear' was needed 'otherwise it could have adverse consequences on the market' (Edwards, 2011).

With the energy market not directly under government control since liberalisation and privatisation in the 1980s and 1990s it has been an on-going challenge for the government to influence the energy market in the UK. There are important tensions between the prevailing discourses of neoliberalism and discourses of security, with the latter tending to work more in favour of nuclear interests (Toke, 2013c). However, as others have pointed out, the neoliberal agenda has tended to come hand in hand with 'a more unaccountable state formation' and a heightened security role for the state in certain areas (Johnstone, 2010; Stokes, 2007). Because of dominant neoliberal discourse the 2010 Policy Statement insists that nuclear energy will not receive state subsidies. However the government was in protracted and difficult negotiations with EDF over the 'strike price', the price the government will guarantee for power generated by Hinkley C.

For EDF, favourable results to these negotiations were crucial for receiving back up investment for its UK projects. Centrica pulled out of the Hinkley project in 2012 and potential investors require more government

guarantees of returns on investment (Carrington, 2013). The government, on the other hand, though pushing for nuclear energy, was extremely wary of negotiating a high 'strike price' which would be guaranteed for the next 35-40 years (Gosden, 2013a). The power station was given planning permission in March 2013. In October of the same year, after extremely protracted negotiations, the government agreed a 'strike price' of £92.5 megawatt-hour for the energy produced there, at least twice the current market price, with 65% of its capital costs underwritten by loans guaranteed by the Treasury (Toke, 2013b). Pending a ruling from Brussels as to whether this agreement contravenes state aid regulations the controversial, extensive preparatory clearing and excavation works, which EDF have already begun at the site will have successfully paved the way for the UK's largest nuclear power plant (Chazan & Barker, 2013).

Thus we see how the imperatives created by the science on climate change and the commitments to reducing carbon emissions create a force which subverts democratic process and underlines the non-negotiable 'need for nuclear.' This need is also justified according to the requirements of economic growth and in terms of national security. The science and the non-negotiability of economic facts and the taken for granted priority of national security ensure that the politics of the issue are obfuscated and the illusion of steering a 'neutral,' 'objective' and therefore 'rational' course is sustained. This certainty provided by the inescapability of the 'facts' and the assurances of the experts has played a key role in the government's failure to reconsider its nuclear new build policy in the wake of a successful legal challenge over inadequate democratic consultation, and even in the wake of the disaster at Fukushima.

The emphasis on addressing the 'twin challenge of energy security and climate change' (DECC 2011b: 18) increases a general sense of urgency and impending crisis which reinforces existing national and economic security discourses. The security emphasis, the no choice quality of the science on climate change and the priority of national economic interests and security also legitimise harsher policing and government control to minimise the role and effect of protest and civil disobedience in the context of democratic failures (see also Welsh, 2007). This has been seen to particularly affect the radical environmental movement as well as anti-nuclear protest.

Historically, the experience of environmental organisations in anti-nuclear politics in the UK has been a difficult and discomfiting one. Government support for nuclear energy has retained a veneer of legitimacy through the history of public inquiries on the issue, but was combined with a history of coercion and surveillance. Friends of the Earth were bugged by MI5 when involved in making the case against nuclear at the 1985 Sizewell B inquiry (Lamb 1996, in Dryzek et al., 2003: 50). In 1992 Greenpeace pulled out of plans to hold a protest concert at the Sellafield site after the threat of a legal injunction which could have resulted in the group's assets being seized (Connelly & Smith, 1999, in Dryzek et al., 2003).

More recently, the idea of energy security was used to justify the infiltration of environmental activist groups by undercover police officers (Day, 2011). In 2008 a jury acquitted protestors accused of causing £30 million criminal damage by scaling Kingsnorth power station, on the basis that they were acting in the global interest (Vidal, 2008). E.ON had lobbied for 'dissuasive' sentences in this case arguing that failure to impose tough convictions 'could "impact" upon investment decisions in the UK' (Ball, 2013). In 2009 the rationale of 'national energy security' was used in inflationary manner by police in the case against activists who were pre-emptively arrested for a planned action against Ratcliffe-on-Soar coal-fired power station. In this case the Judge said '[i]t is right to emphasise that this planned action would have had no practical effect on the electricity supply', contradicting police claims that the activists 'were looking at taking out one of the biggest power stations supplying over two million people – hospitals, vulnerable people', but these nevertheless featured strongly in the UK media (Day, 2011). This time the jury were not convinced by the defence's argument that their intention was to prevent harm to human life and property which would result from climate change (Lewis, Hirsch & Evans, 2011; Platform & PIRC, 2011).

In 2011, two EDF staff members were sent to jail and EDF fined 1.5 million Euros by a French court for spying on Greenpeace activists campaigning against new nuclear reactors in France (Black, 2011). Prior to this case a private investigator claimed he was hired by EDF to hack into Greenpeace UK's computers and also consulted with MI5 about the environmental organisation's work (Booth, 2009). In the UK, the National Public Order Intelligence Unit (NPOIU) which coordinated undercover police operations within environmental

movements, including the infamous case of Mark Kennedy, has also been gathering intelligence on activists against nuclear new build (Edwards, 2012). The NPOIU 'was established to support police forces in managing the intelligence around the threat to communities from public disorder connected to domestic extremism and single issue campaigning' (NPOIU, 2013; HMIC, 2012). It is part of a set of surveillance units founded with the aim of satisfying 'the needs of companies targeted by activists' and is symptomatic of a broader blurring of boundaries between public and private interest and intelligence gathering (Lubbers, 2012; Evans & Lewis, 2013).

In this section we have seen important continuities in the history of the politics of nuclear energy. Although the environment as an 'issue' has in some ways been successfully 'mainstreamed', for those concerned with the harms which are excluded from or devalued in the dominant abstracted scientific discourses, the same complications in the articulation of harms of nuclear energy persist. For the most part, the problem of our energy futures and the role nuclear power may play in this is discussed and addressed in similarly limiting ways, confining valuation of relevant knowledge to understandings of 'economics' and 'science' which are deemed to be separate from the political conditions which produce them, and which exclude and devalue important aspects of political community. What has changed is the sense of urgency surrounding climate change. In September 2013, shortly before Cameron's deal with the French and Chinese power companies over Hinkley C, the Liberal Democrat Party became the last major party in the UK to abandon its anti-nuclear stance (the Conservatives changed their 'last resort' stance in 2010). Ed Davey argued for this on the basis of the 'real and massive danger to the planet' posed by climate change (BBC 2013b; Jowit, 2010; Vidal 2013).

Recently, Paul Kingsnorth (2013) has characterised the present day split in the green movement as the emergence of 'neo-environmentalism', drawing parallels with the emergence of neoliberalism in the early 1970s. Advocates are 'attempting to break through the lines of an old orthodoxy that is visibly exhausted and confused', and 'emphasize scientific measurement and economic analysis over other ways of seeing and measuring' (Kingsnorth, 2013). 'Neo-environmentalism' is a response to crisis: 'they are beginning to grow in numbers at a time of global collapse and uncertainty. And like the neoliberals, they think they have radical solutions (Kingsnorth, 2013). Yet as the

above discussion shows, many of their arguments and the values they implicitly adhere to are not new.

Resistance continues. While often portrayed as irrational, intransigent, and extreme, anti-nuclear campaigners emphasise that their approach is more 'rational'. They highlight as 'irrational' pro-nuclear trust in risk assessments about the low probability of serious accidents, and faith in positive technological development and long-term stable government and industry control of dangerous waste. As much research suggests, there are different forms of rationality deriving, amongst other things from different value emphases and from different positions of power (Fischer, 2005; see also Jasanoff, 2005).

Theo Simon of the folk band *Seize The Day,* was criticised by George Monbiot (2012) for his involvement in the occupation of the land at Hinkley in protest at the preparatory works there. In an animated exchange with Monbiot (2012), Simon seeks to reclaim 'rationality'

> It is as if we were saying to our children "We have had to behave irrationally (nuclear) to avoid behaving even more irrationally (fossil fuels), because we didn't care enough about you to take a rational, but more politically challenging, route". To me this is the path of political expediency over ecological principles.

He refuses to separate out rationality from politics and his words highlight two important points relating to how I characterise the problem of the dominant discourses of nuclear energy. Firstly, he emphasises the inherent politics of the issue and of any scientific and technological route taken, and secondly, he links the politics to ecological principles. This hints towards the possibility of another form of rationality which does not see science/politics as separate, nor the issue of nuclear energy as something that can only be debated in abstracted 'neutral' economic and scientific terms. Quite the opposite, it implies that a more ecologically grounded form of rationality requires that we take the politically more challenging route, and that rationality has nothing to do with the exclusion of politics.

Limiting discussion to scientific and economic expertise and cultivating a carefully 'neutral', 'rational' approach which excludes emotions and politics has reinforced the separation of science/politics and nature/culture. Reductive understandings of science and economics have facilitated the continued naturalisation and non-questioning of dominant state security and economic development narratives which assume the need for man to conquer 'nature',

whilst taken-for-granted understandings of nature serve to justify and institutionalise the status quo. As I will point out in the final section of this chapter, this blocks important possibilities for change. Conceptions of economics for example, which assume the necessity of a growth economy (conventionally understood), exclude and devalue important human and nonhuman factors and effects, often simplifying opposition so that possibilities are characterised in dichotomous either/or terms such as growth/no growth, which serve to reinforce assumptions and stereotypes about opposition to the dominant understanding of economics as 'political', 'radical', 'idealistic' and therefore completely 'unrealistic'. Yet as John Barry and Peter Doran (2006: 251) emphasise, the crises which we face 'render the distinction between what is 'realistic' and 'radical' problematic', to say the least.

This thesis emphasises that particularly given the uncertainties and problems we may face in the context of climate change, it is important that we have as clear a picture as possible of what is at stake in the politics of nuclear energy. Resistance is vital, and action on climate change is an urgent matter, but importantly, we need to find ways of linking up our understandings of the crises we face and find ways to articulate the harms that are being perpetuated. This entails linking up understandings of science, economics and politics as means of navigating these, as well as challenging dominant exclusionary understandings of security, in order to avoid the potential dangers of co-optation, fragmentation, marginalisation, trivialisation, and even criminalisation within the dominant discourses. There is a danger that the urgency and what Michael Saward (1993: 64) has called the 'no-real-choice quality' of certain environmental discussions, particularly obvious in those based on the science of climate change (reinforced by and reinforcing 'uncontestable' and politically abstracted conceptions of economics and security) obscure important aspects of the politics of the issue. It is precisely these important political aspects to which many of the interlinking social movements of the 1970s and 1980s drew our attention. It is to these, and the intersectional ecological critique, which linked social injustices and environmental degradation, that I now turn. We can see the character of the contemporary debates and the history of nuclear energy as indicative of a broader failure of the radical ecological linking critiques articulated in the 1960s and 1970s to penetrate hegemonic discourses and structures over the past forty years.

Retrieving the radical ecological critique of the early green and anti-nuclear movements

It was in the context of severely restricted political terrain – the limited possibilities for participation in debates and decisions on nuclear energy – which saw the politicisation of nuclear energy and its emergence as a focal point and linking issue for various social movements in the late 1960s and early 1970s. Although with varying strengths and degrees and much local differentiation, the contemporary diverse and diffuse green movements in the Western world, particularly Europe, the United States, and Australia, and the *ecological* critique associated with these, developed in conjunction with, and in part emerged out of, the early anti-nuclear movements. Nuclear energy constituted a focal point and linking issue for strands of all the so-called 'new social movements' (peace, environment, women's, civil rights, indigenous struggles, anti-racism, autonomist/anarchist etc.). In fact, while these 'movements' developed and have been theorised in relatively single-issue form, according to the fracturing effects of existing political opportunity structures and frameworks for thinking about them, in practice there was and still is considerable intersection and overlap between them and a linking of their critiques and capacities which is often lost in mainstream, non-participatory academic analysis (Welsh, 2001).

There are certain key principles emphasised in attempts to define the distinctiveness of green politics or 'ecologism' (Dobson, 2007). As well as the slightly more mainstreamed precautionary principle, such points include: 'holism', or understandings of the complex interdependence of humans and nonhuman nature; understanding the ecological limits to conventional economic growth, production and consumption; respecting human and biodiversity; and appropriateness of scale, involving certain degrees of decentralisation where possible to increase accountability and reduce impact (Dobson, 2007). In more concise terms, according to green parties across the world, the 'fundamental' principles involve ecological awareness, grassroots democracy, nonviolence and social justice (Doherty, 1992; UK Green Party, 2013; Global Greens, 2012).

Inherent in this is the ecological wisdom in attending to the ways in which different aspects of social and political life intersect and rebound upon each other, not only within the social and political world narrowly understood as the human world, but across the nature/culture, human/nonhuman divide. It is this

insight which has drawn together social movements and actors from across a whole range of ostensibly, but never actually, 'single' issues – disarmament and peace, women's rights and feminism, ecology and environment, civil rights, anti-racism and indigenous peoples' struggles, and labour rights and social justice – since the anti-establishment uprisings in the 1960s.

The seeds of both green and anti-nuclear politics can be traced in part to the work of early ground breaking thinkers such as Murray Bookchin (1962), Rachel Carson (1962), and Fritz Schumacher (1973). Such thinkers radically called into question the benefits of the dominance and influence of big industry and big technological and state technocratic solutions for both humans and nonhuman nature. Early radical green politics, which inspired even the more conventional wings of green politics as well as the early green parties around the world, contained within it strands of eco-anarchism and eco-feminism, all of which entail a fundamental critique of the impact of nuclear technology upon social relations (e.g. see FOE Canberra, 1984; Plumwood, 1984; Nelkin & Pollak, 1981). From such perspectives nuclear power has authoritarian and repressive causes and effects, requiring an undemocratic centralised political system, a lack of scientific responsibility and reflexivity, and problematic assumptions about the controllability of people and nature (Pepper, 1993; Gordon, 2008, Plumwood, 1984). Despite the pro-nuclear tendencies of some eco-socialism,[13] nuclear energy has also been criticised from this perspective due to its strengthening of state capitalism and monopolisation of resources (Plumwood 1984; Nelkin & Pollak, 1980b; Pepper, 1993).

From an ecofeminist perspective, nuclear energy perpetuates dominant masculinist discourses of control, violence and the otherisation of women and nonhuman nature. For example, Ynestra King (1983, cited in Sturgeon, 1997: 62) recalls the media coverage of Three Mile Island: 'male technocrats talk about slamming rods into the core to stop the reaction, referring to the runaway nuke as a "her" who needed to be "cooled down"'. This critique has tended to consistently attack the patriarchal features behind both nuclear energy and weapons, seen to epitomise male violence against both women and the world. Such critiques highlighted the ways in which nuclear energy perpetuated and exacerbated asymmetrical power relations. They pointed to the harmful effects

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[13] The UK Workers Revolutionary Party, for example, influenced by Stalinism, supported nuclear power in the 1970s, suggesting that it might be beneficial under socialism (Herring, 2005).

of the dominant understandings of science, nature and society, beginning to unmask these as socially produced rather than as a result of the 'natural' order of things. In this way, they began to problematize the science/politics and nature/culture separations within the dominant discourses.

Developing from such critiques, the emphasis upon appropriate and sensitive technology and the acceptance of the precautionary principle, even within more mainstream green politics, has tended to militate strongly against nuclear energy due to the many still unknown long-term risks that it entails - most of all the unsolved problem of what to do with the waste over thousands of years. Green politics has tended to pose a more radical challenge to existing social relations with the nonhuman world as well as relations within the human world, and has questioned received understandings of inevitably beneficial economic and scientific 'progress' in the 'Promethean' sense rooted in dominant strands of the Western Enlightenment (Dryzek, 2005). Such questioning entails a degree of ambivalence towards the promises of science and the technologies developed by it. In particular, this entails a suspicion of aspects of science and technology that tend to increase overall levels of consumption of non-renewable resources or production of hazardous waste, and otherwise exacerbate entrenched asymmetrical power relations both between humans, and between human and nonhuman nature.

The joined-up critique of science, 'nature' and politics has been especially apparent in resistance to nuclear energy. For example, in Germany opposition to nuclear energy arose at local levels in the early 1970s and developed into mass demonstrations and violent confrontations with the police (Nelkin & Pollak, 1980a; Dryzek et al., 2003). New citizen groups formed in this process, including the German Federal Association of Citizen's Initiatives for the Protection of the Environment (Bundesverband Bürgerinitiativen Umweltschutz, or BBU) in 1972. The latter constitutes a prime example of a key green and anti-nuclear movement arising in one. Even largely apolitical German government-funded environmental organisations, such as Deutscher Naturschutzring, Deutscher Heimatbund and Bund Umwelt- und Naturschutz, became politicised by the nuclear issue and criticized aspects of nuclear policy (Nelkin & Pollak, 1980a: 129-30; Dryzek et al. 2003). Such politicization highlights the way in which this issue forced ecology and the environment to be understood as properly political. Although the paths of Germany and France diverged in terms

of their actual nuclear policies, a similar process of the ecology movement developing as almost inextricably entwined with anti-nuclear politics (and feminist, youth culture and regional autonomist movements) occurred there too (Nelkin and Pollak, 1980b, 1981).[14]

In the UK and the US, as in mainland Europe and elsewhere there was considerable practical and theoretical overlap between the peace (anti-nuclear weapons) and the anti-nuclear power movements, although in practice the more mainstream strands of the movements retained a distance from each other for reasons of style, tactic and constituency (Herring, 2005). In the UK in the 1960s and 1970s, the political structure was such that in order to retain limited informal access to important pressure points in government, the main social movement organisations had to distance themselves from grassroots confrontational direct action and civil disobedience tactics being developed elsewhere at the time (Dryzek et al., 2003), however even here there is evidence to suggest considerable linking across issue areas, with Greenpeace UK arising out of direct action against nuclear weapons testing, and early protests against the building of Torness nuclear power station influencing environmental organisational tactics both radical and more moderate in the 1970s (Welsh, 2001; Dryzek et al., 2003; Herring, 2005). The linking of radical green politics with the anti-nuclear movement is also highlighted by the fact that one of the first actions by Earth First! (UK) occurred at Dungeness nuclear power station in the early 1990s, with a particular emphasis on the ecological impacts (Wall, 1999).[15] At the level of action and capacity building, Earth First! and other direct action activist groups remain strongly interlinked with the radical peace movement, particularly the feminist strands emerging from women's activism, including the peace camps, at Greenham Common, and more recently Faslane (Wall 1999; Earth First!, 2014).

In Australia, where nuclear power has not (yet) been developed as an energy source, activism was linked around the global dangers of nuclear weapons and proliferation from the supply of uranium, and the impact of uranium mining upon aboriginal peoples and environment (Martin, 1982, 2007;

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[14] For consideration of the differences and causes of differences in outcome between different countries see Nelkin and Pollak 1981; Dryzek et al. 2003; Sovacool & Valentine, 2012.

[15] This action was framed from a deep ecology perspective with a press statement observing that the area contained 'the best example of a cuspate foreland in the world.. home to over 600 species of flora and fauna, some of which are rare' (Green Anarchist 1991 (28): 24, cited in Wall 1999: 46-47).

MacLeod, 1995; Plumwood, 1984). Early anti-nuclear action here was strongly connected to the trade union movement and the grassroots of the Australian Labor Party (Martin, 2007), which was also more strongly ecological than elsewhere (Haskell, 1977; Martin, 1982). Here environmental organisations such as Friends of the Earth played a more radical grassroots role than, for example, in the UK, by-passing state institutions and emphasising transformative structural change, education and capacity-building from below rather than influence of existing elites (e.g. see FOE Canberra, 1984).

There was much linking of the anti-nuclear movement at the international level, with people like Amory Lovins (US), Walt Patterson (Canada) and Helen Caldicott (Australia) invited to speak at public meetings around the world (Martin, 1982). In another example of international solidarity, in the 1980s and early 1990s, in the period running up to and after the end of Apartheid and independence from white South Africa, trade unionists at the Rossing uranium mine in Namibia worked together with European environmental, peace and social justice activists (Hecht, 2010b).

The linking of struggles against both social injustice and environmental degradation has been apparent once again in the multiple uprisings of the 'alter-globalization' or 'global justice' movements at various places such as Chiapas, in the majority 'less economically developed' world, at international and global summits in the 1990s and early 2000s, and at the protests and events surrounding the Conferences of the Parties (COPs) of the United Nations Framework Convention on Climate Change (UNFCCC) at the end of that decade. This includes the numerous environmental justice and climate justice campaigns around the world (cf. Schlosberg, 2007, 2013; Kingsnorth, 2004). Such interlinking indicates an awareness of and frustration with the existing structures and institutions for their capacities, let alone incentives, to address the root causes of complexly interlinked damages to both humans and nonhuman nature.

Green opposition to the institutions and technologies which supported and embedded the dominant Promethean ideals of economic and scientific progress causing widespread harms to both human and nonhuman nature has often led to the accusation of 'green luddism' as a put-down term. Yet this simplifies and misunderstands the luddite demand to 'put down all machinery injurious to the commonality' (Monbiot & Simon, 2012; Gordon, 2008: 129; Sale,

1996). The idea of the 'commons' has been important in radical green theory and practice. It tends to transcend the dichotomous and limiting culture/nature and human/nature divides (Paterson, 2005). In *Small is Beautiful. A study of economics as if people mattered*, Schumacher had coined the term 'Intermediate Technology' to describe possible types of technology which were accessible to all. Influenced by such ideas, the predominantly green Alternative Technology (AT) movement emerged, again strongly intertwined with the other counterculture movements of the 1970s and concerned with developing technologies that were not harmful to humans or nonhuman nature (Herring, 2005: 45; Smith 2005; Toke, 2011). The AT movement were among the first in the UK to 'adopt and promote the anti-nuclear position' (Herring, 2005: 4). The emphasis upon alternative technology demonstrates that rather than being anti-technology, many green and anti-nuclear activists were instead aware of the inherently politically-effective and socially-embedded character of technologies; that technology is never 'neutral'. While such an understanding is taken for granted, for example, in mainstream technology studies, it is not generally reflected upon in the mainstream of everyday political and environmental discourse (Gordon, 2008).

The importance and cross-cutting character of the issues raised by the ecological critique is underlined by the increased attention to and mainstreaming of 'the environment', with government departments, global institutions and the Earth Summits organised to focus upon it. Yet greens remain divided over whether this constitutes genuine progress in addressing the issue. Within green political thought there have been clear and useful efforts to distinguish between environmentalism and ecologism (Dobson, 2007), or varying degrees of anthropocentrism and ecocentrism (Eckersley, 1992) to highlight the differences between the more radical transformative politics adhering to the key principles or values described above and those which have ostensibly green features but are not thoroughgoing in their critique and proposed solutions.

For Dobson '*environmentalism* argues for a managerial approach to environmental problems, secure in the belief that they can be solved without fundamental changes in present values or patterns of production and consumption', whereas '*ecologism* holds that a sustainable and fulfilling existence presupposes radical changes in our relationship with the nonhuman

natural world, and in our mode of social and political life' (2007: 2-3, emphases in original). In practice, the distinctions between these are not always so clear cut, as debates about different shades of ecological modernisation also show. Not all subscribe to the more ecological, linked up understandings of politics described above and splits within green politics are nothing new. This was clearly apparent in the Fundi-Realo splits in various green parties in the 1980s, for example (Doherty, 1992). As with similar splits in other radical politics, the former tend towards a more robust adherence to the basic values and critique, while the latter take what has been defended as a more pragmatic realist approach, willing to sacrifice certain principles with the aim of advancing green politics institutionally and culturally (Cudworth, 2003; Dryzek et al., 2003; Doherty, 1992). The question of how pragmatic and realist the sacrifice of core principles ultimately ends up being is an ever present tension and matter for continued consideration (e.g. see Dobson 2007: pp. 189-202; Barry & Doherty, 2001).

Given that splits within green politics are nothing new it should not be surprising that certain environmentalists now advocate nuclear energy, particularly in the context of climate change. As discussed in the previous section, the penetration of the ecological critique was not consistent within the movements, as the strategic 'expert' and 'scientific' type of opposition and the ambiguity of many environmental activists in the UK and elsewhere in the early days shows. In the UK the environmental organisations such as Friends of the Earth were much less radical and much more 'institutionalised' than the green party (Dryzek et al., 2003).

It is clear that although the basic green or ecological principles and the linking of social justice and ecological critique have to a certain extent become enshrined in the green parties of today these principles have never fully and consistently penetrated and manifested in much green and environmental strategy and action against the status quo. It is ironic, as Dobson points out, that 'green parties are seen as single-issue when ecologism from which they stem is devoted to showing the *connections* between various aspects of social and political and economic life that produce environmental problems' (2007: 25). It is these connections which I argue are lacking in the emphases upon economics and science as separate from politics, which dominate in the prevailing discourses of nuclear energy. Despite the emphasis in theory upon

the linking and integration of issues, this is extremely difficult according to the logics of the dominant discourses and institutional structures. The difficulties are exemplified by the ways in which greens past and present have engaged with the nuclear energy issue.

As Kingsnorth (2011) has also pointed out, according to the dominant discourses it is difficult for environmentalists 'to do anything but argue about which machines they would prefer to use to power an ever-growing industrial economy.' Those that attempt otherwise are

> accused of wishful thinking if they talk about zero-growth economies; called snobs and hypocrites if they criticise consumerism; attacked as terrorists if they engage in direct action to protect wild nature; called naive idealists if they ask whether planning for a future much like the present is really such a good idea (Kingsnorth, 2011).

While the main environmental groups and the UK Green Party are still officially anti-nuclear, their emphasis has become much more focused on cost and economic and scientific-technological feasibility than on the harms to both humans and nonhuman nature and the impact upon social relations (Vidal, 2013, Bennett, 2012).Yet as I discussed in the first and second sections of this chapter, as it has turned out, the restricted terrain of argument and the governmental and industry power in promoting nuclear energy has meant that often green organisations, at least in the UK, have had their fingers burned regardless of whether or not they restricted themselves to the 'technical' scientific and economic arguments. The concern is that by engaging according to the terms of the dominant discourses, and neglecting to clarify and unmask the inherently political aspects of the issue more forcefully, we ultimately reinforce the dominant discourses at the expense of the very ecological political aspects which motivate us in the first place.

Along the way, the emphasis upon 'the connections between various aspects of social and political and economic life that produce environmental problems' (Dobson, 2007: 25), the ecological critique of existing structures, values, and relationships involving an integrated understanding of 'science' and 'politics' across the culture/nature divide has been persistently discounted, weakened or lost. Ingolfur Blühdorn and Ian Welsh (2007), echoing the analysis of the 'post-political' discussed briefly above, describe aspects of this as the 'post-ecologist turn'. This is the manifestation of the overwhelming tension and contradiction inherent in the fact that the all-round importance and impacts of

ecological crises have become painfully evident, moving eco-political issues to the centre of global politics. Yet precisely because these issues challenge the very bases of the existing systems of state-backed consumer capitalism in the wealthiest and most technologically advanced countries and the dominant paradigm of development in the rest of the globe, strategies of ecological modernisation and environmental management as attempts to tackle them persist in only addressing the symptoms rather than the root causes (Blühdorn & Welsh, 2007: 253). This is due to 'the unprecedented consensus of defence that protects the 'blessed way of life' (Fleischer, 2001, cited in Blühdorn & Welsh, 2007) and which 'resolutely obstructs the exploration of any socio-economic alternatives' (Blühdorn & Welsh, 2007: 253).

The importance of taking the 'politically more challenging' route (Monbiot & Simon 2012, above) is something that has been understood by many greens since the 1960s at least, and explains why, in Lynas' (2008) terms, the recent public move by some environmentalists to support nuclear energy appeared as 'green heresy' to some. As this section has shown, the harmful, yet socially produced effects of nuclear energy have been consistently challenged by a green critique which draws attention to the ecological links between ostensibly single-issue problems and highlighting the political and ecological limits and deficiencies of dominant strands of modern technological and economic development.

Yet as this chapter as a whole has shown, this critique tends to be lost in the dominant debates where there is an over reliance upon scientific and economic 'facts' understood to be separate from considerations of political community and the relations both between humans and between humans and nonhuman nature. Nested within the broader problem of the failure of penetration of the ecological critique and the limited political terrain available for responding to ecological problems are the dominant discourses for nuclear energy which circumscribe possibilities and which neglect, devalue and exclude vital aspects of the politics of this important issue. It is not that green politics is necessarily dogmatic in its opposition to nuclear energy, but that the ecological critique of nuclear energy and the dominant status quo which it reinforces is difficult to communicate according to the dominant discourses. How can we articulate the harms to both humans and nonhuman nature so that they become

relevant to the dominant discourses in ways which link up the issues so that we don't end up with only single-issue victories which are often counter-productive?

It is this problem which my thesis, with its attempt to open up and redescribe the problem of nuclear energy, will seek to address. The intersectional ecological critique apparent in early anti-nuclear and green movements is still alive and kicking in more radical green, anti-nuclear and other forms of resistance politics today and constitutes an important source of knowledge about the problem of nuclear energy which is neglected within the dominant discourses. The next chapter explains my ecological approach which more clearly problematizes the science/politics and nature/culture separations, and sets out my framework for articulating injustices of nuclear energy.

Chapter Two
Towards Articulating Ecological Injustices

I suppose my thinking began to be affected soon after atomic science was firmly established. Some of the thoughts that came were so unattractive to me that I rejected them completely, for the old ideas die hard, especially when they are emotionally as well as intellectually dear to one. It was pleasant to believe, for example, that much of Nature was forever beyond the tampering reach of man – he might level the forests and dam the streams, but the clouds and the rain and the wind were God's.

(Rachel Carson, 1958, in Garb, 1996: 250)

The old ideas die hard. As discussed in the previous chapter, this is something which those currently promoting nuclear energy as a solution to climate change also emphasise. In the face of the magnitude of the problems we face, the temptation to fixate upon clear-cut explanations and solutions is great. The loss of ideas of 'God', or 'nature', or 'science' as something separate from our messy and complicated political worlds is traumatic. Conceptions of science and economics as separate from and above difficult and 'dirty' politics are so seductive because they are linked to the deeply embedded separation of nature/culture that many of us rely upon for understanding and ordering the world. However, as I seek to show in this chapter, it is important that such conceptions are resisted, because these separations reinforce and mask the positions of the powerful whilst fragmenting, and limiting the political efficacy of those struggling to resist the harms produced by the dominant discourses and structures. If we continue to debate the various scientific and economic 'facts' of nuclear vs. fossil fuels vs. renewables (which also affect 'the clouds and the rain and the wind') as if they are separate from and above politics, we fail to address the difficult, inherently political questions about how these and other options affect the relations we as humans have both with each other, and with the many other ecological entities of which we are a part and with which we live.

The difficulties of challenging the dominant reductive narratives of science and economics which reinforce the naturalisation of dominant political relations in discourses of nuclear energy should now be clearer. As the previous chapter sought to show, the ecological critique which draws attention to the neglect of significant linked harms to both humans and nonhumans resulting from nuclear energy has failed to penetrate dominant discourses. In this chapter I show how the hierarchical separation of science/politics reinforces unsustainable relations of domination perpetuated by the separation of

nature/culture and perpetuates harms to both humans and nonhuman nature. I argue that these linked harms may be more effectively understood as injustices which need to be articulated and taken into account as relevant to our understandings of political community, or common life. I explain the ecological approach which holds my ontological and normative commitments to address the separation of nature/culture, and which I use to develop an open heuristic framework for articulating injustices. I suggest that opening up space for ongoing articulation of injustices in ways which cross the nature/culture separation presents possibilities for strengthening the position of both humans and nonhuman nature which undergo harms, resistance to which is currently fragmented and pacified within the dominant discourses. Articulating injustices can help to facilitate points of solidarity, although always contingently, remaining open to ongoing contestation.

In the first section of the chapter, I clarify my ecological approach to understanding the problem described in Chapter One. In part, this ecological approach emerges from the early radical ecological critique discussed at the end of Chapter One, but here I draw upon academic theory, particularly the work of Bruno Latour (2004) and Val Plumwood (1993, 2002), to consider how we may move beyond the limiting hierarchical separation of science/politics and nature/culture which restricts our understanding of the politics of nuclear energy, naturalising and neglecting socially produced harms to both human and nonhuman nature. I point to the limits of the hierarchical separation of an understanding of 'science' understood to be about 'what is' which is positioned above, and used to cut through an understanding of 'politics' which deals with 'what could be' and the power relations which make up political community. I argue that it is more helpful to think about the inherently political processes of knowledge construction. These inherently political processes consist of, firstly, the process of taking all affected into account, involving perplexity and consultation and asking 'how many (and who) are we?' and secondly, the process of putting in order, involving institutionalisation and the process of answering the question 'how might we live together?' Although these are inextricable in practice, the analytical separation is important so that we can guard against the latter pre-empting the former, particularly in the interests of the powerful.

In the second section, I describe the main components of the open heuristic framework which I develop for articulating injustices: distribution, recognition and representation. I gather these from a consideration of David Schlosberg's work which helpfully draws together academic theory and activist practice in struggles for environmental and social justice. My work differs from his as I understand distribution, recognition and representation as images of politics which can provide the tools for articulating diverse *injustices* beyond the separation of nature/culture.

In the last section, I explain the steps I take to develop my open, heuristic framework for articulating injustices. My ecological approach to challenging the separation of nature/culture informs this framework as it seeks to re-examine the question of 'how many (and who) we are' and take all affected (as far as possible) into account, so as to take a fresh look at the possibilities for the process of putting in order and answering the question of 'how we might live together.' This paves the way for Part II of the thesis which uses my ecological approach to develop the framework in detail.

An ecological approach:
knowledge beyond science/politics and nature/culture

Knowledge of the harmful, socially produced effects of nuclear energy and the broader political links between damage to humans and nonhuman nature raised by anti-nuclear and green movements has been lost or devalued in the dominant debates which play out in more abstract scientific and economic terms considered to be above politics. Here I propose an ecological approach to help address this problem. Firstly I describe how the hierarchical dichotomy of science/politics is rooted in the separation of nature/culture and how the elevation of science above politics has been used to naturalise domination, to enable particular forms of knowledge to appear 'neutral' and objective at the expense of the knowledge of others affected adversely by the relations of power which constitute political community.

Secondly I describe an explicitly political understanding of the construction of all knowledge and the possibilities of generating ecological knowledge through processes of political contestation of the knowledge of all affected. This involves attending to knowledge of both 'what is' (the domain traditionally associated with science and nature) and of 'what could be',

knowledge which is sensitive to the power relations which make up political community (the domain traditionally associated with politics and culture). These 'domains' are not actually separate for they each impact upon the other in the processes of 'common life' on this planet. I draw upon Latour (2004) to move beyond a hierarchical binary separation of science/politics in the construction and valuation of knowledge. Moving beyond this separation can help us to envision a constantly evolving process of working out 'how many (and who) we are' (aimed at perplexity and consultation in order to take knowledge of all affected into account), and 'how we might live together' (aimed at institution and decision which temporarily ends contestation and enables action). Thirdly I draw upon the problem of nuclear energy to show how the hierarchical dichotomy of science/politics is being used to short-circuit these contestatory processes of knowledge construction. The second stage of knowledge construction (consisting of assumptions about how we might live together), is used to short-circuit the first stage (taking into account and gathering the situated knowledges of all affected). As illustrated in the problem of the politics of nuclear energy this means that full contestation of knowledge does not occur. This lack of consultation limits possibilities for understanding the conditions and possibilities of common life and perpetuates significant socially produced harms to both humans and nonhuman nature.

Bruno Latour (2004) gives a clear depiction of how in Western culture the separation of a 'natural' sphere from a 'cultural' sphere has functioned as a powerfully constitutive framework for ordering and understanding the world. Nature, associated with science, has been broadly understood as the domain of objects, the environment, objective knowledge, matters of fact, and necessity. The cultural sphere, associated with politics and society, has been broadly understood as the realm of subjects, of humans, of values, matters of discussion, and freedom. Dominant understandings of legitimate knowledge have been associated with 'the natural' state of things, with nature, facts and things as opposed to culture and political values.

The separations of science/politics and nature/culture reinforce and reproduce exclusionary and hierarchical binary constructions of reality which elevate particular conceptions and organisations of political community. Such hierarchical binary constructions mask the particular politics of dominant discourses, naturalising these at the expense of others. As ecofeminists and

others, including some of the Frankfurt School thinkers have pointed out, throughout Western history exclusions and hierarchies of domination based upon similarities and differences between entities have been 'naturalised', with reference to nature, thereby justifying the status quo and all manner of unjust states of affair by implication (Plumwood, 2002; Stone, 2006). The dominant scientific and economic rationalities have naturalised the objectification and instrumentalisation of women, slaves, and non-whites as well as the instrumentalisation and exploitation of the nonhuman world. Othering discourses and practices of many kinds, including exclusionary security discourses discussed in Chapter One have been naturalised by the complex dynamics of the hierarchical separation of science/politics and nature/culture which have worked in favour of the dominant. Certain spheres associated with objectified and instrumentalised humans and nonhumans, such as the reproductive sphere, have been 'backgrounded' or separated from other spheres in ways which disguise dominance and dependency (Plumwood, 1993: 48-49, 153). Such separation is maintained and justified through recourse to a separate and firm 'truth' about the way things are, provided by the idea of a single 'nature' (Latour, 2004: 14, 45).

Common to both dominant scientific and economic rationalities are the ideals of disengagement and an emphasis upon neutrality and objectivity achieved through separation from politics. The dominant forms of social organisation and understandings of reality are able to deny their own 'political' character and assume the appearance of the natural order of things, the way things are. Thus the hierarchical separation of science/politics enables the continuation of dominant forms of knowledge and social organisation whilst enabling these to deny their own situatedness within political power relations. This means that even though the separation of the domains of science and politics is supported in most cases precisely because the intention is to avoid power politics influencing scientific knowledge production and 'corrupting' it, there is a problem because disengagement and neutrality have the perverse effect of creating a 'commitment vacuum' even where genuine neutrality is intended (Plumwood, 2002: 41). Insisting upon 'emotional neutrality and ethico-political disengagement' contains an inescapable, 'paradoxical politics in which an appearance of neutrality conceals capitulation to power', and

'the fully 'impartial' knower can easily be one whose skills are for sale to the highest bidder, who will bend their administrative, research and pedagogical energies to wherever the power, prestige and funding is' (Plumwood, 2002: 43).

In this way, impartiality and neutrality work against the inherent politics required for social and political responsibility. Scientific knowledge which questions the dominant political status quo is often tarred with the brush of politics and subjectivity, whilst science which confirms dominant understandings of the way things are is more likely to appear as neutral and unproblematically 'objective'.

However within democratic theory there is an understanding of a kind of legitimate political knowledge and 'objective' knowledge of and for the social whole developed through democratic political process. Critical theories of democracy emphasise the importance of the political public sphere understood as a space within which public opinion, drawing upon and developing understandings of the common good, is generated. In an increasingly 'global' age of cross-cultural politics and increasing awareness of interconnectedness, the realm of politics has been extended to include 'all-affected' (Fraser, 2008: 24). In radical democratic and social justice theory, the 'all-affected principle' may be understood not so much as 'an abstract causal criterion', but more as an 'animating political intuition' (Barnett, 2012: 682; Fraser, 2008). To achieve a better, more comprehensive understanding of the political relations and contradictions which make up the ecological world it is important to pay attention to all affected, to all areas that have been separated from traditional political life. The 'objectivity' and legitimacy of knowledge claims resulting from inclusive and fair democratic communication and contestation which includes all affected is brought about through publicity (the exposure of different perspectives and viewpoints to each other and others in the public realm) which 'is supposed to discredit views that cannot withstand critical scrutiny and to assure the legitimacy of those that do' (Fraser, 2008: 76).

Due to the understanding that science is separate from politics and therefore elevated as a legitimate source of knowledge of 'nature' or 'what is', the status (hence legitimacy) of the types of knowledge generated in democratic processes is seen as less. However, as Latour (2004: 49) points out, 'no culture except that of the West has used nature to dictate its political life in this way' and contra to romantic understandings 'traditional societies do not live in harmony with nature; they are unacquainted with it'. He argues that we need to

stir together nature and culture into a new collective 'that is heir to the old nature and the old society' (Latour, 2004: 232). This involves attending to knowledge of both 'what is' (the domain traditionally associated with science, nature and facts), and of 'what could be', knowledge which is sensitive to the power relations which make up political community (the domain traditionally associated with politics, culture and values). Taken together we can understand this to involve ecological knowledge of 'common life' (Latour, 2004: 89). Latour (2004: 1, 185) argues that we should let go of an understanding of nature as 'sword of Damocles', that which separates human cultures from nonhuman nature and through the separation of science and politics allows the use of understandings of nature to dictate political life. Nature conceived of as separate and above politics has been used as a 'cipher for objectivity' (Dobson, 2010: 757; Saward, 1993), to produce dominant, apparently neutral and unchallengeable knowledge which has been used to transcend politics and 'reduce public life to a rump parliament' (Latour, 2004: 232).

Donna Haraway (1988), in particular, has been influential in proposing that we understand the unavoidably situated character of all knowledge. It is not through separation of subject and object that objectivity may be achieved, but through awareness of the connections, the groundedness of perspectives and the weighing up of many different perspectives in relation to each other. This resonates with what Lorraine Code (2006) terms 'ecological thinking'. This is 'a revisioned mode of engagement with knowledge, subjectivity, politics, ethics, science, citizenship, and agency that pervades and reconfigures theory and practice' (Code, 2006: 5). Ecological thinking is about 'the politics of epistemic location', acknowledging the partiality of knowledge about selves and others (Code, 2006). It does not seek 'a priori or transcendent principles or truths; but neither is the language of "context" and "contextualization" adequate to explain it' (Code, 2006: 5).

Ecological thinking contains the inherent 'politics of epistemic location' (Code, 2006). It is a grounded form of knowledge which acknowledges relations and connections and the ways in which 'knowledge is made, negotiated, circulated' (Code, 2006: 5). This kind of approach is critical and wary of the separate and aloof 'subject positions of the self-invisible and the discursive sites, the 'laboratories,' of the credible, civil man of science' (Haraway, 1997: 270, in Code 2006: 21) which have acted as the guarantors of legitimate

knowledge but which have disguised relations of domination and neglected and devalued important aspects of 'what is'. On this reading the only 'irrational' knowledge is that which claims to be above politics and succumbs to the fantasy of the 'One' truth, of pure or universal knowledge (Haraway, 1988: 581).

I therefore refer to situated, political, relationally generated knowledge as ecological knowledge. I use the word ecological to broadly encompass both the relations between humans and between humans and nonhumans as well as those relations between ecological entities which may not involve humans (although the extent to which we can know about these without being involved is questionable). Although the word ecological tends to be associated with the sciences it was used by green movements precisely to draw attention to the links between humans and nonhumans and the ecological situatedness of humans within the nonhuman world. Stewart Brand (2009), one of the old greens of the 1960s who has come out in favour of nuclear power, recently stated that it was good that 'environmentalists don't call themselves ecologists any more' because

> most weren't, and most people who said they were part of the ecology movement wouldn't know one trophic level from another, or what a trophic level is, or what a food web is, or why a niche is a niche, or much less why horizontal transgenic gene transfer is natural rather than unnatural (Brand, interviewed by Woody, 2009).

Whilst ignorance and presumption by non-scientists may be frustrating for those engaged in the complex ongoing practices of the sciences, and it is important to note that expert and specialised knowledge still plays an important role in a more ecological and democratic understanding of knowledge production and contestation, this statement by Brand demonstrates the dismissive attitude to all knowledge which is not 'scientific' in the reductive sense of the word, and the use of 'nature' as a means of policing the problematic line between 'what is' (traditionally the realm of science) and understandings and experiences of 'what could be', knowledge sensitive to the power relations which make up political community (traditionally the realm of politics). The typical definition of ecology as 'the scientific study of interactions among organisms and their environment, such as the interactions organisms have with each other and with their abiotic environment' (Ernst Haeckel, in Begon, Townsend & Harper, 2006: xi) can be applied to both the human and the nonhuman world, and as such crosses the science/politics divide. It is important to bear in mind that the word 'science' has

its roots in the Latin for 'to know'. Knowledge is inherently political because it is always situated and constructed from within power relations between ecological entities.

Awareness of partial objectivity and the situated and political character of all knowledge challenges the science/politics divide and helps to underline the importance of political contestation by all in processes of knowledge construction. Understood in this way 'the virtue' of processes of democratic contestation of the knowledge of all affected 'may not lie in claims that it resolves conflicts but in its tendency to reveal them (O'Neill, 2006: 276). Thus, rather than emphasising consensus, this type of knowledge production is intended to uncover 'structural conflicts of interest' and contest the ways in which other situated knowledges construct notions of political community and common interest (Young, 2000: 120). It is important to pay attention to 'matters of concern' (Latour, 2004: 24) or grievances rather than 'to suppress them for the sake of some people's definition of the common good' (Young, 2000: 120). As such the process of democratic political knowledge construction

> is inclusive, not by formally including potentially all affected individuals in the same way, but by attending to the social *relations* that differently position people and condition their experiences, opportunities and knowledge of the society' (Young, 2000: 84, emphasis added).

Although Young refers here only to the human and political realm, Donna Haraway's work (1988), upon which Young draws, is explicitly concerned with developing broader understandings of 'science' and knowledge construction which move away from the nature/culture and science/politics separation. If we take on board Latour's (2004: 24, 66) broader emphasis upon 'matters of concern' and 'entities' ecologically conceived we can apply this approach as relevant to knowledge of both the traditionally 'natural' and 'cultural' spheres.

An ecological approach requires a more complex interrelational understanding of knowledge, both 'political' and 'scientific'. This is not simply a question of 'downgrading', or rather altering, the perception of science, from objectivity and certainty to something more nuanced (and ecologically responsible), admitting the inherent politics within the endeavour, whether desired or not. It is also about 'upgrading' the status of politics (and associated values), to that of legitimate knowledge. This is especially the case when it comes to understanding issues, such as nuclear energy, which are understood to be traditionally 'scientific' matters, separate from politics. Science is

inherently political and for this reason it is important to counterbalance this, to 'ecologically correct' it with awareness of the importance of political knowledge, awareness of the power relations which affect our understandings of the relations which constitute 'what is'. It is for this reason that Plumwood (2002: 73) and others critique remote forms of knowledge and governance, understood both as remote from the direct consequences of decisions, and in the communicative and epistemological sense, as remoteness from news and from knowledge, including communication and understanding barriers (see also Plumwood, 1995). These barriers to understanding are only reinforced by the hierarchical separation of science/politics which structure our understandings of reality and tend to reinforce the position of the dominant at the expense of the marginalised.

Knowledge can only claim legitimacy then, if it is sensitive to the inherent politics of life. Ultimately this is important because it is about keeping a check on concentrations of power. Realising the implications of the embodied, relational, ecological character of knowledge, reveals that artificial separations such as emotional disengagement, and the separation of 'science' from 'politics', are no longer tools for the advancement of knowledge but in fact work to epistemically remove us from the complex connections of what is. All knowledge is political because it is produced ecologically through the power relations which make up common life. In Haraway's (1988: 590) words '[r]ational knowledge is power-sensitive conversation'.

As discussed, part of the problem of the 'transcendence of nature' (Latour, 2004: 121) is that the maintenance of certainty and order through recourse to a separate realm of knowledge about the nature of things, of facts about 'what is', tends to work in favour of the dominant status quo and those currently in power. However, drawing attention to the inherent politics of all knowledge, and confronting the science/politics separation in the evaluation of knowledge tends to raise alarm bells, particularly with concern for the independence of science from political machination or expedience. The separation has existed for good reason, for it has enabled a degree of order and certainty required not only for the legitimacy, but also for the efficacy of knowledge required for common life. The intention here is not to remove the separation per se, but to challenge the current hierarchical binary separation which falsely places science above politics. It is the hierarchical distinction

between science and politics which perpetuates the nature/culture divide, and enables politics to affect science and science to affect politics 'surreptitiously' (Latour, 2004: 1), and therefore in ways which suit the dominant powers perpetuating an ecologically insensitive and damaging status quo. An ecological approach suggests that we openly acknowledge the politics inherent in scientific knowledge of 'what is', but also openly acknowledge that scientific knowledge of 'what is' is of vital importance for our political negotiation of common life, of understandings and experiences of the power relations which make up political community. Questions of 'what could or ought to be' and 'what is' are not so easily separated.

Lest there be concerns about the collapsing of the traditional separations which have been important for a degree of order and certainty which is central to the efficacy of common life, Latour (2004) helpfully breaks down the conflicting processes of knowledge construction inherent in both scientific 'facts' and political 'values.' He identifies aspects of each which can be rearranged so that the hierarchical separation of science/politics which reinforces nature/culture can be circumvented. While scientific (or economic) facts are considered unified and absolute in popular understandings, this fails to account for how 'facts are made' (Latour, 2004: 95). The scientific process involves peer review and the exposure of knowledge claims to critical discussion and debate. Facts contain the contradiction of both 'perplexity' motivating discussion, and 'institution' which brings an end to discussion. Institutionalisation of facts, and science's recourse to a transcendental 'nature' to do this, works to obscure the more political, uncertain and constructed aspects of scientific facts (Latour, 2004).

In contrast, political values are positioned on the lower end of the hierarchical binary, in a 'position of weakness that obliges them always to wait behind the fluctuating border of facts' (Latour, 2004: 97). Latour (2004: 98) points out that

> by limiting themselves to facts, the scientists keep on their side of the border the very multiplicity of states of the world that makes it possible to form an opinion and to make judgements at the same time about necessity and possibility, about what is and what ought to be.

This leaves those who are not scientists with a dilemma, for not being privy to the construction of factual knowledge, there remains little in which to ground political values, either about 'what is', or 'what could, or ought to be'.

Yet political values contain a similar contradiction to that contained in the notion of scientific facts. The assertion of politics and appeal to values usually involves a 'challenge to the ways in which powerful parties have neglected to take into consideration certain associations of humans and nonhumans' (Latour, 2004: 106). This neglect points to the need for consultation and involvement or participation in discussion which might be compared to the stage of perplexity and discussion inherent in the construction of scientific facts. Like facts, political values also contain a moment where discussion ends, where something like 'the right order of priorities' must be decided (Latour, 2004: 107). Latour (2004: 243) calls this the composition of hierarchy,

> a matter of arranging propositions, which are by definition heterogeneous and incommensurable, into a single homogenous order and according to a single relationship of order, an obviously impossible task that will have to be taken up again at the next iteration.

I would term this the moment in the processes of value construction which constitutes political community, a sense of the 'common', for as Latour (2004: 107) describes it, it involves consideration of how these propositions might 'be articulated with those which already exist' (Latour, 2004: 107).

Thus Latour deconstructs the processes of establishing both scientific facts and political values, through perplexity, consultation and discussion to institution and the constitution of political community. From the rubble of this deconstruction Latour (2004: 109) suggests a 'new separation of powers' to enable due process in the construction, contestation and evaluation of knowledge claims. This new separation avoids the limiting hierarchical dichotomisation of the science/politics divide. It consists of 'the power to take into account' and the 'power to put in order' (Latour, 2004: 109). For the purposes of this thesis we can understand the former to involve the process of taking all affected into account, the process of posing answers to the question of 'how many (and who) we are.' The latter we can understand as the process of deciding what to do after the first stage has been completed, answering the question of 'how we might live together' (adapted from Latour, 2004: 111). Importantly, the second must not 'short-circuit' the first (Latour, 2004: 126). The process of taking into account incorporates from science (and the realm of facts) the avoidance of simplification, the importance of perplexity for enabling discussion, while from politics and the realm of values it incorporates the consultation of all affected. The process of putting in order incorporates from

politics (and the realm of values) the discussion of the compatibility of entities in the common world so that all achieve their legitimate place, and from science and the realm of facts it incorporates the understanding of institution, that once propositions have been instituted, their legitimate presence in common life need no longer be questioned (adapted from Latour, 2004: 109). Or at least, they need no longer be questioned once all affected have been taken into account, and as this is never complete the processes continue.

This reformulation of the problem of contesting, evaluating and constructing knowledge of the world provides common ground and a potential way of integrating the processes of knowledge construction involved in both science and politics as they have been traditionally understood, without delimiting science to 'nature' and politics to 'culture' and thereby perpetuating the hierarchical divisions which have been instrumental in causing the ecological crises we face in the first place. If we think about the construction of knowledge in this way we might learn to cease 'to tie politics to humans, subjects, or freedom', and '[s]cience to objects, nature or necessity' (Latour, 2004: 89).

The hegemony of certain forms of knowledge has obscured awareness of vital ecological relations of domination and dependency, interlinking and complex interdependence, between humans and nonhuman nature. This can and has been displaced continuously, for example, through a mass potential workforce, plenty more women, plenty more animals, plenty more oil, plenty more uranium. However, on a finite planet and with the scale of the instrumentalisation of both human and nonhuman nature this displacement sooner or later causes ecological crises which conventional dominant dispassionate understandings of knowledge and objectivity cannot solve. Continuing to subscribe to the separation of nature/culture and science/politics is misleading and counter-productive as human effects upon the biosphere increasingly show consequences which disturb human life and the 'politics of nature' becomes harder to ignore. The displacement of effects of instrumental relations of domination becomes more difficult, and 'objectivity' on the problems is no longer achievable as the inherent politics which lies behind the neutral mask of science becomes harder to deny. This is what Latour (2004: 24-5) implies when he says that the 'ecological crises' we face are 'objectivity crises':

> [w]e are not witnessing the emergence of questions about nature in political debates, but the progressive transformation of all matters of facts into disputed states of affair, which nothing can limit any longer to the natural world alone – which nothing, precisely, can naturalize any longer (Latour, 2004: 24-5).

He highlights how 'matters of concern' such as the BSE crisis in the UK and controversies around climate change reveal that science is not the realm of certainty and objectivity which the ruling distinction portrayed it to be (Latour, 2004: 263; see also Hinchcliffe, 2001).

This applies also to the problem of nuclear energy in the context of climate change discussed in Chapter One. As we have seen, the nuclear energy issue crosses both science and politics (nature and culture), and appealing to simple 'matters of fact' is often impossible because it brings conflicting facts to the fore. As debate and decision making in the UK currently stand, science, economics, and the domain of experts, expressed as matters of technical economic 'fact' understood as above or separate from a more 'value-driven' politics, dominate coverage of the issue, with an aura of objectivity and neutrality. The mainstream debates are so bewildering and/or frustrating for experts and non-experts alike, because conflicting claims to objectivity and appeals to the 'facts of the matter' fail to openly acknowledge the inherent social, political and ecological underpinnings on all sides. This denial of political knowledge has the effect that important aspects of the debate are neglected, devalued or excluded and this is justified according to the dominant narratives which reinforce the problematic separation between 'nature' and human-centred 'culture'.

Within the dominant discourses of nuclear energy, scientific and economic facts which pre-constitute political community and determine 'what is', have already implicitly answered the question of 'how we might live together' and are inserted into politics in ways which by-pass democratic contestation of these problems. The dominant scientific knowledge and the political response to this is not deemed challengeable. As Tony Blair stated after the Supreme Court ruling in 2007, the government might have to consult the public again, but this would not change the policy (Johnstone, 2010: 96). The policy was already decided upon and justified according to incontestable scientific facts about the necessity and safety of nuclear energy, the imperatives of economic growth and the dominant political concerns about national energy security. Dominant

narratives insist that the knowledge with which we make these decisions cannot be political if we are to achieve objectivity and gain the most comprehensive understanding of the issue (Lynas 2013; MacKay, 2009). For while there is so much caution on the part of 'neo-environmentalist' greens (Kingsnorth, 2012) such as Mark Lynas about the potential political bias of scientists, the fallacy of a 'pure' and detached science is being used as a transcendental force to 'abort politics' (Latour, 2004: 19). Reductive understandings of science as apolitical are used as a force which by-passes the political contestation required to mitigate and address problematic power asymmetries within the political community. Democratic political contestation is intended to avoid the totalitarianism of the use of a transcendental force above political contestation, but it is a temptation which is difficult to shake.

Although the knowledge of industry and scientific experts is also positioned politically and is also partial, it is able to masquerade as neutral and objective. This means that certain knowledge of harm and concern (for nonhuman nature, future generations, those in other countries, alternative cultures and ways of living) are doubly disadvantaged, for they are not taken into account either in the construction of the scientific validity or in the dominant processes and constructions of political community. The knowledge and reasoning produced through democratic political process has been relegated to the cultural sphere, to second place, to deal with the scientific facts after they have been established. This is evident in the lack of truly open public consultation and opportunities for public contestation of the nuclear energy issue. The hierarchical binary opposition of science/politics limits the political choices available and confronts us with seemingly intransigent either/or choices (such as nuclear/coal).

Resistance and protest against nuclear energy in the UK has shown the inherently political and contestable character of the issue nonetheless, pointing to the entrenched power asymmetries which reproduce harms to both human and nonhuman nature. However it is difficult to forcefully express these harms as relevant to both science and politics according to the dominant narratives which fragment responses to the problem. Knowledge claims about the risks of low-level radiation, of accidents, of the future long-term waste problems are accounted for, subordinated and justified according to the dominant understandings of political community, and faith in the solutions produced by

scientific progress. In discourses of national security a certain definition of the good of the political community is discussed in reductive scientific and economic terms which naturalise it and mask the reproduction of socially produced harms. The powerfully constitutive increasingly globalised discourses of state security in conjunction with prevailing economic and techno-scientific rationalities tend to pose as neutral and objective forms of knowledge, simply reflecting the nature of things, the way things are, yet they mask unnecessary harms perpetuated by avoidable human/human and human/nonhuman relations of domination.

This is seen in Chris Huhne's Regulatory Justification (DECC, 2010) for the new nuclear reactors at Hinkley C. The harms are acknowledged but justified as necessary according to the logics of the dominant scientific and economic facts. These facts are used to delimit our understanding of the possibilities of political community to national energy security under conditions of capitalist economic growth and the need to reduce carbon emissions reduction in the context of climate change. The concerns which many have about nuclear energy are then categorised by industry and government experts as irrational and due to a lack of knowledge or misplaced politics. The dominant discourses deny or limit understanding of the extent of social and political embeddedness of science and economics, whilst also limiting understanding of the ecological embeddedness of political community. The knowledge of activists, those resisting and raising concerns for future generations, for the nonhuman, and those in other countries, is not considered relevant to our knowledge of the issue of nuclear energy because tainted by politics and/or because it is deemed out of touch with the realities of how things are; therefore demanding unreasonable changes. Such knowledge has suffered short-circuiting both in the realm of science and the dominant politics, as the process of taking into account 'how many (and who) are we' has been cut short and pre-empted by assumptions about 'how we might live together'.

However, if we gain an understanding of the politics inherent in understandings of 'what is', and challenge the short-circuiting of the process of taking all affected into account (how many, and who are we?) with the process of constituting political community (how might we live together?) then we can denaturalise the conditions which produce harms to both humans and nonhuman nature, and begin to challenge them as unnecessary and avoidable,

because politically produced. This involves paying attention to important knowledge about these harms. In order to gain a better picture of the politics of nuclear energy we must expand our conception of political community to include that previously excluded as 'nature'. An ecological process of knowledge construction which attends to the problem of 'how many (and who) we are' before seeking answers to the question of 'how we might live together' enables both legitimacy and efficacy of knowledge.

Yet in this process we must be aware of the intertwining of these and the ever present danger of the latter short-circuiting the former; the question of 'how many (and who) we are' is not only a matter of counting but is also explicitly political involving questions of 'who we are', which has direct bearing upon questions of 'how we might live together'. Rather than simply inserting matters or entities from the nonhuman world as objects or matters of fact into politics, as a stick with which to beat politics and delimit freedoms and possibilities, there is potential for more ecological (i.e. political) awareness as we face 'matters of concern' which cross the nature/culture divide, which provoke perplexity and contestation. By emphasising the process of taking all affected into account across the science/politics divide we can open up the possibility that 'harms' which are treated and dismissed as regrettable and unavoidable in prevailing scientific and economic discourses (which implicitly shore up the dominant political discourses) might be understood as unnecessary *injustices* when considered in terms of an explicitly political ecological approach, and therefore explicitly politically challenge the dominant status quo.

Due to the entrenched character of existing political power relations which pervade dominant discourses however, it is especially important that the process of putting in order (assumptions about how we live together) does not block the process of taking into account (questions of how many, and who, we are). The alternative 'separation of powers' (Latour, 2004) should ensure that the process of putting in order (hierarchy and institution) does not short-circuit the process of taking into account (perplexity and consultation) as has been occurring in the case of nuclear energy. However, the problem remains, how can we maximise perplexity and consultation of all affected, given the hegemony of the separative, reductive discourses and the preponderance of power in the hands of those with an interest in keeping the power of 'nature' to maintain the old order of things? Latour (2004: 125) argues that 'the power to

take into account' needs to be 'sensitive and alert' to that which has been excluded in the process of putting in order. Ideally, those entities which have been excluded in the processes of deciding how we might live together (given the new combination of knowledge claims about the constitution of common life) will come back to haunt us, as long as the process of taking into account 'is sensitive and alert enough' (Latour, 2004: 124). Latour (2004: 81, 77) argues that inhabitants of both the human and nonhuman world have the capacity to act as 'social' actors, and that they are also defined by 'reality and recalcitrance'.

Resistance tends to be a sign that we need to pay attention to harms which may appear 'natural' and therefore necessary but are actually politically produced, resulting from contingent relations of domination between selves and others. Sensitivity to such resistance is needed if we are to take all affected into account and achieve more knowledge of what is at stake in the politics of nuclear energy. The harms resulting from social relations of domination require expression as injustices in order to register in the public sphere as political, as knowledge pertaining to political community. However, injustices must be understood not only as relevant to the sphere of politics, but also to the sphere traditionally ascribed to science, to our knowledge of 'what is', as aspects of the effects of common life not taken into account (in a way which avoids the hierarchical separation of science/politics, nature/culture).

Given existing entrenched power asymmetries in prevailing discourses, listening and attending to the politics of 'what is', to 'recalcitrance', to resistance to the status quo, is vitally important. Faced with ecological crises where we as human beings are forced to realise our own political situatedness in power relations with nonhuman nature, we require the 'best available knowledge' we can get (Barry 2012: 10). The entities and knowledge claims excluded from the dominant discourses may be recalcitrant and provide resistance to the status quo. However, resistance does not always arise automatically and even when it does, experiences and senses of harms require articulation as injustices in terms which rethink and challenge existing conceptions of the political community (Honneth, 1995: 139; see also Barnett, 2012). The need for a careful weighing up of knowledge, perspectives and possibilities for common life (the integration of 'what is' and 'political community'), particularly that knowledge which has been 'sequestered' (Giddens, 1991, in Barry, 2012: 37)

devalued, or excluded, requires a sensitivity which I propose necessitates a clearer understanding and articulation of potential and existing injustices and attention to, in Latour's terms (2004: 80, 77) 'actants', 'realities and recalcitrance' on the ground. We need to develop ways to heighten sensitivity to potential points of neglect and power asymmetries, as well as points of connection and contradiction, bringing important political knowledge to the fore, in order to enable a more adequate response to ecological crises.

The framework which I develop in this thesis is intended to help in this process, to enable clearer attention to and expression of injustices so that they become relevant to our understandings of common life, including the overlapping domains of both science ('what is') and politics (political community). It is a framework which is intended to enable participation or inclusion in the contestation process; it is intended to heighten sensitivity and awareness on the part of those who do have some power within existing political relations, to enable perplexity and to broaden consultation. This process of asking 'how many (and who) are we?' in order to try to take all affected into account mirrors the first part of my two part research question: *how might we become more aware of the injustices produced by nuclear energy?* Making sure that all affected are taken into account in the political process of the contestation of knowledge claims serves to ensure the legitimacy of knowledge. The second part of my research question, which is concerned with *how we might become more aware of how these injustices intersect*, relates to the problem of the efficacy of knowledge and the relation between the processes of taking into account and putting in order (considerations of how we might live together, not only how we might find a language to express injustices but how we might *articulate* them), This will be clarified in the third section of this chapter. In the next section, with a view to gathering the tools to develop the framework for attending to and articulating injustices I turn to David Schlosberg (2007) who breaks important ground in paying attention to ecological and social justice claims of those engaged in political resistances on the ground, who have important knowledge about the harms reproduced by the current dominant conceptions of both politics and science, political community and 'what is'.

A 'shared toolbox' for articulating injustices: distribution, recognition and representation

In seeking to enhance our sensitivity to harms which are not 'natural' but reproduced by situated historic configurations of knowledge and political relations, it is important to listen to those who, in Latour's words (2004: 144), 'knock at the door' demanding more perplexity and consultation, or that prove recalcitrant, resisting the easy running of the status quo. A number of feminist, marxist and green theorists have emphasised the importance of sensitivity and attention to the struggles of social movements against injustices (Young, 1990; Fraser, 1997, 2008; Harvey, 1996; Schlosberg, 2007). The work of David Schlosberg (2004; 2007; 2013) provides a particularly rich resource from which to develop a framework for articulating injustices, for he is especially attentive to the knowledge claims of those engaged in grassroots environmental justice activism at both local and global levels, whilst also bringing together the work of a variety of theorists in this area. He highlights the importance and value of multiple knowledge claims, emphasising that one should be 'open to examining and emphasising various conceptions of justice – and experiences of justice – on different issues' (2007: 172-3).

Schlosberg also extends the discourse of justice to nonhuman nature, he explicitly aims to 'expose a common language of justice, an overlapping set of discourses, and *a shared toolbox,* which we can use to address issues of both environmental and ecological justice' (2007: 130-131, my emphasis).[16] He doesn't argue that all conceptions of justice must be present in every case, but that they should be considered, that one should be open to examining and emphasising various conceptions of justice – and experiences of justice – on different issues' (172-3). He gives an example:

> In the case of the use of reclaimed wastewater to make snow at a ski resort on a mountain sacred to local tribes we can easily see distributional (Native Americans get more environmental bads than others), recognition-based (lack of acknowledgement of tribal cultures), participation-focused (exclusion from decision-making and lack of material in tribal languages), and capabilities-based (the impact on the tribes capability to retain cultural meanings and teachings) notions of environmental justice; we can also see distributional (water moved from one watershed to another), recognition-based (nature's processes

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[16] Schlosberg does not use the word 'ecological' as I do, to explicitly challenge the separation of nature/culture. As discussed in the first section of this chapter my own use of the word ecological aims to be explicit about the intersections between, as well as the injustices perpetuated by such powerfully constitutive symbolic separation.

ignored), participation-focused (no proxies for impacted species or communities), and capabilities-based (what will water laced with pharmaceuticals do to the reproductive capacity of local animals and plants) notions of ecological justice. All of these exist simultaneously in a single snowmaking proposal (Schlosberg, 2007: 172).

Thus he states the intention that '[u]sing the range of theories available to us and understanding how they overlap and interact, will illuminate problems more thoroughly' (Schlosberg, 2007: 173). While he continues to treat human and nonhuman nature as separate, and he focuses upon bringing together thinking about *justice*, he draws extensively on the knowledge of those resisting injustices and breaks important ground for my own work by bringing together different understandings of justice which I will use and develop as useful ways for thinking about politics in my heuristic framework for articulating *injustices* of nuclear energy. In what follows I elaborate on the three main understandings of politics which are either explicit or implicit in his work: i) distribution, ii) recognition, and iii) representation, and which I will draw upon in developing my own heuristic framework for articulating *injustices* of nuclear energy.

Firstly, I draw from Schlosberg (2004, 2007) the importance of thinking about distribution. He does not need to spend much time defending the conception of justice as distribution, given that this dominates political thinking about justice. In fact he spends much time defending the need to pay as much and separate attention to recognition and participation or procedural justice, for it is generally assumed by distributive justice theorists that the latter either follow from, or are preconditional to just distribution (Rawls, 1971; Miller, 1999). Schlosberg is careful to emphasise however, that whilst defending the need for a focus upon recognition and other conceptions of justice this does not mean that he is rejecting or setting aside distribution as an important concern.[17] He grounds his discussion in the knowledge claims of environmental justice social movements in the US where

> the most often cited, and most obvious, evidence of environmental injustice is in the realm of distribution – specifically the inequitable share of environmental ills that poor communities, indigenous communities, and communities of colour live with (Schlosberg, 2004: 522).

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[17] He also emphasises that this was not the intention of any of the recognition theorists he draws upon, Fraser (1997) being an obvious case in point, but also Young (1990) and Honneth (2007: 24-5).

While industry and government deny discrimination claims due to the 'unintended' or accidental character of the harm, Schlosberg (2007: 59) counters this with a systemic analysis, arguing that even if 'the distribution is caused by, for example, market forces rather than targeting minorities it does not mean that the overall process is just'.

Attempts to define what he and others term 'ecological justice' or justice to nonhuman nature in political theory (e.g. Baxter, 2005) have often relied upon the liberal paradigm of distributive justice. Schlosberg (2007) finds theorists attempts to expand the liberal distributional framework to include nonhumans to be lacking. The liberal framework, itself is biased towards anthropocentrism and is difficult to expand in this way, although it has been done most successfully through exploring loopholes in the framework, such as the possibility of including future human generations (which would have a positive side-effect for nonhuman nature), or, as Baxter does, through extending the community of justice procedurally so that nonhuman nature may be considered a non-participating recipient of distributive justice, just as some members of the human community must. As Schlosberg (2007) points out, however, exploring such loopholes already moves beyond the bounds of distribution and begins to include recognition, procedural justice and participation (or as I would emphasise, representation).

As we can see from the ski resort example above, Schlosberg (2004; 2007) focuses specifically upon the distribution of *environmental* goods and bads. Yet his work also illustrates how social movements emphasise that distributive injustices to both human and nonhuman nature are *linked*. In examining the knowledge claims of those in global justice movements he points out that 'social justice, environmental justice, and ecological justice are tied together in these critiques, as the poor suffer both social and environmental inequity and nature is drained of resources for economic gain' (2004: 524). That which others have argued goes for environmentalism in general, so Schlosberg argues is even more the case with the environmental justice movements: their struggles are not just about single environmental issue politics but instead 'challenge multiple lines of domination' making it hard to differentiate the environmental aspect of struggles from other dimensions (Pulido, 1996 in Schlosberg, 1999: 117).

Like Shrader-Frechette (2002), Schlosberg argues that distributive environmental justice assumes that 'all things being equal, rich and poor, colored and white, educated and non-educated, be treated equally in the distributions of society's environmental benefits and burdens' (Shrader-Frechette 2002: 24-5, in Schlosberg 2007: 56). This makes some sense within a single-issue anthropocentric understanding of 'environmental justice', and is also important as a means of challenging the emphasis upon economic and social goods alone within the dominant theories of justice. However, when referring to the movements Schlosberg (2004: 522) himself points out that 'the call for "environmental justice" focuses on how the distribution of environmental risks mirrors the inequity in socio-economic and cultural status.' This begins to highlight the limits to the single-issue focus and of thinking in terms of distribution alone. An assumption of equality with regards to the deeply ingrained differences (and inequalities of class, race/ethnicity etc.) appears absurd for in reality such inequalities tend to correlate with each other, intersecting with and reinforcing other injustices which cannot be conceptualised in terms of equality of distribution alone, but have as much to do with issues of recognition, participation and representation.

As we have seen in the first section of this chapter, ingrained differences in status which have knock on effects upon distribution are also shored up by the nature/culture distinction and both humans and nonhumans have suffered from being categorised as part of the realm of objects and 'nature' to be used instrumentally and exploited (as 'goods') for the gain of dominant humans. Class and racial bias are reflected in distribution of environmental ills '[b]ecause they reflect the distribution of power in society, they cannot be expected to produce an equitable distribution of goods' (Hamilton 1993: 69, cited in Schlosberg 2007: 60). Thus Schlosberg's work points to some of the limits of thinking about justice only in terms of distribution of environmental benefits and burdens. The correlations and tensions resulting from the ways in which different types of distributive injustices, not only 'environmental' but also 'social' and 'economic', intersect with each other, however, deserves closer examination, not only within the confines of thinking about injustices to humans but also to nonhuman nature. The latter must in part remain a 'good' to be distributed (e.g. water, wood, etc.) yet must also be understood as a recipient of

goods and bads (e.g. river or forest ecosystems and individual animal and plant life within these).

This takes us to thinking about the second concept I draw upon: recognition. Schlosberg (2007) spends much time defending this as a valid and analytically separate area of inquiry. He argues that '[j]ust as distributional theorists do not want their key concern subsumed in a theory of justice focused on recognition, recognition cannot simply be subsumed, or assumed, in a theory of distribution' (Schlosberg, 2007: 24). Following Nancy Fraser he emphasises that thinking about 'the 'identity politics' of social movements or the post-material critiques of the 'cultural' left' is not antithetical to thinking about the traditional material concerns of the left, and that, as Fraser (1997: 12) argues, '[j]ustice today requires both redistribution and recognition, as 'neither is sufficient' (1998: 5). Even Axel Honneth (1995), who has written extensively on recognition, does not dismiss the problem of material inequity. Honneth (1995: 165) acknowledges 'the more utilitarian struggle over the equitable distribution of goods, including cultural goods, as a motivator for collective action' and emphasises that 'this second model of conflict, based on a theory of recognition, should not try to replace the first, utilitarian model but only extend it' (cited in Schlosberg 2007: 25).

The problem with focusing only upon distribution and an ideal 'basic structure of society' (Rawls 1971: 9-10) alone, is that patterns of distribution thus generated do not help us to examine social and historical context. As Young (1990: 18) pointed out, simply theorising ideal patterns of distribution does not account for the underlying reasons for present distributional inequalities, nor the reality of actually existing domination and oppression which perpetuate injustices of different kinds, not only distributional inequity. Distributive theorists, such as Rawls may include recognition partly as 'an *assumption* or *precondition* of distribution' and partly as 'a *good* to be distributed' (Schlosberg, 2007: 20; Rawls, 1971), but the problem with assuming recognition is that it 'is simply not assumed in the real world of injustice' (Schlosberg, 2007: 21). This is therefore 'problematic on pragmatic and empirical grounds': '[i]f the interest is about attaining *justice*, rather than attaining a sound *theory* of justice, recognition is central to the question and the resolution – and is not simply to be assumed' (Schlosberg, 2007: 22).

Young also critiques the conceptualisation of the benefits and burdens to be distributed as static entities, instead emphasising that they are the outcome of social and institutional relations, particularly a lack of recognition of group differences by social structures, cultures and institutions (1990: 18). Young argues that recognition simply cannot be quantified and distributed as a 'good' in the way that some distributive theorists envision, precisely because it is 'a relationship, a social norm embedded in social practice' (Schlosberg 2007: 23; Young 1990: 27). Recognition cannot be distributed in the same way as education or housing support,

> [a] state may set an example of recognizing a socially demeaned group and validate difference in the political realm (through voting, or marriage rights, for example), but recognition must happen as much in the social, cultural, and symbolic realms as in the institutional (Schlosberg, 2007: 23).

This moves attention away from the state alone as a focus for redressing injustice 'and brings justice theory squarely into the political space beyond the state' (Schlosberg, 2007: 23). This is also important within the context of globalization and the need to acknowledge other social forces beyond the state such as the market (e.g. see Dryzek, 2000, also Barnett, 2012).

Rawls maintains that recognition is preconditional for membership in the political community (Schlosberg, 2007: 23; Rawls, 1971), but recognition is a more complex issue than simple inclusion or exclusion, relating also to the hierarchical structures *within* political communities. As Schlosberg points out there is a need to 'examine the range of social and cultural values and practices that impede full recognition of a group as an accepted member of the moral and political community' (Schlosberg, 2007: 16). These include both the internal effects of intersubjective relations upon the 'self-worth' of individual subjects (Taylor, 1992; Honneth, 1995), and the external structural effects of social relations upon the social status of individuals, 'institutionalized relation[s] of subordination' within broader social structures (Fraser, 2000: 113). Disputes between these conceptions notwithstanding (Fraser & Honneth, 2003), they are actually linked. As Schlosberg (2007: 20) points out

> civil rights protesters who carried signs proclaiming, simply and poignantly, 'I am a Man' – certainly a call for more than education and voting rights – conveyed the issues of both individual self-worth and institutional and cultural status.

Sojourner Truth's words 'Ain't I a Woman?' and bell hooks' book of the same name do this too, with the latter in particular highlighting the intersections between injustices of race/ethnicity and gender and the particular struggle of non-white women in the context of a predominantly white and middle-class feminist movement and a male focused civil rights movement (hooks, 1981).

Each of the above examples, in having to proclaim the status of non-whites (and women) within the moral community of 'man', highlight the ways in which the nature/culture divide, in delineating 'what is', has also circumscribed the boundaries of political and moral community. Non-whites and women were considered 'by nature' of lower status, and indeed associated with (nonhuman) nature, as primitive and mentally undeveloped, identified and objectified by means of their bodily attributes. The struggles to be included within the realm of 'man' have broadened understandings of political and moral community, but 'nature' (and/or 'reason') as 'sword of Damocles' (Latour, 2004: 1, 185) still divides human and nonhuman nature in terms of whether and how they are recognised within moral and political community.

Schlosberg argues that recognition 'has a particularly useful role to play in expanding conceptions of justice to nature' (2007: 129-120), and while much has been written on 'recognition or respect for the intrinsic value in nature in order to justify an extension of our moral and ethical community to nature' (Schlosberg, 2007: 159), this has hardly been done in connection with thinking about justice. Indeed environmental ethics, including much ecofeminist theory, has been criticised for its failure to speak to politics (Schlosberg, 2007: 159; Light & de-Shalit, 2003; MacGregor, 2003). Underlying any attempt to extend justice to nonhuman nature presupposes recognition of nonhuman nature, and while this is a good start, the recognition of nonhuman nature 'is undertheorized' and there is a need to address the 'underlying social, cultural, and political issues around this recognition of nature – something absolutely necessary in order to transform such a theory into social practice' (Schlosberg, 2007: 132).

Schlosberg in particular draws attention to the possibilities of extending Fraser's thinking on status injuries to nonhuman nature. These are 'based in social mis- or mal-recognition' rather than 'individual psychological feelings on the part of the victims of injustice' so that the focus is less about valorising individual or group identity and instead aimed at 'overcoming subordination (Fraser, 2000: 114, in Schlosberg, 2007: 139). As Schlosberg (2007: 139)

points out, '[w]e can see nature injured, its interests ignored, autonomy dismissed, or its integrity damaged':

> The point is to examine the range of social and cultural values and practices that impede the full recognition of a group as an accepted member of the moral and political community. We focus not simply on the similarity of characteristics of humans and nonhumans, but on the commonality of patterns of oppression and status injuries in political, social, and cultural realms (Schlosberg, 2007: 141).

These institutionalised social, political and cultural structures position humans and nonhumans differentially within our knowledge and understandings of both 'what is' (science) and political community (politics). As the first section of this chapter, and the nuclear energy issue, make clear, these are not as separate as we have been conditioned to think.

Recognition is about the social bonds or relations which make up political community. While some are concerned with those bonds breaking down under the pressures of globalization (Lash & Featherstone, 2001), and others see it expanding in more cosmopolitan fashion to include all of humanity (Archibugi & Held, 1995; Fraser, 2008), Schlosberg's (2007: 142) concern is that '[m]odernity's social bond [never went far enough, and] is unsustainable without a simultaneous recognition of, and bond with, the rest of the natural world'. Indeed, as Plumwood's analysis has shown, strategies of inclusion predicated on similarities to morally considerable insiders and differentiation from morally non-considerable outsides can backfire upon devalued others who have just about made it through the 'trap-door' of considerability (Plumwood, 1993, 2002; see also Crenshaw, 1991). [18] This is because such strategies of inclusion fail to challenge the continued separation between humans and a separately conceived 'nature' (Latour's (2004: 1,185) sword of Damocles – science/politics, nature/culture).

The implications of this in terms of recognition-based injustices to both humans and nonhumans, deserves further consideration, particularly in the context of addressing the problem of the nature/culture divide. The lesson most commonly taken from Latour (2004) is that we must let go of 'nature', but equally important is his suggestion that we must lose the 'culture' distinction. To some extent this has already occurred with the recognition of other cultures and

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[18] Kimberle Crenshaw (1991: 61) uses the analogy of a trap-door to illustrate how the problem of 'intersectionality' or 'multiple burdening' makes it harder for some others, e.g. black women to achieve recognition (1991: 61).

the rise of 'multiculturalism', but Latour (2004: 130) emphasises that the latter will continue to be problematic as long as it is posed against 'mononaturalism', the background of a single 'nature'.

The emergence of multiculturalism and certain more respectful attitudes towards the knowledge and values of other cultures, whilst constituting a move away from certain types of othering (devaluing social and institutional norms which limit recognition of some social groups), is incomplete without the move away from 'mononaturalism' (Latour 2004: 48), towards an understanding of the multiple natures which make up reality. Mononaturalism provides a backdrop against which the old forms of othering between human cultures can slip back in. All that has been consigned to 'nature' has tended to be devalued and 'nature' and the nonhuman world of things has been backgrounded in western culture 'as the taken-for-granted backdrop to market [and other human] activities, as absorber of wastes and provider of limitless resources, noticed only when it threatens to fail to perform as required' (Plumwood, 1993: 153). Dominant discourses of state security and economic and scientific rationalism rely upon the distinction between nature and culture, and thus reinforce these recognition-based injustices.

Schlosberg's research indicates that many of the claims made by global environmental justice activists highlight 'the danger of a growing global monoculture', not simply protesting against the homogenising destructive force of neo-liberalism, but also against the 'present and coming loss of diverse cultures', and calling for 'recognition and preservation of diverse cultures, identities, economies, and ways of knowing' (Schlosberg, 2004: 524, see also Shiva, 1997, 2000). Crucially, the spread of the dominant culture is reinforced by the wielding of science and by its status as the pinnacle of progress, 'the end of history' (Fukuyama, 1992). These narratives are normalised and naturalised by the nature/culture separation. Other cultures are deemed more primitive and backward in contrast to the neoliberal development discourses. The destruction, for example, of localised cultures of farming, is about more than simply 'culture', but also the loss of biodiversity as local agriculture is replaced with seed monocropping. Loss of culture is bound up with the loss of the ways in which other cultures relate to the nonhuman world; 'globalisation creates 'development' and 'growth' by the destruction of the local environment, culture and sustainable ways of living' (Schlosberg, 2004: 525).

A key response to this lack of recognition of diverse cultures and ways of living which do not adhere to the science/politics and nature/culture separations has been to demand more participation, to claim legitimate voice within the discourses and structures which govern common life. This takes me to the third and final understanding of politics which I draw from Schlosberg, the importance of thinking about representation. Drawing upon both social movements, and the work of Iris Young and Nancy Fraser, Schlosberg (2007: 26) discusses this in terms of procedural justice and participation and emphasises the importance of paying attention to 'demands for more broad and authentic public participation.' However, the ecological approach, described in section one of this chapter, prompts me to accentuate more clearly, as others have done, that we cannot, and should not seek to, escape representative processes (Spivak, 1988; Alcoff, 1991; Plotke, 1997; Young, 2000; Eckersley, 2004; Fraser, 2008; Saward, 2010). An ecological approach which moves beyond the hierarchical separation of science/politics and nature/culture, involves acknowledging that 'seeking to break the boundaries of representation, to find directness, engagement, contact, authenticity' (Saward, 2006: 195) falls back upon an understanding that it is possible to achieve direct and incontestable knowledge about the 'nature' of things.

It follows, then that the importance of paying attention to representation is not only a matter of scale. Scale is Fraser's (2008) main reason for acknowledging the need for representation at the global level in the context of transnational structures and forms of organisation in which most have no voice or impact upon the representative processes therein. Participation of those affected is undoubtedly vital. Green thinkers such as Dryzek (2000) have also emphasised this, insisting that participation must occur in various social and cultural institutions, not only in the traditional arenas of government. Acknowledgement of unrepresentative institutions and practices at state and international levels, as well as the abuses and insensitivity of many representations reflected in the 'crisis of representation' in academic theory (Alcoff, 1991: 7), means that participation is of great importance. However, it is important not to lose sight of how participation always takes place within broader representative processes. Speaking for oneself always also entails representations which impact upon others (Alcoff, 1991). Participation and representation are not mutually exclusive (Young, 2000; Saward, 2010), rather

it is helpful to think instead in terms of possibilities for participation within processes of representation.

I therefore take from Schlosberg the importance of thinking about participation, but I understand participation as part of a broader understanding of politics as representation. Schlosberg (2007: 71-70) looks at movement demands for participation, and the chance to speak for (or represent) themselves and others like them, and identifies a range of participatory practices seen as important to the US environmental justice movement; access to information, inclusion in traditional policymaking and environmental decision-making processes, and an increase in 'community-based participatory research' where communities have worked together with scientists for community health surveys. Importantly, Schlosberg (2007: 70) highlights that in contrast to the liberal justice paradigm, there is not the same emphasis in environmental and global justice movement discourses upon liberal individualism, with a much greater focus on the importance of participatory justice at both the individual and community level; '[t]he relationship between individual experience and community achievement is crucial to the practice of participation as an element of environmental justice.' Empowerment is also seen as a vital part of this.

Schlosberg's emphasis upon the links between individual and community relates to my concern with emphasising representative processes, and not only participation, for it is these broader processes which enable the constructions and representations of individual and community identities and norms which structure and enable participation. If we understand that representative processes make up our understandings of 'what is' as well as 'what could be', and are present at every level, starting with the very language we use to understand and order the world, then we can concede that representation is not something to be avoided. We cannot escape representation and it must therefore be addressed head on, particularly if we wish to articulate injustices relating to it.

As Schlosberg (2007: 97) points out, social movement critiques of global institutions such as the World Trade Organisation (WTO), International Monetary Fund (IMF), and World Bank have made clear

> that there would not be satisfaction with minimal participation – a seat at the table or participation in an unempowered working group on one issue or another. The current development model cannot be 'fixed' simply by letting some folks speak at WTO meetings.

He emphasises how these movements challenge 'the social and ecological devastation the development model engenders – the destruction of nature, culture, and existing modes of relation between the two' (2007: 97). The underlying issue here is that this is not only a problem of participation in formal institutional structures, but is about the very ways in which representative processes influence our understandings of the world, with 'the current development model' representing both 'what is' and 'what ought/ought not to be', based upon conflicting understandings of 'nature' and 'culture.'

As Iris Young (1990: 34) has argued, '[f]or a norm to be just, everyone who follows it must in principle have an effective voice in its consideration and be able to agree to it without coercion'. If we consider the 'current development model' as a norm, it is clear that not all have been able to participate in its construction and there are certainly coercive factors at the international level which paint a far from benign picture of its impact upon social relations. It is useful at this point to return to the discussion of the construction of knowledge in the first section of this chapter. The current development model predicated on ideas of capitalist state security and neoliberal conceptions of the conditions of economic growth and human well-being, is not only an idea of 'what is' and 'what could be', but is embedded in and emerges from social practices.

The point is that the norm, or idea, cannot be detached from the ecological relations from which it emerges, relations which are in ongoing process. For this reason, representations are always incomplete and contestable. Young (1990: 34) goes on to say that '[f]or a social condition to be just, it must enable all to meet their needs and exercise their freedom; thus justice requires that all be able to express their needs.' Yet is important to be aware that these 'needs' are not straightforward or immediately self-evident, and that there is always a degree of construction and interpretation in both the recognition and the representation of these needs. To allow an understanding of external or transcendent 'nature' to dictate these needs may exacerbate injustices. However, if human needs themselves are considered independent from a 'nature' externally conceived, this may also pose injustices to both humans and nonhuman nature. These issues will be explored further in the following three chapters.

Implicit in the above line from Young then is also a sense of how understandings of justice as distribution, recognition and representation intersect in practice. Schlosberg (2004: 537) too has emphasised how the 'articulations of global environmental justice' in the knowledge claims of social movements illustrate

> that these conceptions are thoroughly linked. It is not simply that the justice of environmental justice in political practice includes issues of equity, recognition, and participation; the broader argument here is that the movement represents an integration of these various claims into a broad call for justice.

This is also apparent in his description of the 'single snow making proposal' described at the beginning of this section (Schlosberg, 2007: 172). Indeed, as will become clear, it is this insistence that distribution, recognition and representation intersect, which makes them particularly suited to my attempt to articulate injustices beyond the limiting separations of nature/culture and science/politics, in a more ecological manner.

In his description of the snow making proposal above Schlosberg also includes a capabilities-based notion of environmental justice. While the capabilities-approach has important political currency (Sen, 2010; Nussbaum, 2006), and Schlosberg (2009, 2010) has fruitfully pursued this avenue, I have chosen not to include this as a basis for the heuristic framework I develop in this thesis. I do not consider that the capabilities-approach provides me with the same rich tradition of political theory and practice for articulating *injustices* which accompany the concepts of distribution, recognition and representation. Schlosberg's (2009, 2010) exploration of capabilities, which he has deepened in recent years, is particularly interesting and apt for his own work. As Schlosberg and Carruthers (2010: 16) argue, there is much potential for thinking about capabilities as a way 'to define environmental justice' because it potentially 'includes such a wide range of concerns.' However, as they also point out, Amartya Sen's, and Martha Nussbaum's capabilities approaches, while expanding on 'a purely equity-based notion of justice [..] remain squarely liberal' (Schlosberg & Carruthers, 2010: 15). While Sen (2010) is cautious about defining sets of capabilities for all, emphasising public reasoning to determine what is needed, and Martha Nussbaum (2006) does defend the idea of guaranteeing a set of capabilities to protect minorities who may not be in a position to deliberate, both retain a focus 'on the freedom and functioning of

individuals' (Schlosberg & Carruthers, 2010: 15). Schlosberg (2007) moves away from this liberal approach, broadening out an understanding of capabilities to include the linking of individual and community in conceptions of justice. This includes concerns about 'traditions, practices, cosmologies, and the relationships with nature that tie native peoples to their ancestral lands' (Schlosberg & Carruthers, 2010: 13).

However, in seeking to more thoroughly push through the implications of an ecological approach, my work differs from Schlosberg's concern with conceptions of justice, as I seek to adopt and adapt aspects of the 'shared toolbox' which he offers, in order to articulate *injustices* beyond the limited separations of science/politics and nature/culture. As such, it is interesting that Schlosberg's work suggests that demands for equity, recognition, and participation are all linked up within a broader understanding of capabilities as 'a concern for the basic functioning of nature, culture, and communities' (Schlosberg & Carruthers, 2010: 13). However, rather than consider distribution, recognition and representation as 'conceptions of justice', or as 'capabilities' within more plural definitions of environmental justice, my aim is to draw upon these as 'images' of politics, which help to give different understandings of the problem of nuclear energy. In using these images to redescribe the problem of nuclear energy the aim is 'not to develop a normative theory', but rather 'to disclose the conditions of possibility' within the problem (Tully, 2002: 534).

I take the language of 'images' from Ingram (2008). My approach involves an interest in the practices and discourses which reproduce injustices, rather than the development of abstract principles, or even more grounded conceptions which define justice. Like Ingram (2008: 402) I refer to different understandings of politics as 'images, rather than ideas or concepts, because they grow out of largely implicit assumptions about the nature of politics and political theory.' The three images of politics I focus upon – distribution, recognition and representation – are analytically useful because they reveal and conceal different problems and possibilities for practical courses of action. Each image helps to redescribe the problem of nuclear energy, drawing out and unmasking aspects which have been taken for granted or deemed necessary. They help to uncover different aspects of the contingent, historically and spatially situated relations between ecological entities, helping to expand and shift our understanding of the problem and the possibilities for addressing it.

I therefore seek to develop an open heuristic framework using distribution, recognition and representation as images of politics which help us to more clearly attend to the injustices produced by nuclear energy and consider these from different points of view. This suits my ecological concern with developing a grounded, situated, explicitly political and contingent form of knowledge which is contestable in theory and practice. My ecological approach has arisen from my own personal engagement in the disorderly world of praxis. Similarly, the language relating to representation, recognition and distribution has arisen from this reflexive relation to practice (Drake, 2010; Schlosberg, 2007).

Schlosberg (2007) emphasises the importance of being able to consider multiple diverse claims which draw our attention to injustices. This is especially important from an ecological point of view which seeks to overcome the hierarchical binary separations of science/politics, nature/culture. Only through considering the diversity of human and nonhuman life and the complex interconnections between, can we even attempt to approach any kinds of ecologically sensitive solutions to the problems we face. By adopting and adapting aspects of Schlosberg's approach, drawing out distribution, recognition and representation as important and useful images of politics which help us to understand diverse claims of injustice I hope to more clearly address the problems which the separations of science/politics and nature/culture pose to our understanding of the problems we face.

Emerging from the theory and practice of justice and liberation struggles, these three images of politics have considerable political currency. I use them in order to reflectively engage with practice in the spirit of critical political theory described by James Tully (2002), and engaged in by others who have sought to develop thinking about different kinds of injustice explicitly aiming to bridge the gaps between theory and practice (e.g. Fraser, 1997; Feldman, 2002; Schlosberg, 2007; Eschle & Maiguashca, 2010). The inclusion of these images of politics in my framework helps begin to address the first part of my research question, namely, how might we become more aware of the injustices produced by nuclear energy and express them so that they are more clearly discernible as injustices in public debates and decision making on nuclear energy? The final section of this chapter explains in more detail the open heuristic framework

I develop as well as how the ecological approach influences the steps I take in its development.

Developing a heuristic framework for articulating ecological injustices

So far in this chapter I have described the ecological approach I take to addressing the separation of science/politics, and explained the reasons for drawing upon the three images of politics - distribution, recognition and representation – to more clearly get at and understand the harms produced in the politics of nuclear energy as different kinds of injustices. The latter is part of the first stage in the ecological process of the construction and contestation of knowledge. Attending to 'due process' in an ecological sense involves an ontological commitment to the situated, relational character of knowledge, and a normative commitment to opening up our understanding of those affected in the processes of common life. The first stage involves asking 'how many (and who) are we?' and taking all affected (as far as possible) into account. The second stage, the process of 'putting in order', considering possible answers to the question of how we might live together, responds to the relational and negotiated character of common life, which we can only understand by means of situated and relationally produced knowledge. These processes are inextricably related to each other and difficult to separate out analytically, but the purpose of doing so is to guard against the ever present potential that the process of putting in order (of hierarchy and institution: 'how might we live together?') will pre-empt the process of taking all affected into account (of perplexity and consultation: 'how many, and who are we?'), and to address the concern that the latter might paralyse or unduly disrupt the former.

The ecological approach to addressing the science/politics and nature/culture separations is part of the 'critical attitude' (Tully, 2002: 549) which I bring to the problem of nuclear energy described in Chapter One. From this ecologically critical perspective I seek to redescribe the problem in a way which helps to provide another 'language of self-understanding' for those struggling within it (Tully, 2002: 549). Table 2 (below, p.111) outlines the open, heuristic framework for articulating injustices developed in this thesis. The aim is to 1) ecologically reformulate the image of politics; 2) articulate the political intuition of injustice with specific examples from the struggle against nuclear energy;

and, 3) evaluate the political efficacy of each articulation in terms of the practical political work it does, and its limits. In the remainder of this chapter I clarify these moves and explain how the ecological approach influences the development of this framework. I suggest that *articulating* injustices opens up possibilities for strengthening the voices and positions of those currently fragmented and pacified within the dominant discourses. Awareness of the intersections between injustices (the second part of my research question) can help to produce solidarity, although always in contingent fashion, open to the ongoing contestation of injustices.

The first step I take (see Table 2, row 1) is to consider how each image of politics shifts when we take an ecological approach to understanding it. The first section of each of the following three chapters considers the image of politics and seeks to reformulate this in terms of the ecological approach of taking all affected interests into account. I turn to existing theory which goes into detail about each image of politics. The distributive view relies on an image of politics as 'who [or what] gets what'[19] (Lasswell, 1958 [1936]) and 'the just state of affairs [as] that in which each individual has exactly those benefits and burdens which are due to him' (Miller, 1976, in Simon, 1995: 8). The image of politics we get from the recognition perspective addresses politics as 'who [or what] counts as what' (Taylor, 1992), while the image we get from the representation perspective addresses politics as 'who [or what] speaks, decides or acts on behalf of whom [or what]' (adapted from Saward, 2010). The images chosen are not intended as essential or ontological claims about reality, but rather as useful, flexible, and open heuristic devices which are connected to the political imagination.

By looking at the problem of nuclear energy in terms of the three different images the intention is to gain alternative perspectives on the issue and an

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[19] The distinction between 'who' and 'what' relates to the distinction between object and subject, relating to different types of identity: selfhood and sameness. This can be understood better if we think of the difference between the question of 'who human beings are' in terms of their individual identities, and the question of 'what they are' in terms of their membership of a species, for example. This distinction also tends to be a distinction in animacy, based on how sentient or alive the referent is considered to be. This distinction is based upon context, but it tends to correspond with the nature/culture separation (Salleh 1997; Plumwood, 2002). I use both because I wish to circumvent this separation and I not only refer to humans but also nonhumans, and depending on context, not only individual members of a species with particular identities, but also groups/assemblages of these (which may or may not be species).

understanding of the different, analytically distinct, yet actually 'tangled,'[20] political processes which generate harms. Schlosberg (2007: 74) points out how, in practice, recognition, distribution and representation are intertwined:

> one must have recognition in order to have real participation; one must have participation in order to get equity, further equity would make more participation possible, which would strengthen community functioning.

In this thesis my concern is with finding ways to more clearly communicate the harms which emerge in the practices and discourses of nuclear energy. While distribution, recognition and representation are inextricably interrelated in practice, we can distinguish between them analytically in order to tease out different aspects of the multifaceted politics involved. These analytical distinctions help us to better understand the complex political processes which produce the harms of nuclear energy.

The second step (Table 2, row 2) in the development of this open, heuristic framework is to find a language from within each ecologically reformulated image of politics to articulate the injustices of nuclear energy. Our intuitions of injustice to both ourselves and others provide a form of political knowledge, a means of determining legitimacy and weighing up right or wrong action. While injustice remains under-theorised (Shklar, 1990), much of the justice literature, having at root always been motivated by injustices, provides a rich supply of language with which to address this. I suggest that working on understanding and expressing different aspects of injustice can give us a more grounded and politically responsive picture of the problems we face. As Miranda Fricker (2007: 5) has pointed out, although 'any claim of injustice must rely on shared intuition,' analysing 'the nature of the wrong inflicted' can help us to 'achieve a clearer idea of why something constitutes an injustice.' Understanding the political processes which produce harms helps us to articulate them as injustices.

Paying attention to different kinds of injustices can make an important contribution to clarifying discussions on nuclear energy, given the connected and situated character of all knowledge. The intention behind articulating the

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[20] I take this from Latour (2004: 22, 255), who has adapted it from work in anthropology (Thomas, 1991). Drawing also on Ulrich Beck (1992), Latour uses it to depict how in times of ecological crisis, subject-object relations which were previously understood to be 'risk-free' have given way to an awareness of 'risky attachments' which are difficult to articulate within dominant 'modernist' discourses.

Table 2: Articulating ecological injustices of nuclear energy

	Distribution	Recognition	Representation
Ecological Politics	'Who or what gets what?' Distribution includes future generations, non-nationals and nonhuman nature. This highlights unequal distribution of burdens as well as goods and the limits of human and nonhuman capacity to sustain this.	'Who or what counts as what?' Recognition involves continuities as well as differences in interaction between selves and others, pointing to unpredictability and limits of human independence from and control of other human and nonhuman nature.	'Who or what acts for what?' Representation entails constitutive forms of communication, involving speech as well as other forms of action, pointing to multiple human and nonhuman authorities and possibilities for both constructive and destructive collaborations.
Injustices of nuclear energy	Deprivation of basic necessities for future generations, non-citizens and nonhumans caused by unequal distribution of the burdens as well as goods produced by nuclear energy and the dominant contemporary forms of social organisation	Disrespect for integrity in self/other relations is reinforced by nuclear energy which denies human vulnerability and fallibility and perpetuates the illusion of independence from and control of unpredictable interaction between selves and others.	Denial of multiple authorities is perpetuated as government, industry and scientists promoting nuclear energy monopolise authority in disengaged form which denies the authority of other humans and of nonhuman nature. This inhibits reflexivity and possibilities for responsible collaboration.
Political Efficacy	Enables contestation of benefits and burdens to being across time and space and is commensurate with dominant economic modes of thinking. BUT, meaning of 'benefit', 'burden' and 'basic necessities' will remain contestable – recognition contests quality of relations, representation contests authority.	Enables contestation of values that structure interaction and critique of human domination of nonhuman nature and how this affects human-human interaction. BUT domination and alienation are inevitable possibilities –representation contests authority, distribution contests benefits and burdens to being.	Enables contestation of authority in terms of both speech and action, is commensurate with discourses of democracy. BUT representation is always incomplete but has a tendency to totalise – to keep the process open we still require contestation of the distribution of benefits and burdens to being, and contestation of the quality of self/other relations.

harms as injustices is to make them more readily understood as problems of political community and thereby help to resist and contest their naturalisation (and hence also political fragmentation and pacification) within the dominant discourses. By articulating harms as injustices I seek to amplify the knowledge of those resisting injustices of nuclear energy in order to give a thicker description of the ecological politics of nuclear energy. Taken together, and considering the links and overlaps between them, we can take into account more knowledge claims about the politics (power relations) leading to any given injustice than we would have had we taken just one or two of these images of politics.

In critical democratic theory, the idea of all affected interests has been used and understood 'less as an abstract causal criterion' (for justice) and 'more like an animating political intuition, as a worldly normative force generating political claims and counter-claims' (Barnett, 2012: 682; Fraser, 2008). It is in this more 'worldly normative' spirit that I suggest articulations to express 'felt senses' and experiences of injustice (Barnett, 2012: 684), which may be taken up (and contested) by those affected. In seeking to attend to and articulate injustices I am interested in doing more than simply pointing out whose interests have been left out or not taken into account. I also seek to address the possibility of articulating multiple injustices in relation to each other, to uncover contradictions but also possibilities for solidarity in countering the contemporary hegemonic discourses. This is about engaging in the second part of the ecological knowledge construction process outlined at the beginning of this chapter, asking the question 'how might we live together?' and it relates to the second part of my research question namely, how might we become more aware of how these injustices intersect?

Amplifying the perspectives of those suffering injustices is not to essentialise injustices or the positions of those who suffer from them:

> [a] voice is privileged to the extent that it is constructed from a position that enables it to spot distortions, mystifications, and colonizing and totalizing tendencies within other discourses' (Cheney, 1991: 24).

As discussed in section one of this chapter, the point of disclosing the knowledge of those undergoing injustices is to bring out the contradictions which emerge for many under the conditions of the dominant discourses which

split science/politics and nature/culture. Heightening sensitivity to potential and existing power asymmetries and points of neglect will help to clarify the points of connection and contradiction and enable a more practical, more democratic, but crucially, also more ecological response to the nuclear energy controversy. As Markell (2003: 178) has pointed out, attention to injustices will not necessarily put an end to political controversy nor give definitive prescriptions for action, but it can help us see different possibilities for action.

In bringing out and responding to these injustices I draw upon the term 'articulation' in its two senses 'of language-ing, of expressing' and of 'connecting', of 'a linkage which is not necessary, determined, absolute and essential for all time', but rather is a possibility, 'under certain historical conditions' (Hall, 1996: 141). Understood in this way the knowledge claims of injustice articulated in this thesis are intended to help empower, to offer some possibilities for making sense of contemporary conditions, without falling into the trap of reductionism (Hall, 1996: 142). Ariel Salleh (1997: 177-178) has helpfully emphasised the contradictory character of the 'subject-in-process' inherent in an understanding which moves beyond the nature/culture divide. For example, she describes how 'an exploited worker might be empowered to move from subjective anger to 'objective' consciousness of her unity with a class of others' (1997: 177), or how in an inherently practical sense, the possibilities of ongoing processes of 'labour-in-reciprocity' privilege 'neither worker nor matter' but foster 'the subjectivity of others, including nature's constant flux.' Articulation is appropriate from an ecological perspective because it aims at greater sensitivity to practice, action and process, as well as helping to increase awareness of possible linkages and points of effective political solidarity.

This takes us to the third step (Table 2, row 3) in the development of the heuristic framework of this thesis, which involves evaluating the political efficacy of each articulation of injustice. The important point here then is not only the status (legitimacy) of knowledge claims in a democracy, but also the efficacy of these claims. The public sphere is understood not only as space for critical scrutiny and the processes of legitimation of ideas and practices, but in terms of its efficacy, as 'a vehicle for marshalling public opinion as a political force' for holding people and institutions and structures with decision-making powers accountable' (Fraser, 2008: 76).

As discussed above and in Chapter One, those claims, concerns and entities which have been excluded from the dominant knowledge construction process may be 'recalcitrant' and resist the status quo. However, those resisting are also often split and pitted against each other according to the logics of the dominant discourses. Resistance is not automatic and to be effective harms need to be articulated as injustices in solidarity with others, so as to challenge or shift existing dominant conceptions of political community (Honneth, 1995: 139). At the same time, because articulation aims at greater sensitivity to practice, action and process, it is important to emphasise that articulations are always partial, that other articulations are always possible.

Understandings and interpretations of the legitimacy of knowledge claims are closely linked with their political force. Solidarity is only part of the story here. As the previous chapter shows, activists and those seeking to bring about social and ecological change have felt the need to achieve legitimacy and therefore more political force by making their points according to the dominant forms of reductive scientific and economic rationality. Perhaps the traditional 'political' sphere - the public and government - have found the uncertainties and the inherent politics of scientific knowledge production (as opposed to the reified transcendent 'fact' which is often wielded bluntly) particularly difficult to deal with because it is difficult to act upon uncertainty. And in today's policy-making, with so many pressing problems, the desires and pressures for action are surely and understandably great, none less so than in the context of energy policy and climate change. As discussed, there are grave concerns about challenging the hierarchical separation of science/politics, but this is not only a problem of ascertaining the legitimacy of knowledge claims, but also the efficacy. Once we arrive in this understanding of a realm of contestable and contested knowledges and more obviously difficult to predict natures and realities, the question is how to achieve a measure of certainty about knowledge claims, certainty which is actionable at least, around which one can make decisions? With the problems confronted by energy policy in the context of climate change it is the combination of existential imperative (and urgency) and moral obligation which makes the integration of science/politics, nature/culture such a potentially dangerous and inherently difficult operation. The neglect of one side or the other can either lead to surrender, paralysis and inaction in the face of the

status quo, or authoritarianism. Efficacy must not substitute for legitimacy, and vice versa.

To assist in this problem we can understand the due process described in the ecological approach of first taking all affected into account, asking 'how many (and who) are we?' and then the process of putting in order, articulating political community and asking 'how might we live together?' as a 'feedback loop', a dynamic understanding of common life (adapted from Latour, 2004: 125). The point of such a dynamic understanding of common life is that to an extent it continues the inside/outside separation required for ordering the world and with this ensures a degree of certainty and stability, but crucially, it allows for *process*. It has the potential to avoid the fixity of understanding and reinforcement of entrenched power asymmetries of the status quo which characterised the old divide, it accounts for *change*. This reformulation of the knowledge construction process challenges the old conception of society 'in the midst of an inert nature made up of essences whose list would be fixed once and for all, expecting from moral values a salvation from on high so it can extricate itself from mere matters of fact' (Latour, 2004: 125). In the context of the rise of multiculturalism and the decline of a sense of certainty, universality and transcendence of political values, the ecological reformulation also challenges the use of 'nature' and facts as transcendental power to cut through uncertainties and enforce particular notions of common life (culture) at the expense of others (Latour, 2004).

The feedback loop between the process of taking into account and the process of putting in order insists on the continuation of relations and processes between the inside and outside of constructions of political community, and it is this awareness of relation and process between the inside and outside of political community which provides clearly, 'within reach', not a transcendental force, but a relationally grounded and negotiated sense of limits which provides '[a]ll the transcendence one needs, in practice, to escape the straightjacket of immanence' (Latour, 2004: 125). It is the interaction, which provides the corrective, the relations between selves and others, and which enables negotiated judgement and the means for judging legitimacy and politically effective possibilities for action in context. Legitimacy and efficacy of knowledge are therefore linked.

As Lorraine Code (2006: 6), has argued, ecological thinking begins with 'ecological situations and interconnections of knowers and knowings – be they benign, malign, or merely equivocal' (Code, 2006: 6). This approach to knowledge 'works with affinities from location to location, imaginatively and interpretively discerned' (Code, 2006: 6). Such an approach is 'practice-dependent, communicative, deliberative,' critically reflexive and grounded in the "givenness" of the physical, historical, corporeal Lebenswelt' and this guards against 'the subjectivism and/or relativism that have deterred philosophers from granting epistemic significance to place, particularity, imagination and interpretation' (Code, 2006: 6). It is to this relational reflexivity in self/other relations beyond the nature/culture divide to which Dobson (2010) implicitly draws our attention when he emphasises the listening dimension of politics. This is why I suggest that an open, heuristic framework for attending to, articulating and contesting injustices is so important, in contrast to a focus upon transcendental, universal moral values.

In evaluating efficacy I consider how each articulation might help us to navigate manifold claims of injustice by relating them to each other and exposing the intersections between them in opposition to the dominant discourses. The articulation of injustices is vital to the processes of political contestation, for it provides a kind of relational accountability and check on decision-making processes rather than a transcendental objective knowledge which by-passes politics. Articulating injustices is important because we must not lose sight of the problem of the constitution of political community and the inevitable political power relations inherent in common life. We need to bear in mind the continued temptation for dominant perspectives to parade as neutral and objective as a result of the nature/culture separation. It will likely be difficult to shift what Haraway (1988: 581) terms the 'myth of the One', the claimed objectivity and universality of knowledge produced by 'the gaze that mythically inscribes all the marked bodies, that makes the unmarked category claim the power to see and not be seen.' Shifting the hegemonic discourses which claim objective knowledge of the nature of things is a difficult task, particularly when the dominance is bound up in so many of the institutional structures which exist.

The framework developed in this thesis is grounded 'in the ontological picture and the diagnoses of injustice' (Markell, 2003: 178). Rather than 'settle political controversies or prescribe courses of action', thinking about existing

and potential injustices helps to alter the 'view of the problems we confront', which might 'lead us to see hitherto unnoticed dangers in some political options, and to discover unappreciated promise in others' (Markell, 2003: 178). In emphasising the inherent politics of all knowledge, the ecological approach entails awareness that injustices in the negotiation of common life are inevitable. Opening up possibilities for ongoing contestation of injustices perpetuated by the nature/culture separation is the task of the next three chapters.

PART II

I learned to make my mind large, as the universe is large, so that there is room for paradoxes

<div align="right">(Maxine Hong Kingston, 1977: 35)</div>

Chapter Three
Articulating Injustices of Distribution:
Who gets what in the politics of nuclear energy?

Nuclear energy is being proposed as a necessity within the dominant discourses discussed in Chapter One of this thesis. It is seen as an essential component of the answer to our energy and climate problems because it is low-carbon, because it is efficient and reliable (when nothing goes wrong), and because it kills less people than fossil fuels. Nuclear energy is therefore needed, say government, industry and some prominent environmental spokespeople, to meet inevitable increases in energy demand, not only in the UK, but globally.

This framing of the problem ostensibly makes a nod to all affected, both the global population, and implicitly, future generations and nonhuman nature. However it does so in a reductive manner which quantifies and normalises important aspects of all affected in the energy and climate problem, and so neglects significant socially produced harms to humans and nonhumans, future generations, and those in other countries. Although claiming legitimacy and quantifying distributions with expert facts and figures, this framing of the problem reflects a particular understanding of the goods and burdens of common life which short-circuits and therefore limits our understanding of who is affected and how they are affected, failing to take these adequately into account.

In this chapter I develop in detail the first part of my heuristic framework for articulating injustices. Guided by the ecological approach which seeks to take all affected into account, I consider how we might articulate what is at stake in terms of an image of politics as distribution and thereby gain a different perspective on the problem. An ecological image of politics as distribution involves consideration of how future generations, those in other countries, and nonhuman nature are affected by distributions in common life. I argue that we can articulate distributive injustices of nuclear energy as the deprivation of basic necessities experienced by many due to unequal and compounding distribution of the burdens, as well as the goods produced by both nuclear energy and modern industrial society as a whole.

In section one I draw upon justice and green theory to rethink the image of politics as distribution in terms of the ecological approach. I claim that as we

incorporate those in other countries, future generations and nonhuman nature into our understanding of distributive politics we become more aware of the burdens of political association, including the negative impacts of both the input and output of productive processes aimed at producing the goods for common life. Taking into account all affected by burdens as well as goods in distributive processes makes apparent the connections between inequalities in the distribution of goods and burdens. Inequalities of one sort, for example in access to resources, tend to correlate and compound inequalities of other sorts, for example exposure to environmental hazards, pointing to the limits to both human and nonhuman capacities to sustain such distributions. I argue that a more relational understanding of that which is to be distributed, which takes the connections between both the benefits and the burdens of common life into account, would enable a more profound critique of nuclear energy in terms of an image of politics as distribution.

In section two I build upon the ecological reformulation of distributive politics described in the first section. When we consider an image of politics as distribution we become aware of injustices which can be broadly articulated as deprivation of basic necessities. I develop an open, relational and contestable understanding of basic necessities which includes both the goods which are needed for the existence of an ecological entity, and the burdens which may limit that existence. I then consider how this helps redescribe the politics of nuclear energy discussed in Chapter One, and enables better contestation of what is at stake. While nuclear energy is posed as a necessity for 'all of us' in the context of climate change, this framing obscures unequal deprivation of basic necessities resulting from this form of energy. Those who benefit from the production of electricity from nuclear power plants are not those who suffer, and will suffer, most from the burdens of uranium ore extraction, waste production, or disaster when things go wrong. From the points of view of all affected, the cumulative effects of these distributive injustices, which tend to combine with other distributive injustices of common life, raise serious concerns about the suitability of nuclear energy as a response to the problem of climate change and the role it can play in rethinking how we might live together in these times of ecological crisis.

In the final section of this chapter I evaluate the political efficacy of this articulation. I consider how articulating the deprivation of basic necessities

provides a common language so that diverse understandings of both the goods and burdens affecting various existences may be taken into account as relevant to our political negotiation of common life. This articulation has the potential for building common ground amongst those deprived, vis-à-vis those who benefit disproportionately from the effects of nuclear energy production, thereby strengthening challenges to the hegemonic discourses which describe nuclear energy as a necessity for the benefit of all. Identifying the effects of nuclear energy as exacerbating the deprivation of basic necessities has transformative potential for contesting the benefits and burdens of common life on this planet by enabling broad brush-stroke comparisons of structural inequalities across both time and space. This can help to draw attention to severe and ultimately unsustainable inequalities and exposes serious problems not only with nuclear energy but with prevailing forms of organisation, for example in prevailing capitalist market and state systems, which cannot be understood separately from nuclear energy as it currently stands. Such articulations can be politically effective in so far as they may in some cases enable compensation and mitigation of deprivation and in others may work against developments out of precaution.

Ecologically reformulating distribution: understanding all affected by the connections between goods and burdens

Politics has traditionally been understood in terms of distribution: 'who gets what, when and how' (Lasswell, 1958 [1936]). As discussed in Chapter Two, justice has also been conceptualised predominantly in these terms, with a focus upon the distribution of both material and nonmaterial goods amongst the members of political community. In this section I argue that because ecologically rethinking the image of politics as distribution alters perception of the 'who' and the 'what' of distribution, this has implications for 'how' we think about distributive processes. An ecological approach which takes all affected into account involves expanding our understanding of 'who' should be counted within political community beyond traditional anthropocentric state boundaries, across time and space, so as to include those in other countries, future generations, and nonhuman nature. Taking all affected into account helps us to refocus our understanding of distributive processes so that we i) pay as much attention to the burdens, as well as the goods of political association, for

example, the negative as well as the positive impacts of producing more energy, and ii) become more aware of the connections between distributive inequalities of goods and burdens, and therefore also of the limits to both human and nonhuman capacities to sustain these. This leads me to suggest that it would be helpful to expand potential understandings of basic 'needs' or 'necessities' so that these can take both benefits and burdens of common life (various conceptions both of what entities need and what they don't need) into account.

Particularly when approaching matters of justice, political theorists dating back to Aristotle have tended to think about the benefits and burdens of political association (Fleischacker, 2004; Warren, 2000). For Aristotle this was primarily a matter of political goods, i.e. characterizing the constitution of the state, how rights to vote and hold office were distributed (Fleischacker, 2004: 23). Yet at least in part due to the expansion of politics to include those previously excluded from the political community, this shifted from a concern with only political goods to an understanding of politics as a struggle over the distribution of 'scarce goods' (Drake, 2010: 159; Beck, 1992). This was also partly because within much political economic thinking scarcity was seen as 'the main regulatory mechanism of society' (Drake, 2010: 159). We can also think about distributions of cultural capital, knowledge, skills, commitment, energy and time, of which some are easier to redistribute than others, but thinking about and articulating them in distributive terms can be a useful tool (Gordon, 2008: 55-61). Often these are connected to distribution of material goods and burdens.

Much liberal theory has tended to focus upon abstract notions or ideals of justice as distribution. For Rawls, (1999 [1971]: 130) '[a] conception of justice is a set of principles for choosing between the social arrangements which determine [the] division of [benefits produced by society] and for underwriting a consensus as to the proper distributive shares' (in Fleischacker, 2004: 111). As such, theorists ask '[a]re there any clear principles from which we may work out an ideally just distribution of rights and privileges, burdens and pains, among human beings'? (Sidgwick, 1981, in Fleischacker, 2004: 105).

A major modern basis for thinking about distribution has been the assumption of basic equality of some kind. Two basic egalitarian principles are basic equality, involving the right to life and liberty, and basic need, involving the right to adequate food, clothing and shelter (Warren, 2000: 176). These reflect

both the material and nonmaterial understandings of the benefits of political community, but as we will see, they are intrinsically related to each other. Accounts appealing to equality 'include Marx's theory of capitalist exploitation, John Rawls's account of justice as fairness in the choice of principles governing the distribution of "primary goods," Amartya Sen's view that justice requires ensuring that people have equal "capacities to function," and Ronald Dworkin's view that it requires equality of resources"' (Fraser, 1997: 13). Non-egalitarian principles include merit/desert, ability, compensation, utility and effort (Warren, 2000: 176).

Historically, and with more currency again more recently, distribution was as much about just deserts based on merit as upon equality (Fleischacker, 2004: 5). Even the idea of just distribution based on labour, found in Locke, Marx and Proudhon, for example, is tied to the idea of merit rather than simply basic equality (Fleischacker, 2004: 82). The struggle for redistribution has been very much associated with class politics, and in Marxist and social democratic terms, the focus has tended to be upon shares of profit or wage: '[o]rganized labor has traditionally fought to reduce the rate of exploitation of the workforce and to increase the wages and wage premiums paid to workers' (Gibson-Graham, 2006: 176).

Yet equality has emerged as a vital principle. Movements for, and historical legal consolidations of, equal suffrage are prime examples of state-oriented and state-enforced distributions of the right to decide according to the modern sense of basic equality rather than Aristotle's conception of political rights based on merit (Fleischacker, 2004; Drake, 2010: 18). Fleischacker traces the development of justifications of distribution based on equality, as originating in a shift in popular consciousness culminating in the Universal Declaration of Human Rights (UDHR) (Fleischacker, 2004: 83; Rawls, 1971). The UDHR covers both material and nonmaterial goods, with much emphasis upon liberty, but also taking into account 'standard of living adequate for health and well-being' (UN General Assembly, 1948).

The Human Rights Declaration was later theoretically justified by John Rawls (Fleischacker, 2004: 83, Rawls, 1971). Rawls emphasises equality of basic liberties compatible with similar liberty for all, and justifies social and economic inequalities as long as they are of greatest benefit to the least advantaged, consistent with the just savings principle (saving of sufficient

material capacity to maintain just institutions over time), and are attached to offices and positions open to all under conditions of fair equality of opportunity (Arneson, 2008; Rawls, 1971). Rawls' latest version of the savings' principle is based upon self-interest and mutual disinterest, so that '[i]t is simply rational for goal-maximising individuals to seek the mutual benefit of a savings principle' (Wissenburg, 1999: 189). For Rawls, '[d]istribution' of liberty takes priority over all distribution of economic and social goods' (Fleischacker, 2004: 115). While both the Universal Declaration of Human Rights and Rawls' work have since been challenged for their cultural (Western liberal capitalist, as well as masculinist and anthropocentric) bias (Warren, 2000: 127-8; Young 1990: 18-27), the basic emphasis upon freedom and equality carries much political force (Sen, 2010: 64).

Ecological problems have shifted our attention away from a predominantly one-sided focus upon goods to be distributed, towards awareness of the environmental burdens, risks and hazards, as well as the limits to certain goods, which have emerged as unwelcome side-effects of much 'goods' production (Beck, 1995; Schlosberg, 2004; Dobson, 1998). Awareness of the gravity of some of the burdens produced by industrial modernity, the dominant mode of political, economic, social and cultural organisation, has highlighted the problems with prioritising liberty and goods production over other forms of social well-being. As Marcel Wissenburg (2006: 429) puts it,

> social justice as a motive in politics has been too one-sidedly construed as a matter of just distribution of the benefits of the output of the productive process. Apart from the issue of taxes, both governments and philosophers would have ignored the input side and the burdens of production, and it is there that we find the disadvantages of the incomparable growth in welfare on planet Earth since the 1950s.

Concerns about the earth's resources being finite, and the ecological imbalances caused by excessive production and consumption of material goods forces a reconsideration of the scope of political community involved in the politics of distribution, challenging conventional understandings of the politics of distribution to consider distributions across both space and time.

An ecological understanding of politics has brought in a '"new" form of distributional politics based on the "future rights" of succeeding generations to existing resources and environments (Gibson-Graham, 2006: 178). It reminds us of connections across time, of the old partnership highlighted by Edmund

Burke (1982 [1790]) 'between those who are living, those who are dead, and those who are yet to be born' (in Dobson 1998: 104). The renewed emphasis upon scarcity highlights the limits to the goods to be distributed, so ecological sustainability must lead to consideration of the loss of possibilities for future generations to access dwindling resources. Linked to this, the production and distribution of ecological burdens, including major environmental risks and hazards across time, raises the moral problem that people in the far off future will suffer harms caused by the actions of present generations. The problems which the notion of sustainability and the need to consider the future pose for understandings of distributive justice are particularly obstinate, and have been much discussed in political theory. As James Fishkin (1992: 9) has argued, we cannot today 'neglect the fact that people are born and die and that our actions may have serious effects on the interests of those yet to be born'. Growing awareness of climate change has demonstrated the impacts of actions past (and present) generations upon distributions of risk and harm, as the 'climate change the earth is currently experiencing is primarily the result of emissions from some time in the past,' while 'the full, cumulative effect of our current emissions will not be realized for some time in the future (Gardiner, 2008: 31-32).

Growing awareness of the burdens of industrial economic growth through climate change not only draws our attention to connections in distributions between goods and burdens across time, but also to connections across space. Distribution of burdens is not confined to the places of production and consumption. The complications of distributions across both time and space are exemplified in conflicts at the global level over responsibilities for action on climate change between industrialised and industrialising countries. Attention to the uneven distribution of contemporary, historical, and future industrial economic growth has brought issues of transnational injustice in the distribution of the goods and burdens of contemporary life into focus. The consolidated wealth of industrialised countries in large part results from unrestricted industrialisation, accompanied by unchecked colonial exploitation and ecological degradation. The inequitable global distribution of wealth, seen both historically, and into the future, has caused conflicts over emissions caps, with the more powerful industrialising countries such as India and China arguing for the 'right to develop' (Vanderheiden, 2008b: 55-56).

Globally apparent ecological problems such as climate change thus highlight the limits to contemporary distributive processes, for 'there is not world enough' for all to continue as we have been (Athanasiou & Baer, 2002: 128). Growing awareness of the limits to the capacities of nonhuman nature to sustain past, present and future distributive processes also raises the problem of distributive injustices to nonhuman nature. Goods are extracted and burdens produced which limit possibilities for the further existence of aspects of nonhuman nature. The damages of, for example, deforestation, ocean pollution, and biodiversity loss do not only constitute distributive injustices to humans.

Indigenous peoples and environmental justice activists have long highlighted the limits of the world, emphasising the broader problem of distributive injustices to nonhuman nature beyond climate change: the effects of both resource depletion and environmental risks and hazards upon ecological systems upon which both humans and nonhumans depend (e.g. Katona, 1998; Schlosberg, 2007; Di Chiro, 2007; Schlosberg & Carruthers, 2010).

We are seeing increasingly 'hybridised material relations of inequality' (Luke, 2008b: 133) in the context of climate change and accelerating ecological degradation more broadly. Climate change is indicating the combined limits of both human and nonhuman capacities to sustain the production of goods and burdens across time, as 'the climate carries the byproducts of present and past combustion with all the negative implications into the future long after the production and consumption of "goods" took place (Luke, 2008b: 137-8). Traditional justice theorists might object to thinking about distributive justice beyond the bounds of the traditional political community of the nation state, because justice is understood to require reciprocity (Simon, 1984, in Dobson, 1998: 90). Yet although 'reciprocity may have been hard to identify in the past, the contemporary globalization of political life' makes interconnectedness and relationship undeniable' (Dobson, 1998: 90). Indeed, an ecological approach which acknowledges the political importance of all affected, across time and space, as well as the human/nonhuman divide, exposes the interdependence and therefore implicit and involuntary reciprocity which exists across these areas previously not considered within the ambit of distribution. This draws our attention, not only to the links between goods and burdens, but also to an understanding of all affected by distributions of goods and burdens which is less definite (Barnett, 2012). The indefinite character of all affected is apparent when

'[t]he actions of a large multinational corporation or of institutions that regulate financial markets influence the life possibilities of indefinite others – as when, for example, decisions in China affect workers in many, but not all, locations' (Bohman, 2007: 25). These indefinite others are not only human.

Because an ecological approach seeks to take all affected, including that which may also be distributed, into account, it poses a fundamental challenge to liberal capitalism for its faith in limitless economic growth as provider of human well-being and mechanism for justifiable distributions. While there has been much consideration of the relations between goods and burdens in terms of the concept of citizenship and thinking about reciprocity in terms of the entitlements and responsibilities of membership of a political community (Drake, 2010), this can have a tendency to put the onus upon abstracted individuals rather than clarifying our understanding of the ways in which distributive inequalities in some areas are often compounded by distributive inequalities in other areas. Liberty cannot be prioritised over basic necessities because these are not as separate as much liberal theory would suggest. Liberal understandings of liberty and goods, such as private property and financial capital for some, have burdening, and ultimately unsustainable effects upon the basic needs and liberties of others, both human and nonhuman.

Completely separating goods from burdens is unhelpful from an ecological point of view of taking all affected into account. Rather than focusing simply upon the distribution of 'burdens' or 'goods' in isolation, it is more useful to consider how these relate to each other. An understanding of the intersections and relations between distributions of goods and burdens is particularly evident in the claims of environmental, climate and energy justice movements worldwide, for they emphasise how distributive injustices in economic, social and other resources tend to intersect with unjust distributions of environmental burdens (Schlosberg, 2007; Falk et al., 2006; Salleh, 2009; Di Chiro, 2007). Ulrich Beck may have argued that 'poverty is hierarchical, while smog is democratic' (1995: 60), yet others have since emphasised that smog and 'even highly diffuse' environmental bads such as climate change are distributed unevenly, disproportionately affecting 'those who already suffer from a social distribution deficit' (Plumwood, 2002: 84). The idea of international community, that we are all in it together, aims to critique liberal democratic failings to imagine a common good (or equal basic needs) at the global level,

but it also can serve to mask injustices and responsibilities, creating the illusion that environmental bads are an 'innocent and accidental distribution of damage affecting everyone more or less equally' (Plumwood, 2002: 84).

The Environmental Justice and Environmental Racism literature as well as articulations by global justice movements illustrate that this is certainly not the case (Taylor, 200; Schlosberg, 2007; Di Chiro 2008). As Bullard (1999: 33) points out, environmental harms follow the path of least resistance. Prevailing forms of economic organisation enable 'a set of impersonal NIMBY mechanisms which guarantee that an important range of ecoharms, from both redistributable and collective sources, are redistributed to marginalised groups' (Plumwood, 2002: 86). Inequality tends to create 'systematic opportunities and motivations to shift ecological ills onto others rather than prevent their generation in the first place' (Plumwood, 2002: 86, 81). An ecological approach to distribution, taking all affected into account means that we can no longer neglect the links between the production of 'goods' and 'burdens,' nor the correlations in their distributive impacts. We require a more far-reaching and less one-sided understanding of distributive effects.

Paying attention to the correlations between distribution of goods and burdens highlights the tendencies for inequalities to intersect, so that those who are economically worse off are also more likely to be on the receiving end of many burdens, as well as having their labour power (a 'good' in itself) exploited. Conversely, those who benefit from uneven distributions of all kinds of goods can afford to avoid the worst forms of environmental degradation. They can move away from degraded areas and are able to take advantage of 'wider supply sources and markets that continue to deplete distant communities in ways that elude knowledge and responsibility' (Plumwood, 2002: 85). The impacts of climate change are arguably already being felt by many, and even in the industrialised world the most disadvantaged suffer the most. This could be seen, for example, in the overwhelming impacts of Hurricane Katrina upon those who were 'poor, minority (most often African-American); less likely to be connected to the workforce; and more likely to be educationally disadvantaged (i.e., not having completed a high school education)' (Gabe, Falk & McCarty, 2005: 13). At the global level, poorer, less industrialised countries are less equipped to deal with disasters influenced by climate change (Timmons Roberts, 2007).

While the worst off tend to be doubly impacted (see also King, 1988), groups who benefit from uneven distributions 'consume (both directly for their own use and indirectly for income generation) the greatest proportion of resources' and they 'have the strongest economic stake in the sort of accumulation which generates environmental harms' (Plumwood, 2002: 85). Those who benefit from unequal distributions are positioned so that they can 'most easily purchase alternative private resources, (clean water, for example)' and therefore 'have the least interest in maintaining in generally good condition collective goods and services of the sort typically provided by undamaged nature [sic]' (Plumwood, 2002: 86). Through privatisation, collective goods may be further redistributed in favour of those who have the resources to afford them, thereby guaranteeing them 'superior access and insulat[ing] them from many kinds of limits and scarcity' (Plumwood, 2002: 86).

It is important also to note the gendered and classed dimensions of uneven distributions, as reproductive and care jobs, as well as manual and agricultural labour, are heavily impacted in times of crisis and unrest which expose human dependencies upon the goods, and vulnerabilities to the burdens of common life (Salleh, 2009; Warren, 200; Di Chiro, 2008). The connections between goods and burdens, and the ways in which these correlate and concentrate upon already disadvantaged or overburdened humans and nonhuman nature (Salleh, 1997), exposes the limits of these to sustain uneven distributions. The correlating effects of distributive burdens upon reproductive systems has also been especially apparent to indigenous cultures which depend upon the land, for when land and country are degraded, so is their culture (Katona, 1997; Charley, 2004; LaDuke, 2009).

By taking nonhuman nature into account, an ecological approach alters the liberal understanding of 'goods' and 'burdens' to be distributed, challenging the subject/object boundary. Given this tension, goods and burdens cannot then be understood as completely non-relational, disconnected, static entities (Young, 1990: 19-30). Expanding the political community to include nonhuman nature both as limited or damageable good and as recipient of both good and bad distributions brings into focus the overlaps and tensions between 'what X is to be sustained' and 'what X is to be distributed' (Dobson, 1999: 5). What unites these is an understanding of interdependent productive and reproductive

distributive processes which cross space, time and the human/nonhuman divide.

As discussed, traditional liberal understandings of distribution tend to separate out the distribution of equal liberties from basic 'needs' or necessities. For example, David Miller (1999) draws upon Rawls' conception of primary goods, expanding this to include certain 'environmental goods'. However, an ecological approach, attentive to the correlations between distributive injustices highlighted by environmental justice movements, shows that life and liberty – of future generations, those in other countries, and nonhuman nature - are dependent upon certain basic necessities and that separating these out perpetuates and exacerbates distributive inequalities; expropriations and exploitations of many kinds. This suggests that rather than simply incorporate 'environmental' goods and burdens as single-issues into existing distributive processes we need to fundamentally rethink and open up our conception of basic necessities so as to integrate and accommodate different understandings of both material and non-material goods and burdens.

Ted Benton (1999: 227) has argued against simply incorporating nonhuman nature and other aspects of social reproduction into the dominant distributive processes, for example by commodifying nonhuman nature as 'environmental goods', suggesting instead that we rethink the idea of 'need' so that it not only includes basic physical sustenance for 'human individual and social flourishing', but also includes spiritual, and aesthetic needs, which nonhuman nature plays a role in. This resonates with Tim Hayward's (1998: 151) recommendation that we consider distribution of ecological values as attached to human interests so that 'they can be brought under distributive principles' with the advantage that they can then often 'lend themselves to protection as rights.' Ecological values are thus seen as social goods whose distribution can be understood to be a matter of social justice.

However, this will not solve the distributive problems we face in an understanding of political community that includes nonhuman nature as subject as well as object of distribution. As in Schlosberg's (2007: 172) example of the ski resort discussed in Chapter Two, we also need to be able to articulate distributive injustices to nonhuman nature, where certain basic properties such as water, necessary for a certain ecological entity or ecosystem, is 'moved from one watershed to another.' In an ecologically revisioned image of the politics of

distribution we require a more open and contestable, as well as relational understanding of the 'X' to be distributed, which takes the connections between both the benefits and the burdens of common life into account.

Articulating distributive injustices: deprivation of basic necessities in the politics of nuclear energy

If we broaden our understanding of distributive processes to include a relational understanding of goods and burdens and the implications of these for all affected within a broader understanding of political community including future generations, those in other countries, and nonhuman nature, then we may acknowledge that all have need for certain basic necessities which are required for a certain form of existence or development. The right to life and liberty enshrined in liberal understandings of basic equality is dependent upon certain basic necessities, which includes certain kinds of goods, but also freedom from certain burdens which may limit life and liberty and/or exacerbate other inequalities. From an ecological perspective which takes all affected into account it is clear that 'need' for such necessities must be prioritised over 'wants' for other things, particularly if they deprive others of their basic requirements (Dobson, 1998). As discussed in Chapter Two we must not neglect the dangers in ascribing specific 'necessities' to individuals, groups or other entities. As Ross Fitzgerald (1985: 101) points out

> If "need" is merely a concept referring to certain physiological or psychological processes – nothing else, there is no way of regarding these processes as desirable or undesirable without introducing some normative premise or some notion of human [or other] excellence.

The idea of certain basic 'necessities' required for the 'self-actualization' or flourishing of 'what is' (traditionally understood in terms of science) very easily substitutes for 'what ought to be' (traditionally understood in terms of politics and political community). The concern is that 'no social good serves or can serve as a means of domination' (Walzer, 1983: xiv). Yet as both the quote above, and the discussion in Chapter Two emphasise, these simply cannot be neatly separated. It is for this reason that an articulation of distributive injustice is so important, for it enables ongoing contestation of the outcomes of distributive processes which cannot be decided in the abstract once and for all,

but require constant attention to distributions both in terms of what is needed, (goods) and what is not needed (burdens).

I therefore suggest that the injustices which arise in the politics of distribution may be articulated as *deprivation of basic necessities*. This entails an understanding of basic necessities which includes both goods, which are necessary for the well-being of an ecological entity, as well as freedom from certain burdens which may limit flourishing. For Nancy Fraser (1997: 13) this entails deprivation of an 'adequate material standard of living.' Michael Walzer (1983: 84) discusses the existence of basic needs which are preconditional for human security, welfare and life itself, emphasising that 'every political community must attend to needs of its members as they collectively understand those needs; that the goods that are distributed in proportion to need; and that the distribution must recognize and uphold the underlying equality of membership'. Exact necessities must be left open to definition depending upon context and circumstance, for '[i]f I am fasting I do not need food. And if I intend to commit suicide I do not need to breathe' (Fitzgerald, 1985: 101), and '[t]here is no single set of primary or basic goods conceivable across all moral or material worlds' (Walzer, 1983: 8). And yet, as Dobson (1998: 142) argues, while it has myriad different forms and cultural uses, 'the suspicion that food will always be regarded as of fundamental value lingers on; it is a "necessary good."'

If we consider entities in nonhuman nature then 'food' as we understand it may not always be a relevant necessity, but we may still, depending on context, be able to pinpoint certain basic necessities that are required for functioning or existence and which also include the necessity of being free from disruption or burdening. Deprivation of basic necessities then involves dispossession, expropriation or despoilation of the necessary healthy and sustaining conditions for the existence or flourishing of entities. For example, Plumwood (1999: 200) attributes intentionality to a tree as 'a striving (teleological) and adaptive being.' From an ecosystems perspective, it is possible to consider conditions of non-flourishing, of disruption to ecological systems, such as desertification, eutrophication, various forms of pollution etc. (Dryzek, 2000).

We can understand deprivation of basic necessities as a relational articulation encompassing both goods and burdens. In a manner similar to

Walzer's (1983: 17) 'complex equality' this is not about straightforward or universalistic equality, rather it is about articulating problematic forms of inequality, where an imbalance occurs between entities, which disrupts the distribution of goods and burdens and therefore the conditions for being, for sustaining that entity or ecological process. It is possible to consider that a 'multiplicity of goods is matched by a multiplicity of distributive procedures, agents and criteria' (Walzer, 1983: 3). Disruptions to distributive processes are inevitable and distributions will always be unequal. However, articulating deprivation of basic necessities allows these to be contested when problematic imbalances occur. So while the broader question of what is needed for a healthy continued existence varies significantly across cultures, across time, and between entities across human/nonhuman nature, the possibility of being able to contest deprivation of basic necessities, whatever they may be, is of vital importance.

If we now recall the thesis problem, important harms of nuclear energy are naturalised and justified within dominant discourses and within green politics. On the one hand, nuclear energy is being put forward as a necessity 'for all of us' if we are to reduce carbon emissions and mitigate the dangers and risks of climate change. However, this necessity requires contestation, for it obscures the highly unequal effects that this solution would have in terms of limiting the basic necessities of others across time, space and the human/nonhuman divide. It entails a particular understanding of the necessities for human (and of course nonhuman) flourishing predicated on the continuing rise in the use of energy, and continued capitalist growth in production and consumption of economic goods and burdens, and it obscures certain unequal distributions from which the dominant are able to profit. As environmental and global justice movements discussed in the first section of this chapter point out, inequalities are rising and both humans and nonhumans are suffering intensifying exploitation and deprivation of basic necessities for flourishing.

The nuclear industry and mining companies, historically state-supported with risks borne by consumers and state governments, make enormous profits, and those in the rich world, who can still afford to pay for an abundance of electricity, use and waste more than they actually need. And yet, indigenous peoples worldwide are disproportionately burdened by uranium mining and nuclear waste upon their lands, future generations will be exposed to the long-

term effects of rising levels of background radiation as well as the risks of uncertain long-term storage of high-level radioactive wastes. These injustices tend to exacerbate other distributive injustices, depriving those in other countries, future generations, and parts of nonhuman nature, of basic necessities for flourishing and continued existence.

Indigenous peoples worldwide have highlighted the fact that they are unequally burdened and deprived of basic necessities by the effects of uranium mining and nuclear waste upon their lands. At indigenous peoples' summits distributive injustices of uranium mining and processing has been emphasised, a crucial yet neglected aspect of nuclear power production (Mining Watch Canada, 2006; LaDuke, 2009; Galloway McLean et al., 2009). For example, the Indigenous World Uranium Summit held in Window Rock, Arizona in December 2006 was proclaimed as 'a vindication of the Navajo Nations' ban on uranium mining in their territory and a regrouping of Indigenous opposition to uranium mining globally' (Mining Watch Canada, 2006). Indigenous peoples from all over the world emphasise the effects on the local ecology and upon the health of local people and ways of life (Minchin & Murdoch, 2006; Schlosberg, 2007; Tufts, 2010).

The broader question of what is necessary for a healthy human life varies significantly across cultures and has been especially apparent in clashes between indigenous cultures and encroaching dominant industrialising, technologically apparently more progressive, cultures originating in Europe and the 'West'. This problem was starkly apparent in the report on the consultation over the Ranger uranium mine in Australia in the 1970s, where a panel of white, westerners, aware of their difference to local aboriginal cultures, nevertheless ruled that the aboriginal protest should not be allowed to prevail (Lichacz & Myers, 1977: 62). This is an ongoing problem, not confined to the past.

To more clearly articulate these injustices as international distributive injustices it is again helpful to consider the idea of basic necessities ecologically, so that our understanding of deprivation is linked to the problem of unequal exposure to ecological bads. Indigenous peoples and others are deprived of basic necessities such as safe drinking water and other aspects of a healthy ecology within which to sustain their lives either traditionally or otherwise. While cultural differences exist, the basics requisite to health may be broadly agreed upon, even if these are considered in process.

The principle of basic equality is violated as the benefits and burdens of nuclear energy production are distributed unequally. Those who benefit from the production of electricity from nuclear power, deemed a necessity, are not those who suffer the burdens of uranium ore extraction. Even all other things being equal, the benefits and burdens of nuclear energy processes are unequally distributed. Taking the example of Hinkley, both short and longer-term benefits of nuclear energy production will be reaped by British energy consumers (leaving aside local ecological and economic costs and risks of nuclear energy production for the moment). British energy consumers will ostensibly benefit from energy supply and concomitant economic and national security which is considered of greater importance than the well-being of those living in the vicinity of uranium mines. The latter may receive initial local investment and jobs but this is outweighed by the deprivation of basic ecological needs to support traditional ways of life, as well as a generally healthy or tolerable working and living environment (Perera & Pugliese, 1998; Shrader-Frechette, 2002a). Deprivation of basic necessities thus includes the unequal distribution of burdens, and needs to be considered relationally in contrast to the profits and power of the nuclear and mining industries.

This type of inequality tends to be justified within nations on the basis of utilitarian calculation on the grounds of a greater benefit to the national security or economy and thus for the greater good. At the international level the same argument, particularly in relation to the risks of climate change, is made, but here the multiple interlinked problems of compounding unequal deprivations becomes even more starkly apparent, further undermining utilitarian justifications which are based upon single-issue conceptions of well-being. It is important with regards to all the above points, to be aware of the correlations between different distributive injustices – how social and ecological deprivation tend to correlate with ecological burdens, thereby reinforcing the importance of including exposure to ecological burdens within our understanding of deprivation of basic necessities.

The Mirrar people in Australia have long struggled with Energy Resources Australia (ERA), majority owned by Rio Tinto. Their struggle highlights the distributive processes of common life across space, time, and human and nonhuman nature, as well as the multiple effects of exacerbating distributive injustices which uranium mining has brought them. They have

expressed regret that uranium from their land was in part responsible for the problems faced by those living around Fukushima: ''it is likely that the radiation problems at Fukushima are, at least in part, fuelled by uranium derived from our traditional lands. This makes us feel very sad' (Gundjeihmi Aboriginal Corporation, 2014). In opposition to the mine at Jabiluka they have pointed out

> Mirrar do not argue that mining alone is impacting on living tradition – Mirrar argue that mining and its associated social, economic, and political impacts are the single greatest impact and that an additional mine will push Bininj culture past the point of cultural exhaustion to genocidal decay (Gundjeihmi Aboriginal Corporation, 2011a).

The emphasis upon the links between human culture and the health of the land demonstrate the linking of healthy ecosystems with a healthy culture, how the burdening of both humans and nonhumans is linked beyond the separation of nature/culture. As Delia Lowe (cited in Perera & Pugliese, 1998: 97), of another Aboriginal community, has pointed out '[p]eople go together with plants and animals, or flora and fauna. There's no separation; we're not separated'. There is also an understanding of reciprocity or relation across time, past and present. The Mirrar people have emphasised 'their knowledge of land and culture inherited from ancestors since time immemorial and from their experiences of the ranger uranium mine over the past twenty years' (Gundjeihmi Aboriginal Corporation, 2011a).

Green thinkers have argued that 'future needs should take precedence over indulging present wants' (Dobson, 1998: 112). To more clearly articulate distributive injustices to future generations, we are concerned with a potential deprivation of the basic necessities of future generations for certain conditions for a healthy and sustaining environment, as a result of exposure to high-level radioactive wastes or the legacy of uranium mining. In discussions over the high-level nuclear waste repository at Onkalo in Finland, designers struggled over how and whether to communicate the dangers and risks to future generations tens of thousands of years from now, with even the consideration that it might be safer not to draw attention to it at all, for fear that it might have the completely opposite effect to that intended, and incite intense curiosity (*Into Eternity*, 2010; see also Hoffman, 2001). The idea of a cursed tomb appears especially apt in this context. While cultural differences will no doubt exist, the basic danger and necessity of avoiding it for reasons of health will remain.

The issue of future generations is also commonly highlighted by anti-nuclear campaigners and activists in the UK. Here it tends to be raised in relation to the waste problem. Greenpeace UK (2013) emphasises that

> [a]llowing ten new reactors to be built would add threefold to the amount of highly radioactive waste we already have to deal with. This waste will remain dangerous for up to a million years: an outrageous legacy to leave for many generations to come.

And at protests at Hinkley and Sizewell in the UK it is common to see placards with messages such as 'no new nuclear for our future generations' and 'don't nuke the future'.

The benefits and burdens of present nuclear energy production are distributed unequally across time. Present generations reap the short-term benefits such as energy supply, jobs and local investment, while the long-term costs are displaced onto future generations who are likely to be even less well-placed to deal with the consequences if present ecological degradation and technological dependency in all other areas continues apace. If we consider the problem of nuclear waste ecologically, that is, refusing to consider it in isolation from other ecological problems such as climate change, deforestation, soil erosion, water shortages and biodiversity loss, the links between the deprivation of basic necessities including unequal exposure to ecological burdens becomes even more apparent.

Deprivation of basic necessities to nonhuman nature is a problem which is likely to be exacerbated rather than ameliorated by turning to nuclear energy as a solution to climate change. Not only does nuclear energy encourage us to continue to produce and consume as much energy, if not more, than we have done, it also has knock on effects upon other important resources. Thermal pollution from nuclear power plants deprives parts of nonhuman nature of basic necessities (cool water) for flourishing, and in the context of climate change and increased water stresses this is of great concern for all manner of ecological systems (Averyt et al., 2011), as well as those humans who do not have access to privatised water sources. Uranium mining is regularly impacted upon by flooding, which in turn impacts upon local human and nonhuman communities and individuals (Moore, 2009; Dowie, 2009; Kelly, 2012). The possibility of increases in flooding in the context of climate change once more raises concerns about the exacerbation of existing distributive injustices.

Taking all affected into account forces us to consider the cumulative effects of these distributive injustices. The ways in which the burdens of nuclear energy exacerbate other forms of deprivation of basic necessities and correlate with other distributive injustices described above raises serious questions about whether or not it can provide an adequate ecological response to the problem of climate change. In the next section I consider the efficacy of articulating injustices of nuclear energy from the perspective of those affected.

Political efficacy of articulating distributive injustices: transformative possibilities for reconsidering the benefits and burdens of common life

This chapter has suggested an open understanding of basic necessities which includes a relational understanding of the goods and burdens of common life and an articulation of injustices of distribution as the deprivation of basic necessities required by human and nonhuman ecological entities for their existence and flourishing. The previous section already indicated some of the ways in which this articulation is politically effective for taking all affected into account in the politics of nuclear energy. It thus began to challenge the short-circuiting in the dominant discourses of the process of taking all affected into account. Deprivation of basic necessities provides a common language so that diverse understandings of both the goods and burdens necessary for various existences may be taken into account as relevant to our understandings of common life. Thus it may be possible to negotiate common ground and alliances between those deprived, to highlight the political stakes of nuclear energy and to more effectively challenge assumptions about basic necessities for endless economic growth in consumption of energy and goods which prevail in the dominant discourses.

Articulating injustices of distribution in this way enables more thorough contestation of dominant answers to ecological crises, particularly climate change. Having reopened the question of 'how many (and who) we are,' articulating injustices enables us to reconsider the question of 'how we might live together' with a better understanding of the basic necessities of all affected. In what follows, I consider both the transformative potential and the limits of contesting distributive injustices across space and time, with reference to the deprivation of basic necessities of those in other countries, and future

generations. There are limits to the efficacy of articulating deprivation of basic necessities if the basic causes of unjust distributions remain unaddressed and those who are deprived are pitted against each other, or do not succeed in comprehensively challenging the dominant interpretations of basic necessities, or the concentrations of power and resources in the hands of a few. These limits reinforce the importance of considering distributive injustices in conjunction with those of recognition and representation, addressed in the next two chapters. However, these limits should not detract from the continued importance of contesting distributive injustices. Articulating the deprivation of basic necessities enables us to understand and imagine a broad range of structural inequalities across both time and space and can help draw attention to and contest unsustainable inequalities and contradictions which expose serious problems in the prevailing social and economic organisations; the ways in which we live together.

In considering the political efficacy of articulating deprivation of basic necessities it is useful to consider the main vehicles of distribution, particularly the capitalist economic market and state systems. Considered in the abstract as distributors of basic necessities for all affected these may seem limited, particularly regarding the question of injustices to future generations and those in other countries, yet they remain important centres of power which must be taken into consideration if we are to contest distributive injustices. Within the modern context, distribution has been mediated by technocratic state politics (apparent in different forms of state including the welfare state, corporatist capitalism and state socialism) (Drake, 2010: 97, 159). Distributive politics has tended to involve an appeal to centralised state power to provide management of just distributions, to regulate and facilitate economic growth and technological progress, upon which distributions to an ever widening moral community apparently depend (Gibson-Graham, 2006). Both Rawlsian and Marxist understandings of just distributions implicitly rely upon an apparently 'neutral' arbiter, the state, to facilitate or manage economic growth and technological progress, to enable and defend just distributions.

However, other conceptualisations of the politics of distribution are not necessarily tied to the state, nor are they tied to assumptions about capitalist economic growth or a particular, homogenous rights bearer. Concerns about the distribution of power in anarchist politics, for example, highlight the utility of

distributive thinking for understanding and addressing injustices resulting from inequalities in 'political resources' or sources of power (Gordon, 2008: 55-61). It is perfectly plausible to consider the case of just distribution within any community or association aside from the state, such as in a food coop, for example (Warren, 2000). Other examples of the politics of distribution also exist which draw upon the authority of alternative legitimising sources which are not necessarily confined to state capitalist imperatives.

Often such cases focus on resource and property distribution rather than the distribution of income. In an example of the rights of stakeholders in older industrial regions of the US, stakeholders have been understood not only as workers and managers but also as suppliers, customers, service providers, taxpayers and other community members, with appeals to basic rights which have been upheld and have 'contributed to innovative dispositions of industrial property that can be understood as distributions of social wealth from the owners of that property to the labor force and local community' (Gibson-Graham, 2006: 178). For example, in Massachusetts, a judge awarded an industrial plant to a lower bidder who promised to keep the plant open, thereby violating owner's rights to the highest price and giving legal support to stakeholders rights (ibid.) Aboriginal land rights movements have opened up the potential for distributions of wealth to traditional landowners in the form of compensation, rent and royalty payments on the basis of 'indigenous rights' to the land, in a sense which again goes at least partly beyond conceptions of state sovereignty (Gibson-Graham, 2006: 178).

The ecological challenge to the dominant discourses, and in particular awareness of '"future rights" of succeeding generations to existing resources and environments', has underlined the importance of thinking about 'the need for a distribution of wealth obtained through non-renewable or unsustainable economic activities toward renewable/sustainable ones' (Gibson-Graham, 2006: 178). Some of the political efficacy of articulating distributive injustices of nuclear energy to future generations lies in the commensurability of such articulations with dominant discourses and short-hand ways of understanding the world. Such articulation provides a means for conceptualising relative benefits and burdens across time and thereby brings excluded costs into more economistic, instrumental modes of thinking such as cost-benefit analysis. The phrase, 'our children's children's children...' is often used at protests and

reflects the personal connections that do exist. But the long-term and most troubling aspects of the nuclear waste issue bring up such a long timescale that many of those affected are complete unknowns to us.

For Dobson (1998: 110), because 'most theories of justice – and most practices too - make reference to future generations only as an afterthought, it practically goes without saying that bringing them closer to the centre of attention will be transformative for both theory and – particularly – practice'. This emphasis upon potential distributive injustice relates to Robert Goodin's (1985: 33, in Dobson, 1998: 123) insistence that the vulnerability of those in the future to our actions in the present should be motivation enough (a duty due to special need, such as that owed to infants), and would also help to confront 'the "sleeper" type of environmental problem' such as high-level radioactive waste.

The ascription of rights, and an understanding of certain equal basic necessities, to people of the distant future might help to provide an imperfect yet 'hard core of a standard on which to base demands for transformation', and against which present practices can be tested (Dobson, 1998: 110). The comparative aspect which a consideration of inequality brings, may make the effects upon people of the future as 'real' as any other effort of comparison and conceptualisation of relations between selves and others has at least the potential to do. Abstract numerical thinking in terms of ranking (of which equality is a part) (Plumwood, 2002: 172) is dominant not only because it corresponds with the dominant forms of social organisation and valuation systems, but because it is so useful for simplifying and making comprehensible complex and vast pieces of information.

Thinking about deprivation of basic needs for future generations provides a conceptual bridge along lines of have/have not, which provide a useful and easy to conceptualise mental shorthand (at least for many). Although vague, simplified and imprecise in actuality, this formulation provides a clear signal of extent of potential harm and suffering as a result of present action. It thus provides a way of including previously and presently excluded, or to use the language of economics – externalised, costs of nuclear energy. Also, because, arguably for some, it is easier to make this leap within the human world across time than between the human and nonhuman world within the same generation, it has also tended to be used as an indirect way of bringing nonhuman nature into dominant calculations of anthropocentric self-interest (Hayward, 1998). The

possibility of assigning quantifiable costs and benefits is strategically crucial for raising awareness of problems in most economic, political and legal contexts (Warren, 2000: 178).

In a similar way to the articulation of distributive injustices to future generations, articulating international distributive injustices of nuclear energy is politically effective in so far as it enables a clear and often stark depiction of comparative deprivation and inequality which chimes with dominant understandings of cost-benefit-analyses and in particular, economic disparities and inequalities. Thinking about international distributive injustices also brings out, less ambiguously than thinking about future generations, the existence of certain roughly equal basic necessities for a healthy environment. This is the case, at least with regards to basics such as clean air, drinking water and environment which does not contain significantly more causes of disease than it would have without interferences of uranium mining and milling, for example.

Thus, I argue that despite, or in fact because of important cultural differences at global level, it is perfectly possible, and in fact vital to articulate distributive injustices at the international level and across time, not only between peoples of nation states, but between people and big corporations and their shareholders, or between the poor and the wealthy in the same country. Although in the context of globalization the state and the corporation have arguably seen a decline in their power to effect redistributions of wealth and other important rights (Gibson-Graham, 2006: 177), the continued articulation of global distributive injustices, for example the deprivations of basic necessities highlighted by those in the global justice movements, highlights their continued power to expropriate and redistribute resources in the name of economic growth. Articulating deprivation of basic necessities at the global level highlights rising inequalities and the increasing concentration of resources in the hands of a few rather than any progress towards ameliorating distributive injustices.

Importantly, articulations of distributive injustices against and despite reported GDP growth and other development statistics, helps to highlight the limits of economic growth as a mechanism for meeting basic needs. On the contrary, articulations of international distributive injustices, ecologically understood, highlight the ways in which conventional understandings of economic development and growth are contributing to the deprivation of basic necessities and increasing inequalities. It is in appeals or articulations about the

injustices of the deprivation of basic necessities, ecologically understood, that the political efficacy of articulations of international distributive injustices lies. Articulation of unequal deprivation and exposure to ecological bads is particularly important from a political point of view.

Warren (2000: 176) points out that appealing to distributive justice plays an important role in highlighting deficiencies in current forms of economic organisation. Articulating distributive injustices can highlight the detrimental effects of markets 'where outcomes recommended by economic analyses conflict with considerations of justice' in so-called 'justice-efficiency quandaries' (Warren, 2000: 179). Attention to such quandaries raises the question of how one can 'reconcile economic market efficiency in the allocation of resources necessary to produced desired goods and services, with justice in the distribution of the wealth necessary to purchase those goods and services' (Warren, 2000: 177). Efficient outcomes tend to be distributively unjust outcomes, for example, when market forces locate hazardous waste consistently and disproportionately in poorer areas, and in the US in more black communities than white (Warren, 2000: 180).

Articulating deprivation of basic necessities brings out the tendencies for correlations, and therefore also potential solidarities, between injustices – that those suffering other social, economic and political distributive injustices are more likely to suffer unequal distribution of ecological burdens, while those who tend to be in receipt of more benefits than burdens tend to 'have the strongest economic stake in the sort of accumulation which generates environmental harms' (Plumwood, 2002: 85). Focusing upon articulations of distributive injustices helps us to see that those who benefit from uneven distributions of all kinds of goods can afford to avoid the worst forms of environmental degradation. This is a matter of turning attention just as much to the most advantaged, rather than simply focusing upon the situation of the most disadvantaged (see Plumwood, 2002). This takes seriously the implication that deprivation of basic necessities tends to be intrinsically linked to inequality.

This aspect of distributive injustice is very politically effective in highlighting how the problem of nuclear energy as a solution to energy scarcity and the need to reduce carbon emissions actually enables the continued degradation and exploitation of both people and 'natural resources', enables 'sustainable degradation' (Luke, 2008b: 143) in order to further facilitate capital

accumulation, thereby further exacerbating deprivation of basic necessities and severe inequalities.

However, it is important to note that without considering the correlations between inequalities and distributive injustices, we encounter strong contradictions between environmental concerns and social justice concerns. Stephen Tindale and Chris Hewitt (1999) have highlighted how discussion of environmental taxation on energy can tend to mask social inequalities and important issues such as fuel poverty perpetuated by the existing capitalist state and market systems, which can pose as neutral and unproblematic arbiters of distributions. A shift in focus from taxes to energy efficiency and property insulation would better consider the distributive impact of sustainability policies upon the poor (1999: 239). By considering the ways in which different distributive injustices link up with environmental concerns it might be possible to counter the strong single-issue focus which leads to such conflicts, and to emphasise complementary rather than exacerbating, conflict augmenting solutions to these complexly interlinked problems.

In the past redistributional politics succeeded best where unions have been able to control the labour market for certain jobs (often by using sexist, racist, and nationalist strategies of exclusion)' (Gibson-Graham, 2006: 176). The politics of distribution was focused on the state and based upon implied and assumed characteristics of the citizen or subject of distributive rights, the model for which was the male citizen (Drake, 2010; MacGregor, 2004). This assumed a 'culturally homogeneous, male breadwinner of a nuclear family' (Drake 2010: 98; Lister, 2007). This highlights some of the limits of distributive articulations as long as those who suffer distributive injustices are widely dispersed across space and time, remain substitutable for at least the immediate foreseeable future and the existing value and meaning systems as well as modes of political and economic organisation continue to pit the basic necessities of some against the basic necessities of others.

There are problems with thinking about distribution across time and space, even if we expand our consideration to the contestation of basic necessities including both goods and burdens. The problem which thinking about both distributive injustices to future generations and injustices to those in other countries brings to our attention is that we may be confronted with conflicting conceptions of basic necessities. Dobson identifies a major problem

with assigning rights to future generations, and that is the question of the extent of present sacrifice. Because the future contains so many unknowns, the idea of ascribing equal rights to people of the future has the tendency to push cost-benefit analyses into absurdity (Dobson, 1998 105). Peter Laslett and James Fishkin, for example, have argued that 'the resources of the human world, social, political, and material, cannot themselves possibly be infinite, even if it is uncertain how large they are in fact and how far technical ingenuity can spread them out', whereas to comprehend potential past, present and future generations we must think of these as infinite (Laslett & Fishkin 1992: 6, in Dobson, 1998: 105-106). So if 'every member of every generation must have equal access to the resources of the world, quite irrespective of the generation into which he or she was, is, or will be born' a just distribution makes no sense because 'a finite quantity divided by an infinite number must have a zero result' (Laslett & Fishkin, 1992: 6).

One suggested way around this problem is to use the economists' method of discounting the future, often used because 'future costs are less burdensome than current costs' (Pearce et al., 1989: 7, in Dobson 1998: 111). By pushing the costs of present activities into the future it is possible to arrive at a calculation whereby, for example '[a]t a 5% discount rate [..] one life today is equivalent in value to [..] sixteen lives in 57.6 years' and in 489.6 years one life is 'worth more than sixteen billion lives then' (Wenz, 1988: 230, in Dobson 1998: 111-2).

One of the limits of the articulation lie in the fact that there is no tangibly measurable or affective reciprocity between those of the present and those of the future which would provide a nudge to those acting out of apparently purely instrumental rationalist self-interest. Robert Heilbroner (1981: 191, in Dobson, 1998: 103), poses and then closes down any response to his query: 'Why should I lift a finger to affect events that will have no more meaning for me seventy-five years after my death than those that happened seventy-five years before I was born? There is no rational answer to that terrible question'. Rationality is an ambiguous term, and part of the problem here is that assumptions about what is rational affect the ways in which we understand and frame distributional problems in terms of who counts as rational (recognition) as well as who may claim to speak rationally (representation).

The problem is exacerbated by the unknowability of the future. There are many unknowns. For example, the objection to giving people of the future rights often involves the argument that they do not exist and they do not have identity (Dobson, 1998: 108). However, this point may be countered by the argument that they will nonetheless have interests, for example, to have 'living space, fertile soil, fresh air' etc. (Feinberg, 1981: 143, Dobson, 1998: 109), i.e. certain equal basic necessities.

Yet this raises the reason that at least some kind of discount rate is so appealing, because prioritising future needs over present wants faces us with the problem of imposing large and potentially unpalatable sacrifices upon present generations (Dobson, 1998: 112). There is a tension here between 'the felt need to do something like discount the future' because the future is unknown, and the green emphasis upon the precautionary principle, also because the future is unknown   (Dobson 1998: 113). This tension exposes an underlying difference in valuing the future, and thus highlights a problem with articulating injustices to future generations in terms of distribution alone. Dominant beliefs in the substitutability of resources and the potentials for technological and economic capitalist development to mitigate present problems permeate much academic thinking on distributive injustice to future generations, with, for example, the Rawlsian assumption that economic wealth created by present generations might compensate loss of other resources, or exposure to ecological bads (Cowen and Parfit, 1992, in Dobson, 1998).

Distributive articulations, especially in the abstract, push us towards numerical articulations in terms of cost-benefit-analyses which encourage trade-offs which in reality may not be palatable or even realistic. Thus we have hit the problem that in order to shift dominant assumptions about who may suffer distributive injustice and what is of value to be distributed, there is a need for articulations and understandings of both recognition-and representation-based injustices, which for example, raise the issue of the intrinsic value of nonhuman nature, of its non-substitutability and the inherent uncertainties in predicting the future. Without articulations of representation we are unable to raise the issue of the prevailing lack of recognition of the limits to human knowledge and power apparent in more ecological understandings of the human self, and the question of who has legitimate knowledge and who speaks for whom about the risks and benefits that we leave to future generations. The problem of what the future

counts for, and who and what counts in the future is a question we need to articulate in terms of potential recognition-based injustices, while the problem of who speaks on behalf of whom concerning the risks and benefits we leave for future generations needs to be considered with potential representation-based injustices in mind.

Many in the local communities around Hinkley C remain supportive of the project. This is in great part due to the strong presence of EDF, and associated support companies for the power station's construction and infrastructure, as local employer and investor in the region's infrastructure. The contradiction here between concerns over economic development and growth, particularly apparent in the investment in local colleges and schools, and the concerns about the impact of the power plant in terms of increased risk and hazard for local people and wildlife both far into the future and in the present , is a stark and seemingly irreconcilable one. Both may be considered in terms of distributive injustices yet with different conceptions of the good life and the basic necessities which are necessary for this.

Arguing for alternative forms of energy and energy-use-reduction involves different conceptions of what counts while calling for more decentralised and accountable forms of energy production, brings in issues of who may speak on behalf of whom. Without challenges over what is to be distributed and who has a say in the distribution processes, articulations of distributive injustices may gain less traction for change. To return to the example of the struggle at Hinkley C, Bob Brown, Corporate Director of Sedgemoor District Council pointed out in 2012 that in the communities around Hinkley C

> [f]uel poverty rates are among the highest in the UK; wages and educational attainment levels are low. We risk the grotesque spectacle of communities suffering in fuel poverty in the shadow of one of the UK's largest power stations' (Western Daily Press, 2012).

This draws attention to the correlation and compounding of the deprivation brought about by the environmental burdening of the UK's largest nuclear power station with other forms of social and economic deprivation. In pointing this out, the aim, which achieved limited success (see Macalister, 2013), was to call for more compensation and a share of the power station's profits, despite already existing investment in local schools and colleges and the promise of jobs. It demonstrates the extent of the distributive injustice felt, but it still only

goes so far as to ask for more compensation, rather than challenge the existence of the power station itself. Often, the promise of jobs and local investment suffices.

Impacts of uranium mining have also been 'compensated' by promises of development and economic and infrastructure incentives (Lichacz & Myers, 1977: 57; Perera & Pugliese, 1998: 74-5; Katona, 1998) However, there can be no compensation for losses of culture which such compensation actually often accelerates. It is also the case that when workers and locals have struggled for compensation against mining companies they have been severely disadvantaged in their chances of addressing the starkly uneven distributions of goods and burdens (Martinez-Alier, 2001: 165; Pearson, 1980). The correlations of distributive injustices have also been known to enable mining companies to dismiss their own adverse distributive effects. Historically, the industry has been known to belittle consequences of mining, for example, blaming 'lung cancers occurring to miners on excessive smoking, drinking, and low living', or even describing uranium mining populations of the early 1950s as 'drunks and tramps' (Pearson, 1980: 144). Martinez-Alier (1993: 115) has pointed out that often those who are already deprived tend to 'sell cheap.' Those who do not recognise the value of what is at stake may sell cheaper. And for those not recognised or given the status they deserve, or who are not given a say in the matter, the sale may be even cheaper still, if not outright theft.

To return to the contradictions which articulating distributive injustices helps to bring out, if we confine our understanding of basic necessities to financial and economic considerations, then the presence of a 'new power plant' which is 'already generating jobs' (EDF advertisement at Taunton Train Station in 2011), appears to mitigate certain injustices of economic and social deprivation, bringing new life to the region. If we narrow our concerns about ecological degradation to combating climate change with carbon emissions reductions, then nuclear energy appears to redistribute certain bads of energy production (carbon emissions) away from this particular problem (climate change). Yet if we extend our considerations, ecologically, to consider basic needs of local people and wildlife for a safe and healthy environment, in an already volatile and changing climate, then the picture becomes more complicated and the nuclear power plant begins to look like more like a potential distributive injustice.

If we extend our consideration to compare the distribution of power plants with the distribution of wealth and other social benefits within the UK, then the superficial benefits of jobs and development from such a dubious and risk-laden source are unmasked as problematic to say the least. We need to add to this the consideration that nuclear energy involves a capital-intensive concentration of resources and control in the hands of a few, redistributing investment away from viable renewable energy sources as well as encouraging us along the well-trodden path of increasingly high energy and resource consumption linked to an engine of economic growth driving the depletion of limited resources and bringing with it increasing inequality.

If we add to this consideration both the global picture, taking the impacts of uranium mining into account, and the future, taking the impacts of an as yet unsolved waste problem into account, the distributive injustice effects of nuclear energy become even more apparent. Quantifying the numbers of deaths from the nuclear industry in comparison to the coal industry becomes an irrelevant numerical game in comparing two evils, neither of which can help us face the problems we currently face. In fact, these problems and their distributive effects are likely to exacerbate each other. Those pushing the development of uranium mines and plants emphasise development opportunities in terms of the building of local infrastructures, jobs, schools etc. Those opposing argue that this development is not of their choosing, disrupts and extinguishes traditional ways of life and the healthy ecology necessary for this.

In the case of uranium mining in Namibia, European environmental activists worked together with trade unionists at the Rossing uranium mine and processing plant there in the period running up to and after the end of apartheid and independence from white South Africa (Hecht 2010b). In the early stages the Europeans and the local trade unionists coincided in their aim to call for boycotts of the mine. However there were tensions. For while the trade union members were against their own exploitation and pushed for more stringent safety standards and exposure of the managements' faults they were ultimately dependent upon Rossing for their livelihoods. After apartheid, with the Rossing mine owners supporting the new government, and the new government strongly dependent upon the industry, the contradictions between the position of the European activists and that of the workers became stark (Hecht 2010b). Here again, if we consider basic necessities as restricted to economic considerations,

the closure of the mine causes distributive injustice. If the closure of the mine coincided with and contributed to the withdrawal of other foreign investment from Namibia, the contribution to a failing economy and weakened social and political infrastructure would likely ensue. The legacy of the mine would also need to be considered, for while stopping its operations would halt some of the infringements upon basic necessities concerning a healthy environment, and at least halt the production of more waste, tailings piles would still exist and might pose an increased threat if not dealt with adequately.

All such considerations require attention, and they involve consideration of recognition- and representation-based injustices too. Should the Europeans who in great part benefit from their countries' historical and contemporary exploitation of African countries, and the continuing unjust distribution of benefits and burdens in the current economic and political systems, have a right to say what Namibians should do? Can they make common cause against the complex inadequacies of current modes of economic, social and political organisation? What might be the potential recognition-, representation- and distribution-based injustices in such collaboration and how might they be mitigated? When it comes to considering transnational distributive injustices we are confronted with conflicting notions of the basic necessities for flourishing lives. And in the cases, such as that of indigenous peoples resisting uranium mining, distributive claims are often difficult to separate out from claims about lack of recognition of ways of life and alternative conceptions of the human relationship with nonhumans and the land, and representation in terms of persistent silencing or marginalisation (see also Schlosberg 2007).

Thus we see the limits of articulating international distributive injustices, for, on the one hand, what counts and is counted in comparative cost-benefit-analyses must be considered with an awareness and possibility for articulation of injustices of recognition, and on the other, the question of who contributes to processes of putting forward the multiple perspectives which exist must also be considered, so that possible representation-based injustices are also taken into account. A more integrated ecological focus, rather than simply prioritising ecological concerns over human concerns, seeks to bring out and help us understand points of contradiction so as to better address underlying structural problems which need addressing.

Articulating as broad a range of distributive injustices in relation to nuclear energy as possible, despite the limitations can nonetheless help to give a clearer picture of what is at stake. Current considerations by the UK government over the strike price for nuclear energy (protracted, difficult and ongoing at the point of writing) ought to take into account potential distributive injustice at both local and global levels, in both the present and future, in terms of who may reap the benefits and who will suffer the burdens of the nuclear energy production which a high strike price would encourage. Those campaigning against new nuclear energy are usually fully aware of the distributional injustices which centralised power over distribution of energy supply can exacerbate and call for alternative more decentralised forms of energy production, as well as energy efficiency, as better placed policies for avoiding all kinds of distributive injustices. However, given the power of dominant discourses, and of dominant conceptions of what the basic necessities are, and the limited extent to which nonhuman nature is taken into account in all this, we also need to consider the problem in terms of both the politics of recognition and in terms of the politics of representation.

The question of distributive injustices to nonhuman nature has been addressed by some (e.g. Baxter, 2005). However, the concern has been that our inevitable 'use' of parts of nature, makes moral considerability on similar terms to humans (in the present, internationally or across time) impossible, for it raises yet another point of conflict over distributions in a limited world. In particular the risk of conflict with social justice to less advantaged humans is often emphasised (Plumwood, 2002). Thus expressions of injustice to humans and expressions of injustice to nonhumans are often pitted against each other. If those who are deprived of basic necessities continue to be pitted against each other and the articulation of basic necessities does not succeed in challenging dominant understandings of what these are so as to take into account the ecological interdependence of human and nonhuman nature, then compensation and precaution will tend to remain affirmative, reinforcing rather than transforming the social structures which exacerbate deprivations. The importance of integrating social justice and environmental concerns is vital from an ecological point of view. As discussed in this chapter, some suggest that this be done by prioritising human interests and attaching the interests of nonhuman nature or future generations as a side-effect of these interests. Many argue

however, that prioritising human interests cannot suffice to redress the injustices to both humans and nonhuman nature, for it fails to acknowledge the blind spots of dominant anthropocentric forms of social organisation, the extent of our lack of knowledge about nonhuman nature, and the extent of our dependence upon it (Plumwood 2002).

This chapter has sought to reformulate an image of politics as distribution so as to find a language to express how future generations, those beyond state boundaries, and nonhuman nature are affected in the politics of nuclear energy. Through this reformulation I have proposed an articulation of distributive injustice which can incorporate an understanding of the connections between goods and burdens and thereby more strongly draw attention to the correlations between unequal distributions. As discussed, such contestation draws attention to starkly uneven and unsustainable distributions of basic necessities across both space and time and the human/nonhuman divide, thereby highlighting serious problems with existing forms of social organisation. Articulating distributive injustices and the correlations between these can help to highlight points of solidarity and common ground between those deprived, including indigenous peoples, workers, environmental groups, nonhuman nature and future generations, helping to unmask the particular dominant interests of industry, of mining companies such as Rio Tinto, and governments' collusion with these in the interests of a few rather than the many. As witnessed at world social and environmental forums, and in protests and participation at UN conferences, there is also much common ground with others deprived of basic necessities through other problematic developments justified by climate change, energy shortage, and/or development. For example, the development of massive hydro-electric dams, biofuel plantations, solar, or wind farms which further deprive those - human and nonhuman - already seriously deprived in national and global contexts. The expression of deprivation of basic necessities for well-being will never be a 'neutral,' apolitical cost-benefit-analysis, as those subscribing to the hierarchical separations of science/politics and nature/culture might wish. Yet, it is precisely because understandings of basic necessities and

well-being are always relational and therefore always political and never neutral, that we require ongoing contestation of distributive injustices.

However, while articulation and contestation of distributive injustices is crucial to understanding certain significant harms of nuclear energy from the points of view of all affected, understanding politics through an image of distribution alone cannot help us to understand all affected with regards to who is able to act and speak in the politics of nuclear energy, who can make decisions regarding changes to the dominant forms of social organisation to redress distributive injustices. These are questions of representation to be addressed in Chapter Five. Correspondingly, just as distributive injustices cannot be understood independently of representation-based injustices, they also exacerbate and cannot be understood separately from recognition-based injustices. In order to facilitate contestation of distributive injustices and to contest the dominant understandings of basic necessities for well-being which can fragment potential alliances and pit these against each other, we must also be able to recognise all affected – future generations, those in other countries, and nonhuman nature – as members of political community. This involves questions of who counts as what in the value and meaning systems structuring self/other relations in common life beyond the separation of nature/culture. The injustices arising from these value and meaning systems which structure self/other relations may be better articulated in terms of the politics of recognition, to which I now turn.

Chapter Four
Articulating Injustices of Recognition:
Who counts as what in the politics of nuclear energy?

Nuclear energy is being put forward as a necessary mediating technology, our only chance of controlling and overcoming the problem of climate change for the good of all. Government, industry, scientists and environmental spokespeople argue that we must recognise the value of '21st century technology' (Caldeira et al., 2013) and the extent of the threat which it can help us to master. We have entered the age of the 'anthropocene' and because we dominate the earth any threat to the earth is a threat to us; we have to face up to our responsibilities and wield the power we have. While more primitive technologies and organisational forms of the past may have succumbed to disaster, such risks have now been stabilised and can be controlled and managed through superior forms of technology and organisation.

This framing of the problem takes nonhuman nature into consideration as a matter of politics but it does so in terms of the entrenched and contradictory hierarchical separations of science/politics and nature/culture which structure our understandings of common life. This framing assumes human domination and continues to portray aspects of human and nonhuman nature as something that can be controlled, managed or overcome, thereby failing to challenge the value and meaning systems which have caused ecological crises in the first place. As a result, significant socially produced harms to both human and nonhuman nature remain difficult to articulate. In Chapter Three, the dominant discourses were challenged for failing to consider the burdens as well as the benefits of common life affecting future generations, those in other countries and nonhuman nature. Articulating injustices in terms of the politics of distribution can help to contest deprivation of basic necessities of all affected. However, there were limits to this articulation if considered alone, particularly for reconsidering how nonhuman nature counts as a *subject* as well as an object of politics. As some feminists have long argued, extending the scope of political community is not enough if the value and meaning systems which structure political community do not change. If taking all affected into account does not also provoke reconsideration of who we are in relation to each other, then important injustices go uncontested. Simply weighing up who gets what within an expanded sense of political community, without considering who counts as

what, perpetuates the dominant structures of common life based around the hierarchical separation of nature/culture. The implications of this are that significant socially produced harms of nuclear energy remain only partially articulated as injustices and our understanding of what is at stake in the politics of nuclear energy remains limited.

In this chapter I continue the development of my heuristic framework for articulating injustices. Guided by the ecological approach of taking all affected into account, I reconsider what is at stake in terms of an image of politics as recognition so as to give another perspective on the thesis problem. The image of politics as recognition helps us to see how the expansion of political community to take into account those previously subordinated or excluded can transform value and meaning systems which structure self/other relations. I argue that we can articulate recognition-based injustices of nuclear energy as disrespect for integrity, with integrity signifying awareness of both the continuities and differences in self/other relations and the accompanying unpredictability of both human and nonhuman interactions.

In the first section I develop insights from justice and green theory so as to reconsider the image of politics as recognition in terms of the ecological process of taking all affected into account beyond the separation of nature/culture. Thinking about recognition in ecological terms entails a challenge to hierarchical inside/outside conceptions of recognition and political community which displace rather than challenge the problems of self-centred power that underlie the structuring of social relations. This suggests a shift from centrist inside/outside relations of recognition, based upon dominant understandings of human intersubjectivity, towards a more complex multi-valent understanding of the processes of interaction which involve both continuities and differences between humans and nonhumans as both subjects and objects of politics. The implications of this are that taking all affected into account challenges not only the status of the others (future generations, non-nationals, nonhumans) involved, but also the status of the dominant human self. We therefore require a new way of conceptualising and contesting the quality of self/other relations which accounts for both continuities and differences between selves and others and enables contestation of hierarchical relations within which the dominant human self is able to maintain an illusion of independence

155

from the unpredictable processes of interaction and deny vulnerability and dependency upon others.

In the second section I draw upon this ecological reconsideration of politics as recognition to disclose injustices which may broadly be articulated as disrespect for integrity. I argue for an understanding of integrity as a notion which describes an unavoidable paradoxical quality in self-other relations which accounts for both continuities and differences between entities and the complex ways in which these interact with each other. This helps to provide a language with which to redescribe the problem of nuclear energy discussed in Chapter One in terms of the politics of recognition. The suggestion of nuclear energy as a solution to climate change presupposes human independence from and control of both human and nonhuman nature. The claims to sovereignty of the dominant human self through both state and financial power as well as the power and promise of science and technology disrespects the integrity of self/other relations and perpetuates an illusion of independence and invulnerability. This insulates those in power from a sense of their own limits and fallibility. Assumptions about human control disrespect the integrity of nonhuman nature, failing to account for its difference, and the essentially unpredictable character of open and complex ecological systems, as well as failing to account for our continuities with nonhuman nature as an influencing factor within these systems. The articulation of nuclear energy as a way of managing climate change also capitulates to the dominant modes of social and economic organisation, assuming that there is no alternative and posing nuclear energy as the only alternative. This entails disrespect for the integrity of a diversity of other value and meaning systems which may be more respectful of integrity in self/other relations. These include some indigenous cultures, but also alternative cultures and technologies which are more sensitive to both the continuities and differences between humans and between humans and nonhuman nature.

In the final section of this chapter I consider the political efficacy of articulating disrespect for integrity. I consider the transformative potential of finding a common language for reconsidering value and meaning in self/other relations in a way which accounts for both continuities and differences between selves and others. The articulation of disrespect for integrity has the potential to challenge the dominant anthropocentric illusion of independence and control of

'nature', highlighting the ways in which the dominant human self uses other humans and nonhuman nature to distance itself from both, and retain an illusion of its own superiority, invulnerability and mastery. Challenging this opens up space to imagine and learn from different existing and potential self/other relations which do not implicitly rely upon hierarchical dualist forms of domination but enable more respect for integrity of selves and others in complex interactive processes. Such potentials include the idea of the commons and alternative technologies which challenge and reconfigure our relationships both with other humans and with nonhuman nature. Such ideas and practices are potentially empowering and prefigurative as they show possibilities for withdrawing support for those hierarchical relations which limit the possibilities of self-development of all involved, including those of the dominant self.

Ecologically reformulating recognition: understanding all affected in complex interaction beyond hierarchical intersubjectivity

The image of politics as recognition has been of great use in understanding the formation of identities and social value and meaning systems which structure social relations. Traditionally this has been restricted to an understanding of the effects of human intersubjectivity. However, taking all affected into account, extending the scope of political community to include those previously excluded, alters the character of that political community, changing our understanding of the quality of self-other relations within it. Ecologically reformulating the image of politics as recognition requires two related shifts. First it involves a more complex understanding of value and meaning systems which structure self/other relations constructed through complex interactive processes involving both continuities and differences between humans and between humans and nonhumans. Secondly, this more complex understanding of the quality of self/other relations entails a challenge to the dominant anthropocentric self as independent and invulnerable within these processes of interaction. As a result, in considering 'who counts as what' we must pay as much attention to the value and meaning ascribed to the position of the dominant anthropocentric self in ecological processes of interaction as upon revaluing previously devalued others. Paying attention to the position of the dominant self entails a challenge

to the ways in which the anthropocentric self does not recognise dependency upon others, both human and nonhuman. The illusion of sovereignty is facilitated by relations of domination which stabilise complex and often unpredictable interactive processes between human and nonhuman nature, thereby insulating the dominant self from understanding its own vulnerability and dependency upon both.

Attention to actual struggles against injustices has led feminists and others to emphasise the importance of thinking about recognition as an aspect of justice in its own right, which cannot be subsumed or assumed to be adequately dealt with in thinking about distributive or representative justice alone (Honneth, 1992; Fraser, 2001; Taylor 1992; Schlosberg, 2004, 2007; Markell, 2008). Political theorists who work with a concept of justice as involving recognition have been involved with and inspired by social movement politics. They consider the importance of recognition for the formation of identities and social meaning and the damage and injustices which are inflicted upon groups and individuals when this is lacking. Charles Taylor (1992) has argued that we need theories of recognition in order to be able to understand and justify many of the demands of social movements which have had an impact in contemporary political life since the 1960s and up to the present day.

Building upon an underlying Hegelian dialogical understanding of intersubjectivity, Taylor (1994: 25) posits identity as crucial to 'a person's understanding of who they are, of their fundamental characteristic as a human being' and this is shaped in great part by recognition or a lack of it. Our sense of identity is shaped through interaction with others and constitutes 'a vital human need' (Taylor, 1994: 26). Lack of recognition 'can inflict a grievous wound, saddling its victims with crippling self-hatred' (Taylor, 1994: 26).

Historically, Hegel's intersubjective understanding of the self, emerged in contrast to the atomistic conception found in Descartes, still present in Kant, and also apparent in Hobbes and Locke (Plumwood, 2002; McQueen, 2013). Hegel was influenced by Fichte, who argued that mutual recognition was a necessary condition for the existence of free individuals, capable of selfhood and self-understanding (Williams 1992, in McQueen, 2013). For Hegel, freedom is intrinsically related to self-consciousness which can only come about through recognition of another (and vice versa) (Hegel, 1821, in McQueen, 2013). Axel Honneth (1995: 169) builds on Hegel on this point, arguing that

it is only due to the cumulative acquisition of basic self-confidence, of self-respect, and of self-esteem … that a person can come to see himself or herself, unconditionally, as both an autonomous and an individuated being and to identify with his or her goals and desires.

Autonomy for Hegel is the result of an intersubjective, contingent, social practice (Hegel 1807, in McQueen, 2013). Recognition 'is absolutely the double process of both self-consciousnesses… Action from one side only would be useless, because what is to happen can only be brought about by means of both' (Hegel, 1807: 232, in McQueen, 2013). This interaction, rather than constraining autonomy, serves instead the 'enhancement and concrete actualization of freedom' (Williams, 1997: 59, in McQueen, 2013). Markell (2003: 7) also emphasises the importance of interaction, drawing upon Arendt in claiming that identity is constantly formed through interaction with others in public life. Denial of recognition or the failure to achieve truly mutual recognition in relations of domination, as is the outcome in Hegel's life-and-death, master-slave, struggle (McQueen, 2013), results in a loss of potential for freedom on both sides of the self-other relationship.

Some of the cultural aspects of the 'new social movements' enabled the (at least partial) co-optation of identity politics (a key aspect of the politics of recognition) by capitalist consumerism, which very much emphasised individualism. Generally speaking, the emphasis in the politics of recognition has been upon inclusion of the previously excluded or devalued other and the debilitating effects when there is either no recognition or the recognition given has been demeaning in some way (Taylor, 1994; Honneth, 1995). This is important. However, the tensions between group and individual within more progressive politics of recognition are more complex than this reading of recognition politics would suggest. By its very interactive and social nature, the politics of recognition involves not only the identity of one group or individual, but the interactions between identities. It is useful to consider Markell's (2003: 24) objections to thinking about injustice only in inside/outside terms. He emphasises the implications of Hegel's master-slave struggle, that inclusion can also entail injustice, for example through social stratification, hierarchy and the division of labour. Recognition is about more than just identity and intersubjective relations, for as Nancy Fraser emphasises it involves matters of status and social standing determined by 'institutionalised patterns of cultural value' (Fraser & Honneth, 2003: 29).

An understanding of recognition in purely intersubjective terms is limited for the purposes of also taking into account harms to nonhuman nature. However, this takes me to my second point about the impact of an ecological approach for thinking about the politics of recognition. It is possible to rethink the politics of recognition more broadly in terms of more complex processes of interaction and the construction of meaning and value systems which structure such interaction between both human and nonhuman nature. David Schlosberg (2007) draws upon Nancy Fraser's (2003) more structural understanding of recognition to think about how we might include nonhuman nature in thinking about recognition-based justice. For Fraser (2003: 29) '[s]ome individuals and groups are denied the status of full partners in social interaction simply as a consequence of institutionalised patterns of cultural value', which determine our understanding of their place within political community and often 'disparage their distinctive characteristics or the distinctive characteristics assigned to them.' Schlosberg uses this more structural and institutional understanding of status to emphasise that nonhuman nature 'either sentient and capable of feeling excluded or not' can still have a place in our thinking about justice (Schlosberg, 2007: 140). However, building upon this, we also need to think about the manner of inclusion of nonhuman nature within value and meaning systems which structure processes of interaction between human and nonhuman nature, and how the type of inclusion within such meaning systems constitutes injustice.

Focusing upon complex processes of ecological interaction in the politics of recognition means that our attention is not only drawn to the status of the devalued 'other' but to how that status is intrinsically related to the elevated status of the dominant human (anthropocentric) self. Interaction is not simply a matter of two-way relations between self and other, but a more complex process of meaning construction through interrelation and interaction between multiple selves and others, both human and nonhuman. It also involves intersectional interactive processes within selves if we consider the body as the devalued other within the anthropocentric dominant human self.

Markell (2003: 13) is helpful here for he emphasises that we need to reconceptualise recognition beyond inside/outside terms and think about its relation to action and time. He critiques the way in which the ideal of mutual recognition in the work of theorists like Honneth and Taylor rests upon an

160

understanding of identity as relatively static, or at least complete in ways which fail to recognise the temporality of identity and the impossibility of fully capturing or ever truly recognising it. He argues that 'the question of justice on the terrain of identity and difference cannot be addressed in this way because it concerns the quality of recognitive relations through which identity itself is brought into being and reproduced' (Markell, 2003: 179).

Thus, while failures of recognition and its consequences upon devalued others are often considered simply as unfortunate relics, resulting from 'persistence of outdated hierarchical belief systems', ignorance about the other or 'baseline unreasonableness in the pursuit of self-interest', it is important to consider the origins of these failures, namely, the 'motives, investments, and experiences that sustain misrecognition' (Markell, 2003: 21). By paying more attention to the processes of interaction which make up relations of recognition, and following through Fraser's call for deconstruction of structures and relations of domination, we must engage 'with the deeper question of the sources of misrecognition for those who commit or benefit from it' (Markell, 2003: 21). Markell goes on to analyse the tensions and contradictions involved in how the dominant self's desire for sovereignty and independence pushes for freedom through subordination and domination. Thus Markell (2003: 22) deepens Fraser's approach to recognition as status relations, examining the motivations which perpetuate misrecognition:

> Social subordination can be understood as a means of avoiding or disavowing the open-ended temporality of human action by converting the existential problem of time into the technical problem of organization of social space.

So, in reconsidering recognition we must fundamentally address the problem of the self's desire for sovereign agency, its unwillingness to confront its own limits, to face uncertainty and lack of knowledge and control in the face of the future.

This resonates with Val Plumwood's (1993, 2002) analysis of the 'mastery' and domination entailed in anthropocentrism. Plumwood (2002: 147) argues that constantly expanding the circle of moral or political considerability fails to problematise the centrist modes of thought predicated upon hierarchical inside/outside dualisms, thereby displacing the problem which lies in the underlying structuring of social relations and assumptions about the nature of power and self-interest. Inclusion of others into the circle of moral

considerability is always predicated on an outside and can boomerang back upon other devalued others in unexpected ways.   Her analysis of anthropocentrism, emphasises the important methodological approach of 'studying up' rather than 'studying down', by which she means that we must shift the onus of proof from inclusion to exclusion, and focus not on the question of the 'qualifications' of others for ethical inclusion and attention, but instead consider the 'different and largely neglected question of the ethical stance of the human evaluator and their own moral status' (Plumwood 2002: 11, 261). She emphasises that in the context of anthropocentric culture, it is self rather than other, which requires critical philosophical engagement (Plumwood 2002: 11). Reconsidering recognition ecologically so as to take all affected into account therefore throws a spotlight upon how domination of human and nonhuman nature has been used to isolate the dominant anthropocentric self from the inevitable dependencies and vulnerabilities of interactions between selves and others, both human and nonhuman.

Markell (2003: 11) traces in Hegel the way in which the relations of domination described in the master-slave struggle serve to insulate the master from the 'hard work of acquiring and preparing parts of the material world' necessary for survival, thereby making the other (the slave) 'bear the disproportionate weight of the fact of human dependence on the material world.' Thus the master achieves an 'image' of himself as free and independent from the unpredictability of interaction with non-human nature and is insulated 'from the experience of his own dependence' (Markell, 2003: 11). The master is thus able to use the other human to 'finesse the problem of his own contradictory relation to the material world by establishing social distance between production and consumption' (Markell, 2003: 112).

However, there remains the problem of the unpredictability of interaction within the human world – of human intersubjectivity. As Markell (2003; 12) interprets Hegel, the master is able to use the material world, the 'existence of an object to be worked on – what Hegel calls the "thing"' in order to 'relate to the slave "mediately": that is in terms of their own differentially defined roles in relation to the objects of nature.' This gives substance to the social identities of master and slave 'lending relative stability to the intersubjective world' because it enables 'the master to experience his own status – like the slave's – as a reflection of who he already is, rather than as the political (and therefore fragile)

effect of an ongoing [and unstable] practice of subordination' (Markell, 2003: 112).

> Markell (2008: 462) describes this as

> an account of a subject's contradictory effort to secure certainty of its own independence through the establishment of a hierarchical social form – an effort that ironically testifies to the subject's continued dependence on others whilst materially insulating him, however imperfectly, from the force of the contradiction.

Subordination enables the insulation of some from the inescapable contradiction between desire for freedom and power and the limits to this, 'the ineliminable fact of finitude', and this allows the dominant 'to live within that contradiction at the others' expense' (Markell 2003: 22). He therefore finds 'the source of relations of subordination [..] not in the failure to recognize the identity of the other but in the failure to acknowledge one's own basic situation and circumstances' which are ultimately those of dependency and vulnerability in the face of ongoing self-other interaction (Markell, 2003: 7).

Markell (2003:22) draws upon W. E. B. Du Bois' analysis of the 'psychological wage' paid by whiteness. He characterises structures of subordination as paying

> an ontological wage: they organize the human world in ways that make it possible for certain people to enjoy an imperfect simulation of the invulnerability they desire, leaving others to bear a disproportionate share of the costs and burdens of social life.

As the green challenge makes clear, it is not only relations between humans with which we must be concerned here, but the impact of such structures for human-nonhuman relations too.

Markell's discussion highlights how interactions between humans and nonhuman nature have been used to give value and meaning to the quality of (dominating and hierarchical) relations between humans. Plumwood's analysis shows how the domination of both humans and nonhumans intersect in the value systems of the dominant anthropocentric self, relying upon similar mechanisms of subordination. Within such value systems, hierarchy and domination are 'naturalised' or normalised by simultaneous interactive processes of both radical separation and relational incorporation which deny both continuities and differences between selves and others.

Radical separation concretises hierarchical self/other relations so that the other is understood as completely separate and 'part of a lower, different order

of being', often through classifying characteristics of different orders of value (Plumwood, 1993: 49). So for example, 'reason', 'intellect' and 'higher pursuits' which are understood to be more active and dominant are associated with the master (self), while the slave (other), associated with 'merely manual occupations,' is seen as 'passive', 'nurturant', 'submissive and lacking in initiative' (Plumwood, 1993: 50). Rather than creating differences such radical separation capitalises on differences which are reproduced through social roles which then ground hierarchy (Plumwood, 1993: 55).

By naturalising homogenizing and stereotyping capacities and 'natures' the difference relationship between self and other is also one of relational incorporation. It is presented as benefiting both the dominated other and the dominant self. However it cages the dominated other into a subordinate role where they 'are obliged to put aside their own interests for those of the master or centre', and are 'conceived of as his instruments, a means to his ends' (Plumwood, 1993: 53). The subordinated other is then often 'judged by a separate instrumental standard (as in the sexual double standard) or seen as outside of morality altogether' (Plumwood, 1993: 53). This of course has a detrimental impact upon the subordinated human other. Iris Young (1990) draws upon Du Bois' conception of 'double consciousness' in her discussion of cultural imperialism, one of her 'five faces of oppression': 'this sense of always looking at one's self through the eyes of others, of measuring one's soul by the tape of a world that looks on in amused contempt and pity' (Du Bois, 1969 [1903]: 45, in Young 1990: 60).

The logics of radical separation and relational incorporation are also central to the perpetuation of anthropocentrism. Nonhuman nature is characterised as a completely separate 'lower order lacking in continuity with the human' (Plumwood, 2002: 107). Features which make humans different from nonhuman nature are emphasised over those that are shared, and the features that make humans different are idealised as 'constitutive of a truly human identity', (such as psychology and intersubjectivity) contrasted with 'a plastic, passive, 'dead' nature which is conceived in mechanical terms as completely lacking in qualities such as mind and agency that are seen as exclusive to the human' (Plumwood, 2002: 107). This is accompanied by a 'strong ethical discontinuity' at the 'human species boundary' (Plumwood, 2002, 107). Yet again, nonhuman nature is also relationally incorporated into

164

anthropocentric value systems by means of its homogenised difference, and is 'conceived in terms of interchangeable and replaceable units (as 'resources', or standing reserve) rather than as infinitely diverse and always in excess of knowledge and classification' (Plumwood, 2002: 107). The nonhuman other is conceived in terms of a 'lack' and 'devalued as an absence of qualities said to be essential for the human, such as rationality' (Plumwood, 2002: 109).

Radical separation and relational incorporation, for example through backgrounding and taking for granted services to the dominant self are 'hazardous for those in this category of 'nature'' (Plumwood 2002: 110). Within the private property system the other which is not incorporated into the self, made useful for the self, 'is conceived as externality, that place remote from the self or home for which no responsibility is accepted and from which resources can be taken or waste deposited' (Plumwood, 2002: 111). Plumwood (2002: 110-111) highlights the ways in which these forms of domination impact upon humans and nonhumans whilst insulting the dominant self:

> abstract decision-makers may never be brought to face the failure of their rational edicts on the ground, because that has become externality, 'someone else's department'. In private enterprise and private property culture, the 'forgetting' of nature's agency and contribution is often paralleled by the forgetting of the importance of social infrastructure, which under economic rationalism and centrism is similarly either privatised (often with disastrous consequences) or starved of resources to the point of breakdown.

Thus Plumwood brings together the concerns of many feminists and green thinkers with the importance of difference and the need to allow for the diversity of experiences and needs. Crucially important to the development of the politics of recognition was the way in which social movements problematized and unmasked the universality underpinning egalitarianist distributive politics as exclusive (in distinguishing between citizens and non-citizens) and implicitly normative. Feminist and anti-racist critiques unveiled assumptions about the subject of politics as male breadwinner (Drake, 2010: 98; Lister, 2007), which assumed the subject of politics to have the same needs, opportunities and ambitions, thereby 'implicitly excluding or pathologizing difference, not only of gender but of other social identities also (Drake, 2010: 98). The movements engaged in identity politics 'arose in the first place precisely to protest the disguised particularisms – the masculinism, the white-Anglo ethnocentrism, the heterosexism – lurking behind what parades as universal' (Fraser, 1997: 5).

Groups different to the norm, 'communities of value', struggle 'to defend their "identities" against "cultural domination"' (Fraser, 1997: 2). However, both greens and feminists also emphasise the importance of recognising fundamental relations and continuities between humans and others, the complex dependencies and interrelationships which constitute the social and ecological realms. By simultaneously denying both continuities and differences, radical separation and relational incorporation of human and nonhuman nature bolster domination within the human world.

Conceptions of what makes a good human in anthropocentric culture tend to

> reinforce [..] discontinuity by devaluing the qualities of human selves and human cultures it associates with nature and animality in the human self, and thus also to associate with nature inferiorised social groups and their characteristic activities, real or supposed' (Plumwood, 2002: 107).

As Markell's (2003) rearticulation of Hegel's master/slave relation indicates, this is reinforced by the division of labour. This enables those who are dominant to 'associate themselves with the overcoming or mastery of nature, both internal and external, and the management of colonised groups' (Plumwood, 2002: 107). The dominant self is distanced from both human and nonhuman other, this distance and the hierarchical relation of domination and subordination is naturalised, and the dependency of the dominant self upon both is denied and backgrounded at the same time as the independent worth and difference of both human and nonhuman other is distorted and homogenised .

In crystallising and emphasising both continuity and difference in complex interactions between selves and others, Plumwood (1993, 2002) highlights these apparently contradictory, yet vitally important tendencies. She argues that the problematic value and meaning systems which underlie the dominant interactive processes between selves and others have certain features which enable a simultaneous disrespect of relation and of continuity (between humans as well as between humans and nonhumans), at the same time as they disrespect the other's independence of self (the other's difference). This contradictory, simplifying logic of mastery between dominant self and subordinate other obscures the dependency and vulnerability of the dominant self within the complex and often unpredictable interactions between human and nonhuman selves and others.

Yet this logic is not completely totalizing. Du Bois' 'double consciousness' of the oppressed has emancipatory potential when 'the oppressed subject refuses to coincide with devalued, objectified, stereotyped visions of herself or himself' which means that a sense of 'positive subjectivity, recognition and affirmation' can often be maintained from within the oppressed group (Du Bois' 1969, in Young 1990: 60). As I will argue in the next section, while unpredictability in interactions between selves and others is unavoidable, and attempts to stabilise and escape this through domination remains an ever present possibility, this does not have to result in relations of domination and subordination between selves and others and requires ongoing contestation.

Articulating recognition-based injustices: disrespect for integrity in the politics of nuclear energy

Within the hierarchical value and meaning systems of the dominant anthropocentric self the contradictory use of 'nature' to assert radical separation as well as relational incorporation between human and nonhuman selves and others has subordinated important realms of both human and nonhuman nature and insulated the dominant self from its own vulnerability and dependencies upon both human and nonhuman others. Markell (2003: 23) points out that

> the very invocation of identity carries with it the prospect of violence or domination; and this, in turn, often inclines us to think of the constant destabilization of identity as a necessary component of any just politics – even if, as we also often acknowledge, identity remains something we cannot do without.

Combining the analyses of both Plumwood and Markell shows how 'nature' has been used in anthropocentric value and meaning systems to stabilise relations of recognition in order to provide a measure of predictability in interaction. The image of politics as recognition has itself fallen foul of such hierarchical value systems. The socialist and feminist recognition of difference and ecofeminist politics of care and ethics which has accompanied this, have been seen as symbolising a softer, more romantic and naïve notion of politics which seeks to overcome alienation in human and human-nonhuman relations. Yet the analysis in section one shows domination as one response to the inevitable unpredictability in relations between selves and others as a result of ever-

167

present continuities and differences between these. This highlights the persistence of possibilities for recognition-based injustices in self/other relations with the implication that rather than being a secondary concern, the ongoing contestation of injustices in terms of the politics of recognition is of vital importance.

The injustices which arise in the politics of recognition may therefore be articulated as *disrespect for integrity*. For Honneth (1992: 189) disrespect for integrity involves both symbolic and material harms such as bodily injury, torture and rape. Within an anthropocentric understanding of recognition the emphasis has been upon intersubjectivity and the psychological experience of disrespect as a 'particular human vulnerability,' and of integrity as enabling a subject to 'regard society as supporting him over the entire range of his practical relationships to self' (Honneth 1992: 196). However, as Schlosberg (2007: 160) also points out, unwanted exposure to ecological harms is a matter of the loss of control over one's body due to actions of more powerful others and is 'a type of physical abuse, especially given the direct health effects shown to be produced by, for example, exposure to lead in urban housing or uranium mine tailings on Native American reservations.'

Honneth's (1995: 132) understanding of physical integrity and the injustice of 'practical maltreatment in which a person is forcibly deprived of any opportunity to freely dispose over his or her own body' can also be expanded to thinking about damage to ecological systems and communities (Schlosberg, 2007: 132). The notion of 'integrity' has been used in ways which cross 'natural' and 'social' scientific, as well as popular thought and it was a key principle of the Earth Charter, referring to 'the integrity of Earth's ecological systems, with special concern for biological diversity and the natural processes that sustain life' (Miller & Westra, 2002: xvii, 11). I use the word integrity as short-hand for the continuities and differences between entities (including humans and nonhumans), and the complex ways in which these interact with each other within a relational whole consisting of our understanding of 'what is.' Disrespect entails disregard, ignorance and insult to these and is just as relevant to describe our treatment of nonhuman nature. An awareness of ecological integrity moves beyond, for example 'older monological socialist forms that define value exclusively in terms of human labour and production, as the key characteristics of the human', and instead conceptualises 'the production of

value in more mutualistic terms that recognise the crucial contribution of the non-human to the production and reproduction of value', thus highlighting the sphere of reproduction previously denied (Plumwood, 2006: 56; Shiva, 1997, Salleh, 1997). An ecological understanding of disrespect for integrity includes both material and symbolic injuries to the status of ecological entities which covers the harms of both radical separation and relational incorporation described in the previous section. This includes disrespect for the integrity of the self, for it fails to recognise other potentially more liberating self/other relations, potentials which are closed off if we refuse to each 'bear our share of the burden and risk involved in the uncertain, open-ended, sometimes maddeningly and sometimes joyously surprising activity of living and interacting with other[s]' (Markell, 2003: 7). Thus crucially, disrespect for integrity also describes the dominant human disrespect for our own finitude and vulnerability within the broader integrity of common life.

How then, does the articulation of disrespect for integrity help us to gain a different perspective upon the thesis problem whereby significant harms to human and nonhuman nature produced by nuclear energy remain difficult to express within the dominant discourses? As discussed in Chapter One, despite ostensible recognition of environmental issues in dominant understandings of political community, the manner of this inclusion and the status given to aspects of nonhuman nature vis-à-vis humans is still highly problematic. In the 2008 White Paper on Nuclear Power, Gordon Brown emphasised that '[m]ore than ever before, nuclear power has a key role to play as part of the UK's energy mix. I am confident that nuclear power can and will make a real contribution to meeting our commitments to limit damaging climate change' (BERR, 2008: 4). The problem is confined to a limited understanding of the environment as a matter of climate change which entails carbon emissions reductions, but does not consider any other action on the part of the dominant human self.

To simply incorporate the nonhuman other as 'damaging climate change' not only fails to interrogate the position, value and meaning systems of the dominant human self but also portrays the nonhuman other as a threat, as something to be controlled and limited (see also MacGregor, 2013). Counting carbon emissions may be seen as an aspect of the domination of abstract 'rational management' over nonhuman nature reduced to numbers. In this way the dominant self can afford to forget integrity in self/other relations. This

constitutes disrespect for integrity, not only of the nonhuman other, but also of the dominant human self, for it fails to acknowledge the disrespect for integrity which climate change is itself a response to. Without conceding this injustice there is no guarantee that 'the same approach will not immediately be repeated somewhere else where it might be equally damaging' (Plumwood, 2002: 116).

The suggestion of nuclear energy as a solution to climate change assumes human control and excludes concerns about human ability to eliminate potentially catastrophic risk (regardless how small) of nuclear accidents, or to manage immensely dangerous high-level radioactive waste into the unknown future. It also neglects the risk of disrespecting the integrity of different human and nonhuman populations through the as yet unknown cumulative effects of increasing levels of background radiation.

Markell (2003: 26) problematizes the implicit role of the state in consolidating an illusory or parasitic sovereignty through the processes of hierarchical differentiation described above. He points out that many theories of recognition either let the state fade into the background, concentrating instead on exchanges between individuals, or the state is seen in Hegelian terms, as a mediator between self and other, enabling the harmonization of social life and solution to struggles for recognition. It is for this reason that recognition is usually conceived as something that may be granted simply by extending the realm of the political or moral considerability. This also enables a shift in focus away from the sources of inequality and those who benefit from unequal institutionalised power relations to a kind of depoliticised focus upon improving the position of the other through the apparently neutral power of the state. As a result, the extension of the arm of state regulation into economic and private life and with regards to legislating for protection or management of the environment is seen in relatively unproblematic terms.

The relation and contradiction between our own desire for sovereignty and the idea of state sovereignty is fleshed out by Markell so as to highlight the trade-off made by citizens in their desire for sovereignty and their attribution of sovereignty to the state. It is not just that the state's 'desire for sovereignty feeds relations of subordination that are external to it' but that the 'state is itself a relation of subordination, fed by our own desire to find a kind of agency we cannot possess on our own in the experience of belonging to a larger whole' (Markell, 2003: 32). On the one hand it overestimates the power of the state for

controlling and resolving conflicts which are inherent and naturalised in its very make-up, while on the other hand it underestimates the entrenched power and interest of the state in perpetuating an extending social subordination as a means of perpetually eluding the unavoidable contradictions inherent in it. '[A]s a bearer of the displaced aspiration to sovereign agency, the state participates in and reconfigures but by no means transcends, the conflictual and potentially unjust dynamics of recognition' (Markell, 2003: 126).

Markell (2003: 29) develops this line of argument, that looking 'to law and the state to redress social injuries may depoliticize rather than transform relations of domination.' He does this, however, by giving more attention to the idea of sovereignty, arguing that it is precisely the idea that is important, for while

> The juridical doctrine of sovereignty, taken as a description of the nature of power, may well be a false or incomplete representation, it is nevertheless a potent representation within the modern political imaginary – one which, whatever its truth-value, affects the formation of political subjects through exactly those productive mechanisms of power to which Foucault draws our attention (Markell, 2003: 29).

Markell (2003: 30) argues that 'characterizations of the state as sovereign are implicated in the same underlying misrecognition – in the sense of a failure of acknowledgement [which he ascribes] to the politics of recognition more generally.' So, although states are in many ways 'disproportionately powerful actors', for them, sovereignty is just as much an unattainable goal as for individuals.

Thus, attempts to extend recognition to others often at best deal with the symptoms and effects of subordination, while simultaneously reproducing the 'problematic aspiration to sovereignty in which those effects are rooted' (Markell, 2003: 31). Reform to ostensibly improve recognition, in this sense then, although often improving things for some within a polity, may also produce or reproduce other 'ways of stratifying the social world, which still distribute vulnerability and dependence unequally' (Markell, 2003: 31-32).

Inclusion in the realm of politics without challenging the dominant understandings perpetuates rather than challenges the inside/outside understanding of politics which means that other forms of domination continue. Because these forms of domination are considered outside the realm of politics they are more difficult to articulate as injustices and address politically (Markell,

2003: 128). Markell (2003: 128-9) argues that rather than being accidental, this is a side-effect of the way in which the modern state legitimises its own power in inside/outside terms. This means that by looking only to the state to manage environmental concerns, assumptions about our power over nonhuman nature are disguised and made even more difficult to address. The mechanisms of state power tend towards centralised solutions to energy and minimum disruption to the perpetuation of economic growth. Thus technocratic solutions become more appealing, and the sovereignty of the state in controlling and securitising the risks which accompany such large-scale projects is taken for granted.

The urge to manage and control the problem of climate change with technological solutions such as nuclear energy which require higher levels of human control and security is symptomatic of the problematic centrist assumptions of the dominant human self and fails to challenge the value and meaning systems which have led to anthropogenic climate change in the first place. The domination of much of nonhuman nature by the human world is becoming total, to the extent that it is now suggested that we have entered the 'anthropocene' (Zalasiewicz et al., 2010). The continued denial by much of the human world of our own dependencies upon the nonhuman other and the limits to our knowledge and power, coupled with the idea that we can successfully control, manage or mitigate the adverse effects of this by means of heightened technologies of domination and control raise the prospect that, as in Hegel's unsustainable and unstable master-slave relation, we have come to need the nonhuman other more than much of nonhuman nature needs us. And yet the rate of ecological destruction remains testament to the ways in which many aspects of nonhuman nature really are deadly dependent upon the decisions of humans who simply do not care or recognise the implications of this.

Recognition of the extent of domination and of our dependence on and continuities with nonhuman nature is vital. This is of course what many deep ecology thinkers have been arguing – for different conceptions of the self. Such alternative understandings intend to strengthen the identification of the self with nonhuman nature and thus attempt to overcome the hyperseparation of human/nature dualism. In a sense this is vital, for the recognition of humans as nature, particularly of 'internal' nature, and the problematic dualist constructions of mind/body and reason/emotion which accompany the denial of this is part

and parcel of the process of human recognition of continuity with biological processes. Indeed, as many have pointed out, scientific thinking and discovery increasingly underlines this understanding of continuity (Hawkins, 1998; Latour, 2004; Cudworth, 2005). However as Hawkins (1998) points out, the knowledge at the scientific level is still not translated into behaviour at the level of the social, for the human/nature dualism is very deeply ingrained. Attention to the intersections between humans, and 'nature' within humans is therefore also important.

However, while recognition of continuities between humans and nonhuman nature are important it is important that there is concomitant attention to difference too. Otherwise recognition of continuities risks slipping into disrespect for integrity through either incorporating nonhuman nature into the human sense of self, or through merging the human self with nature, as feminist critiques of deep ecology have emphasised. Ecofeminists have been sceptical of some of the alternative conceptions of the self which are suggested by deep ecology thinkers such as Arne Naess and Warwick Fox (Plumwood, 1991; Salleh, 1995). Plumwood points out the problems of indistinguishability, where the self tends to be merged holistically with the greater 'natural' whole. This is intended to enable the identification of the other's needs as one's own needs, for example, that the needs of the rainforest are commensurate with human needs, but as Plumwood (1991: 13) points out, on this account 'there is nothing to guarantee this – one could equally well take one's own needs for [those of the rainforest]'. The lack of differentiation and the failure to acknowledge power differentials can have the effect that 'the situation of exploitation of nature exemplifies such unity equally as well as a conserver situation and the human self is just as indistinguishable from the bulldozer and Coca-Cola bottle as the rocks or the rainforest' (Plumwood, 1991: 13). The merged ecological self, whilst addressing the problem of radical separation between humans and nonhumans and seeking to recognise continuity, fails to account for the equally important second point where recognition between self and other has failed – that of difference: 'we need to recognize not only our human continuity with the natural world but also its distinctness and independence from us and the distinctness of the needs of things in nature from ours' (Plumwood, 1991: 13). This danger lies in the emphasis upon nuclear energy as a solution to climate change. The emphasis in some deep ecology

upon 'personal psychological identification and unity as the basis for suitable relationships with the non-human' fails to problematise underlying political and structural failings, including the human-centredness of institutions which play into this, and thus does not provide an adequate tool for dealing with situations of interspecies conflict when they inevitably arise (Plumwood, 2006: 65). If we fail to recognise *difference* as well as continuity, then we will be 'poorly equipped to correct the foundational delusion of self-enclosure and make visible our dependency on the denied and backgrounded presence of nature' (Plumwood, 2006: 65-66).

It is important in this analysis that we do not lose sight of some key analytical distinctions. The simplified model of dominant self (and associated traits, characteristics, behaviours, modes of communication, concerns) and subordinated other can be applied to both human/human and human/nonhuman relations and differences, but eliding the two potentially falls into some of the same problems which the human/nature dualism itself causes. It is the importance of keeping in mind both continuity and difference which supports Cudworth's (2005: 53) point, that it still makes sense, despite the need to highlight the continuities between humans and nonhuman nature (for example when considering the effects of radiation upon the human body), to speak of humans and nonhuman nature as distinct entities. Despite Bruno Latour's (2004: 22, 255) interesting and at times useful discussion of tangled objects and the importance of letting go of 'nature,' it is important also to be aware of the important role that difference still plays in this. Here, Plumwood's (2002: 34) distinction between separation and hyperseparation is useful. The discussion in this chapter concerns recognition of both differences and continuities between dominant selves and subordinated or devalued human others, and subordinated and devalued nonhuman others along with associated traits, characteristics, behaviours, modes of communication, concerns on both sides.

The diversity of nature in such contexts tends to be ignored and its difference from humans is 'a ground of inferiority', it is 'conceived in terms of interchangeable and replaceable units (as "resources", or standing reserve) rather than as infinitely diverse and always in excess of knowledge and classification' (Plumwood, 2002: 107). This can lead to 'a serious underestimation of the complexity and irreplaceability of nature', with, for example, 'scientists assum[ing] their own genetically engineered replacements

for natural species and varieties are always superior, although they have not been tested for survival over a range of conditions nearly as rigorously as naturally evolved varieties' (2002: 108) (as with many GM crops).

The disregard inherent in the rationalist, economistic, centrist system dominant in contemporary global order enables both devalued human and nonhuman nature to undergo recognition-based injustice whereby it is seen as an endless and exchangeable resource for utilisation or as a universal dustbin to be forgotten about. Thus we have seen low-level nuclear waste disposed of in the oceans (until it was prohibited in 1994), intermediate-level waste from French nuclear power plants ending up in open-air waste pits, bought cheaply for 'recycling' in Siberia and agreements for nuclear waste from Japan to be finally disposed of in Mongolia (Hamblin, 2008; Reuters, 2011; Spiegel, 2009). In Taiwan there are disputes over nuclear waste repositories on indigenous lands (Fan, 2006), similar to those in US Nevada on Navajo land (Endres, 2009). Nonhuman nature and less recognised, often poorer and otherwise disadvantaged other humans in remote parts of the world bear the brunt of the excesses of the rich world's consumer society. These injustices result from backgrounding and devaluation as well as splitting and hyperseparation through the division of labour and the global divisions between production, consumption and waste, which form the predominant structure of relations between selves and others in the contemporary world.

Nonhuman nature is backgrounded and human dependency upon it denied, 'systematically, so that nature's order, resistance and survival requirements are not perceived as imposing a limit on human goals or enterprises' (Plumwood, 2002: 108). As Plumwood (2002: 108-109) points out

> crucial biospheric and other services provided by nature and the limits they might impose on human projects are not considered in accounting or decision-making. We only pay attention to them after disaster occurs, and then only to restore the status quo, to fix things up. Where we cannot quite forget how dependent on nature we really are, dependency appears as a source of anxiety and threat, or as a further technological problem to be overcome.

This is clearly evident in the dominant discourses about climate change and nuclear energy.

This is exemplified in the relations of both states and markets to nuclear power. Many states grasp at or cling on to nuclear energy as a sign of sovereign progress and prestige (over both human and nonhuman nature)

which may be traced back to its origins in (and continuing potentials for) the production of atomic weapons. Where nuclear energy is sufficiently backed up by the state, markets are willing to take the risks of investment, but they are consistently reluctant where this is lacking (Sovacool & Valentine, 2012). The dangers associated with the high-level radioactive materials produced, demand high levels of government responsibility and control in decommissioning and handling waste even in countries such as the UK and Japan where the industry has been liberalised. The ongoing nuclear disaster in Japan highlights the dire consequences when that apparently miniscule risk of disaster escapes the confines of carefully controlled and measured expert human risk assessments and becomes real. As Brian Wynne (2011) has argued, expert risk assessments do not satisfy large proportions of the public because what they are intended to predict is in fact by its very nature, the unpredictable. Human fallibility and a conception of the self which matches this is often lacking in dominant scientific and technocratic approaches (see also Haraway, 1988). Reports have shown the reduced tolerance to risk displayed by experts when asked to imagine themselves as fathers in situations where they are not in positions of 'expert' control over risk (Fischer, 2005: 59).

Lack of recognition of nonhuman nature on its own terms constitutes a failure to comprehend it, or rather to acknowledge the impossibility of full comprehension. This is highly problematic, for to consider the issue in empirical terms, in the 'natural' or more practically oriented sciences there is an increasing acknowledgement of the complexity and difference of the nonhuman (and human) world (e.g. see Haraway, 1988; Forsyth, 2003). Assumptions about understanding the other can lead, not only to injustice towards the other, but also to a failure to fully comprehend risks and the dependency of humans upon nonhuman nature.

When activists raise concerns about their health, the health of children and future generations, as well as the effects of radiation upon wildlife in protected and unprotected areas they are touching upon the parts of human and nonhuman nature which to some extent intersect. Yet although there have been studies concerning the effects of radiation upon nonhumans these are highly limited. The International Commission on Radiological Protection was slow to consider the effects of radiation on nonhumans except where these impacted on humans. Prior to the 1990s, the effects on humans were

considered the standard for the effects on nonhuman others. Even now the consideration is still only very basic, with the use of reference animals, and very incomplete knowledge about effects even on those (Pentreath, 1998). It is also very homogenising, failing to account for differences between different animals (Wrixon, 2008; IAEA, 1992;). Similar points are made about differences in susceptibility between humans, in terms of health, biological make-up and over their life-cycle (Shrader-Frechette, 1991b: 191).

It is therefore important to consider differences between ecological contexts and difference and change within nature, both human and nonhuman. This implies the need for reflexive sensitivity to different ecological contexts, again relating back to the importance highlighted in the introduction to this thesis, of a more open than closed means for considering injustices. Importantly, humans do not fully understand the effects of their experiments upon nonhuman nature. Oreskes et al. (1994) highlight the slippage between heuristic numerical modelling devices intended to aid understanding of effects and an assumption of verification of actual effects when this is actually impossible due to the open, complex and essentially unpredictable character of natural systems. Openness to complex relationships is of great importance, and is at odds with the 'dualistic stance of ethical closure that insists on sharp moral boundaries and denies the continuity of planetary life' (Plumwood, 2002: 145).

The emphasis upon human hubris and fallibility is a common theme at anti-nuclear protests, and is often seen as irrational or cynical fear mongering. However, it highlights the disrespect for ecological integrity entailed in the arrogant assumption of human control over nonhuman nature. Such disrespect also includes the failure to recognise that risk assessment cannot account for the unpredictable - that which is not fully understood (Wynne, 2011). Reconsidering the human self in terms of dependency and relationality, as well as difference, involves a consideration of the fallibility of humans regarding the risks of nuclear energy. Human presumption with regards to the short and long-term controllability of nuclear power is tied up with conceptions of the self as separate and superior to nonhuman nature.

A different quality of relations of recognition is possible. At Hinkley Point, the site for the first of the UK's proposed new nuclear power stations, those resisting are concerned for the integrity of nonhuman nature, for badgers, bats, nesting birds and trees which will be destroyed. Take for example the emotion

of a Bridgwater activist who finally succeeded in gaining a tree preservation order for some of the trees on the Hinkley C site: 'I'm actually elated, it is so important that EDF don't get to completely decimate this site without planning permission, there are at least a dozen notable/veteran Oaks in this copse' (Clarke, 2011). Recognition of nonhuman nature, which goes beyond understandings of it for the good of humans alone and the assumptions about nonhuman nature along property and means-to-end lines, is conducive to understanding and articulating those types of injustice which address such issues of connectedness and attachment.

Such concern extended to the occupation of trees which were at risk from felling during the preliminary works, and occupation of farmland next to a barn where bats were roosting, and the willingness of some to resist a court order to leave and thus undergo arrest and court appearances. The individuals concerned profess emotional ties to the countryside and animals inhabiting it. At blockades many have worn badger face masks to highlight the forced relocation of badger colonies from the site and signify solidarity with the nonhuman. This willingness to put self at risk for the sake of the other, contradicts the dominant purely anthropocentric conceptualisation of individuals.

Understanding the politics of recognition in this way enables a critique and articulation of injustices of nuclear energy on the basis of its disrespect for the integrity of both human and nonhuman nature. On the part of the dominant human self, to disrespect one's own dependency upon nonhuman nature, one's finitude and the limits to one's capacity for control of the other is to succumb to an illusion of power which must ultimately fail, thereby causing a constantly insecure and unstable basis to relations with the nonhuman world. This is an instability and insecurity which exacerbates the quality of relations within the human world and vice versa. While to a certain extent such instability may be stabilised in inter-human relations of subordination within the state, the limits of existing state forms in the face of complexly interconnected global ecological limits is increasingly apparent. The persistence of disrespect for integrity in self/other relations in response to increasing ecological crises may have problematic repercussions upon both human and nonhuman alike and requires contestation.

Political efficacy of articulating recognition-based injustices: transformative possibilities for valuing integrity in common life

In this chapter I have suggested an understanding of integrity that accounts for both continuities and differences between ecological entities, and an articulation of injustices of recognition as disrespect for integrity in complex self/other interactions. In the previous section I detailed some of the ways in which this articulation enables us to gain an ecological understanding of all affected in the politics of nuclear energy, and the ways in which this challenges the constitution of political community assumed in dominant discourses and opens up the question of how we might live together. Disrespect for integrity provides a language with which to articulate both continuities and differences between entities and may therefore provide common ground for solidarity in struggles against hegemonic self/other relations. Articulating injustices in this way opens up possibilities for ongoing contestation of the question of how we might live together, with potential, not only for better understanding of the differences and continuities between the basic necessities required by all affected (Chapter Three) but also for reconfiguring the quality of self/other relations which affect such basic necessities. In what follows, I consider some of the transformative potential as well as the limits of articulating and contesting recognition-based injustices, particularly with regards to human/nonhuman relations.

Respecting integrity involves careful attention to both continuities and differences and ongoing contestation of these. I argue that there is great potential for challenging dominant discourses and practices with ongoing contestation of disrespect for integrity, displacing rather than replacing hierarchical forms of domination in self/other relations and embracing the ongoing unpredictability and therefore also possibility, inherent in common life. However, there are limits to the efficacy of articulating disrespect for integrity if the desire to overcome the separation and atomism which pervade dominant anthropocentric and liberal capitalist discourses slips into a desire to overcome alienation in self-other relations. In this section I make this argument, firstly, by considering the political efficacy of articulating ecological injustices of recognition and the potentials which exist within the dominant discourses for transforming conceptions of political community. Secondly, I show how articulation of recognition-based injustices can combine with articulation of

distributive injustices to challenge the dominant discourses, and how articulating recognition-based injustices alone is not always sufficient for political efficacy. Thirdly, I suggest that we also need an understanding of representation-based injustices, particularly to challenge the tendency to deny difference and the agency of the other through the ever-present quest for security and sovereignty apparent in the politics of recognition.

I begin by considering how articulating ecological injustices of recognition is politically effective. By moving beyond inside/outside conceptions of political community an understanding of integrity helps to build common ground between those suffering injustices and to articulate these in solidarity with each other in order to counter the dominant conceptions of political community. An understanding of integrity in self/other relations can help to expose how within the dominant discourses and practices of modern state sovereignty and individual sovereignty in market relations, there are also potentials for transformation. There are potentials in the interactions in everyday life and in green conceptions of the 'commons' which challenge the dominant conceptions of sovereignty and invulnerability in self/other relations. These involve the possibility of transforming and moving away from reductive understandings of the other.

Reassessing and critiquing the anthropocentric understandings of the dominant human self can transform our understanding of the relations between selves and others and the conditions and possibilities of interaction as they unfold in social/ecological spheres. But this also involves a critique of the underlying institutions, norms and values which structure such interaction. This latter point emphasises why such analysis of self and other, whilst often seeming individualist and appearing to locate change only at the personal level, or the level of culture, has implicit within it (and this really needs to be emphasised and made ever more explicit) a structural socio-political-economic critique.

There are potentials within the dominant discursive structures. Modern complex industrial and post-industrial societies rely upon self-regulation and therefore 'institutional organisations put resources of knowledge and communication at our disposal' enabling 'the development of capacities for training and education and the ability to transform oneself as an individual' (Drake, 2010: 148-149). This has the 'dual effect of both increasing

(Foucauldian) control over every aspect of life, but also, because it relies upon this as a means of control, increasing potential individual autonomy' (Drake, 2010: 148-9). Through ongoing interaction and relations within society which go beyond, or are not only about social control and top-down organisation, 'networks of social actors are able to use such resources in ways not intended by agents of control', so '[i]ndividuals in complex societies "work on themselves" in interactive negotiation with others in everyday life through the language they use, their sexual practices, emotional management, dress, patterns of consumption, and so forth, and in the process make cultural innovations' (Drake 2010: 149).

Interaction establishes '[t]he meaningfulness of these innovations', and 'constitutes a form of collective action which modifies the social order. Everyday life thus becomes a political theatre, in which given identities and practices become contested' (Drake, 2010: 149). Thus collective action can include the undertaking of 'experiments in everyday life, creating new experiences and forging new social identities' (Drake, 2010: 149). Such action may be 'institutionally invisible' but yet still 'effectively transform society without formal political or cultural representation' through 'interpersonal networks, consumption networks and the use of public space, effectively changing social reality from within, simultaneously bypassing "politics" and politicizing the everyday' (Drake, 2010: 149). The politics of recognition is therefore also about transformation in everyday life, 'opening the possibilities of life itself' (Vaneigen, 1979, in Drake, 2010: 149). And it has proved 'extraordinarily successful in shifting social attitudes and opening up new ways to live' (Drake, 2010: 154). This is a politics based 'on cultural production and consumption, on everyday life' (Drake, 2010: 154). It is the politics of ever shifting value and meaning in social interaction.

The idea and experience of the 'commons' has been used as an actually existing and potentially prefigurative counterpoint to the logic of capitalist economic development, the enclosures and expanding commodification of life forms this encourages, the resultant concentrations of power and wealth which also exacerbate the marginalization of other ways of being and relating and the resulting excesses of anthropocentric technocratic expert-reliant culture (Paterson, 2005). Such spaces which may exist at decentralised, local levels are seen as remnants of, or starting points for, potentially more sustainable ways of life 'typically organized for the production of use values rather than

exchange values', requiring rough equality of income and power and certain cultural norms such as 'the priority of common safety over accumulation' (Paterson, 2005: 245).

This idea of the commons relates directly to an understanding of integrity, for it entails recognition of mutual dependence. The openness of the idea, its potential adaptability to different local contexts globally, also emphasises recognition of the other side of the integrity tightrope, that of difference. This is similar to the idea of permaculture, with its ethic of 'care for the land and the people', and its emphasis on allowing ecological individuals and communities 'to follow their own, intrinsically determined course of development' according to context (Gordon, 2008: 137; see also Trapese Collective, 2007). The commons encapsulates a powerful 'counter-hegemonic' ontology (or set of ontologies) which arguably might have more potential for avoiding the traps of the more monological hegemonic ways of being which it challenges. Thus, alternative conceptions of the self and relations between human and nonhuman selves and others are apparent in the emphasis by many protestors on more ecological forms of living, reduced material and energy consumption, lower-impact living, and decentralised microgeneration of energy which radically reconfigure the extent of human control over nonhuman nature, as well as the extent of some humans' control over resources needed by other humans and nonhumans

My second main point in this section is that the articulation of recognition-based injustices is helpfully considered in combination with the articulation of distributive injustices (discussed in Chapter Three). While articulating distributive injustices exposes patterns of deprivation of basic necessities across time and space, as well as to nonhuman nature, by itself it may not easily challenge the dominant understandings of basic necessities (of the goods and burdens) of common life. The articulation of recognition-based injustices as disrespect for integrity (continuities and differences between ecological entities) opens up the possibility of challenging the inside/outside understanding of politics and the accompanying linear, instrumental model of production. Such conceptions of politics and production emphasise goods and fail to adequately consider burdens, and involve a unidirectional understanding of power in self/other relations as power-over which necessitates an inside/outside

conception of politics, emphasising state and individual (human) sovereignty as independent from ecological relations.

It is important to consider the critique of the state as a key political mechanism for emancipation and arbiter of social conflicts and problems in conjunction with an understanding of capitalist markets, also seen by some as a potential source of emancipation. The 'sovereignty' of the market is also dependent upon the idea of state and individual sovereignty for stabilisation and regulation of internal conflicts and contradictions. Markets too act as mediators between our struggles for sovereignty, and enable atomism and a certain denial of dependency through monetary relations. The idea of the free market also masks power relations and legitimates and perpetuates cultural as well as economic inequalities. It is therefore important to understand markets as potential transmitters of injustices in ecological terms.

Articulating disrespect for integrity challenges the dominant conceptions of basic necessities entailed in consumerist culture. In particular, this articulation challenges person/property dualism which corresponds to the hierarchical separation of nature/culture. For Plumwood (2002: 147) it is the Lockean model of property ownership and person/property dualism which accompanies it, that reinforces the commodification of the nonhuman world and hence injustice to it. There is a 'broad and deep gulf' between those who can own and those who can be owned and exchanged for property' and this gulf corresponds to such binaries as human/nonhuman, subject/object, consciousness/mechanism, respect/use and those worthy of protection from injustice and those not worthy (Plumwood, 2002: 146). According to dominant capitalist discourses rationality is identified with egoism and competition over property with the result that recognition of injustices to the nonhuman world is minimised and comes second to capitalist production and economic growth (Plumwood, 2002). Minimising the class of beings entitled to defence from injustice 'maximises the class of other beings that are available to be treated with maximum ruthlessness as resources or commodities' (Plumwood, 2002: 146).

Privileged groups 'often aim to set themselves apart from otherised groups' through overconsumption, and 'develop a culture celebrating consumption' (Plumwood, 2002: 87). The dominant understanding of well-being relies upon understandings of individual sovereignty according to the dominant

discourses of consumerism which exacerbate disrespect for both human and nonhuman others, backgrounding and exploiting aspects of these. If these consumerist tendencies come to dominate in the public sphere, the cultural hegemony of social privilege exacerbates ecological damage (Plumwood, 2002: 87).

This clearly relates to energy politics which is very much tied to consumer culture. Tracing such mechanisms back to the unrealistic desire for sovereignty helps us to clarify some of the problems with a simplistic, one-sided drive for recognition and means by which misrecognition is perpetuated. Greta Gaard (2001) provides a comprehensive and critical ecofeminist account of how this has occurred with regards to the treatment of water in the US and Canada. Gaard (2001: 167) argues that

> our conception of power and energy, as well as our relationship to water, is based on a linear model [..] based on the assumption that energy can be continuously extracted from nature – from water, from poor people, from people of color, from women – [..] and in the process, wastes are produced: noise, electromagnetic radiation, flooding, pollution.

This linear model coincides with conceptions of power as 'power-over' which support the centrist relations of hierarchical domination Plumwood (1993, 2002) describes and which Markell (2003) discusses in his examination of the elusive drive to sovereignty engaged in by the dominant self.

An understanding of integrity, of inevitable continuities and differences between selves and others enables the displacement of the dichotomy of use/respect to a more reciprocal and multi-valent understanding of power relations where 'use' does not necessarily preclude 'respect' and vice-versa (Plumwood, 2002: 145-146). This helps to address the problem whereby those deprived of basic necessities are pitted against each other, particularly if it is combined with a challenge to how the dominant discourses perpetuate growing inequalities and increasing deprivation of basic necessities of the many to the advantage of a few under conditions of capitalist accumulation. The trade-off argument between the interests of humans and the interests of nonhuman nature represents a continuation of person/property dualisms, whereby the 'moral extension of the class defined as 'resource' is represented as nothing less than a matter of justice to less fortunate members of the 'person' class', many of whom were also historically understood as resource (Plumwood, 2002: 145). Moving away from such moral dualism is then seen as 'depriving persons

of property or resources that are rightfully theirs'. So, Plumwood (2002: 145) goes on:

> [j]ust as poor whites were seen to be further deprived by the liberation of slaves, and working-class men by the liberation of women, so our duty to underprivileged humanity is seen to require the continued treatment of animals as mere resources, and of trees as mere fodder for timber mills.

However, Plumwood (2002: 145) believes that moving away from a moral dualist conceptualisation is possible and the conflict scenario can be reconceptualised in more complementary ways. She argues that such conflicts between the good of one and the good of the other should be circumvented and eliminated where possible. This applies to both intraspecies and interspecies conflicts. Opting for solving such conflicts avoids multiplying and reinforcing them. Thus Plumwood argues that we have a 'methodological obligation to seek out and favour complementary over competitive constructions of justice spheres, other things being equal' (2002: 145). Markell's analysis would suggest, similarly to Plumwood that the competitive drive to an impossible goal of sovereignty is part of the problem here. The follow through for Plumwood (2006: 72) is that

> a dialogical form of rationality aimed at mutual benefit clearly cannot be one that aims at maximising outcomes, including economic outcomes, for just one party, the human party. A dialogical economics would replace monological economic maximisations by concepts of sufficiency or enough.

This follow through crucially doesn't only affect the relations between humans and nonhuman nature but also between humans.

Thus we see how recognition-based injustices can fruitfully be articulated in relation to distributive injustices in challenging the dominant discourses. It is helpful to consider recognition-based injustices in conjunction with distributive injustices, rather than simply on their own, because awareness of distributive injustices, in this case particularly to nonhuman nature, helps to reinforce the potential for an articulation of recognition-based injustices which challenges traditional inside/outside conceptions of recognition. Both Fraser (1997) and Plumwood's (1993: 66) analyses imply that it is possible to make normative judgements about the relative value of different norms, practices and interpretations which can enable 'movement beyond the old, polarised understandings, redefining the ground and renegotiating hyperseparated identity.' Fraser (1997: 202-203) calls for a 'differentiated politics of difference',

a 'critical theory of recognition' which defends only those versions of the politics of difference which are 'genuinely emancipatory'. As discussed above, this is more likely when articulations of recognition-based injustices are considered in conjunction with articulations of distributive injustices.

This takes me to my third main point. There are pitfalls in the politics of recognition which may be difficult to escape without concomitant articulations of both distributive and representation-based injustices. The ever present desire for stabilisation of social relations, for certainty in relations of interaction is the reason why state and market exist in the first place and this desire for sovereignty will not disappear simply because of emancipatory intent of and for others (in fact it is likely to continue for this very reason). Relations of interaction which are apparent in the politics of recognition can also be fruitfully understood in terms of the politics of representation. The politics of representation enables articulation of injustices which fail to attend to authority and agency, also aspects of the difference of the other, in self-other relations.

Markell (2003) points out the importance of acknowledging the basic ontological situation of all selves as dependent and vulnerable. This dependence and vulnerability is what leads to the pursuit of sovereignty. While it may appear that a community of mutual recognition would achieve this in a better, less alienated way than within a community structured by hierarchical relations of domination, to succumb to this illusion involves once more succumbing to the illusion of sovereignty understood in inside/outside terms. It is by means of the illusion of sovereignty that 'we insulate ourselves from the weight of our finitude, displacing our aspiration to sovereign agency onto a larger whole with which we identify' (Markell, 2003: 95). This desire for sovereignty and belonging is an ever present one and therefore an ever present cause of injustice. As a result, adhering to idealised notions of community as overcoming alienation and recognition-based injustices 'misses the point, and worse' because in providing security and a sense of sovereignty it dulls our sensitivity to injustices and may well affirm and intensify, rather than alleviate them (Markell, 2003: 95).

Recognition alone cannot articulate the injustices of power and resources which bolster and maintain dominant conceptions of the self. It is this which has led to the concern amongst some theorists that the politics of recognition and difference can also fail to achieve the critical distance from the liberal pluralist

status quo (Salleh 1997). All this brings us back to the importance highlighted also by Young (1990), of addressing underlying institutional and cultural causes of injustice. Markell's (2003) critique of recognition as pursuit of an illusory sovereignty illustrates the fundamental failure to recognise the finitude, vulnerability and dependency of the human self which is evaded, albeit temporarily, by means of institutionalised forms of subordination and divisions of labour in the dominant forms of social organisation, the institutions of the state and capitalist relations. We therefore see how injustices of recognition are also closely linked with injustices of representation. Injustices of recognition arise out of complex processes of interaction, our understanding of which can also be assisted by thinking in terms of the politics of representation.

When we begin to think about recognising nonhuman nature we come up against the limits of recognition-based injustice for articulating socially produced harms. For Taylor (1992: 72), the lack of knowledge about the other on the part of the dominant self is what, for him, makes some arguments calling for automatic equal recognition problematic, as he wonders how recognition can occur when there is this gap of knowledge, and is there not

> something midway between the inauthentic and homogenizing demand for recognition of equal worth, on the one hand, and the self-immurement within ethnocentric standards, on the other?

However, inherent within recognition of integrity is the acknowledgement that difference cannot be fully comprehended by the self. Indeed Taylor (1992: 72) himself begins to overcome the problem by calling for the '*presumption* of equal worth' and this is something which especially applies from the position of the powerful self in relation to others, and can especially be considered in relation to the problems of extending thinking about recognition-based injustices to nonhuman nature. Plumwood (2002: 172) argues that we can conceive equality 'both along the axis of sameness and along that of difference'. The former presents us with 'scalar equality,' the latter gives us an understanding of incommensurability and 'non-ranking' (Plumwood, 2002: 172). It is the latter which Plumwood argues is needed if we are to think about the intrinsic worth of the nonhuman and its inclusion within conceptions of mutual recognition. This is because, between categories of different beings, 'many of whose capacities the ranker may not be in a position to know, insistence on ranking (on a scale of superior/inferior which includes the case of equality) is both poor methodology

and symptomatic of an arrogant stance of closure which is impoverishing and limiting for both human self and nonhuman other' (2002: 173). As Taylor's (1992: 73) discussion highlights, 'it would take a supreme arrogance to discount this possibility [of equal worth] a priori' and 'we only need a sense of our own limited part in the whole human [or to move beyond anthropocentrism - life] story to accept the presumption.' Taking this approach suggests that we be willing to engage in learning processes in interactions between selves and others which 'displace our horizons in the resulting fusions' (Taylor, 1992: 73).

However, the difference of nonhuman nature means that it is liable to be subsumed within our meaning systems without necessarily being able to challenge this in terms we may readily recognise, especially not if we adhere to the dominant anthropocentric discourses. The difference of nonhuman nature (and of many human others) means recognition-based injustices are best contested in conjunction with contestation of representation-based injustices. For while nonhuman nature has been subordinated in the politics of recognition, it has been used as a higher power in the politics of representation, underlining the authority of science, to by-pass political contestation of both the integrity as well as the basic necessities of selves and others in common life.

Plumwood (2002: 177) has argued for an 'intentional recognition stance' towards nonhuman nature which 'allows us to re-animate nature both as agent in our joint undertakings and as potentially communicative other', she says we can 'join scientists like Humboldt in hearing basalt cones and pumice speak their past to the well-versed observer who stops to listen.' Similarly to the Frankfurt School theorists and many others, Plumwood (2002: 172) laments how the reductive stance of modern enlightenment thinking has denied 'to the world [..] the ground of enchantment [..] the butterfly wing-dust of wonder that modernity stole from us and replaced with the drive for power.' Adorno critiques the drive for reenchantment of nature, pointing out that modernity already reenchants by positing nature as the ground for the naturalisation of the dominant hierarchical relationships within the human world as well as between humans and nature. He also points out that the reenchantment desired by many green thinkers is dangerously deceptive, for the experiences of reenchantment 'depend on, and can occur only against the background of, hierarchical social relations which are predicated on the domination of nature' and which 'conceal the dominating character of modern society' (Stone, 2006: 239).

While it is important to bear in mind the human lens and the dangers in according nonhuman nature agency, for fear that it might rebound back into that fear and insecurity which might again cause the reassertion of human domination and control (over both humans and nonhumans), I think to conceive of relations between self and other only in such terms as this is to misunderstand and disregard the possibilities for the relations between. To argue, as Adorno does, that humans only begin to appreciate the beauty of nonhuman nature when they have achieved a position of dominance which enables their security from the fear, uncertainty and the precarity of life (Stone, 2006) is to posit a very narrow understanding of what it means to attain security, and in fact feeds into the dominant understandings of the purpose of the struggle for recognition itself which, as Markell (2003) argues, result again and again in unstable relations of subordination and denial of dependency and vulnerability.

Plumwood (2002: 177) argues that the enchantment is retained or refound 'in many indigenous cultures' and within forms of prefigurative ecological politics. The argument that humans only appreciate the beauty of nonhuman nature through dominance and freedom from fear, points back to a recurring theme which runs throughout this chapter about the intersections between injustice as disrespect for the integrity of otherised human nature and injustice as disrespect for the integrity of nonhuman nature. It is through dominance of both that a semblance of sovereignty and security is achieved by the dominant self, but this is not the only possible way of organising self/other relations. Historically, dominant cultures have denied and neglected this through distancing themselves from other more 'primitive' cultures outside the remit of the category of 'civilisation.'

Plumwood (1993) has also addressed the question, to be considered especially within the human world, but also with implications for human/nonhuman relations, of what should be done to address the very complex lack of recognition of continuity, relationality and dependency on the one hand, and valid difference and independence of experience and perspective on the other. It is a thorny issue which feminists have had to grapple with and touches on the question of the agency, and hence also upon the representation of the oppressed. Using the example of feminism, Plumwood (1993: 65) discusses the importance of distinguishing between

the content and value feminists might now assign to those activities and life-concerns which are allocated women and the low status or powerlessness which the master culture has assigned to them (usually by treating them as 'nature' rather than as 'culture'). The failure to make such a distinction perpetuates rather than escapes the master perspective by denying the life-concerns, values and knowledges traditionally associated with women and other subordinated groups.

This potential slippage arises because of the ingrained nature of the logic, and the fact that, as discussed, the difference that is highlighted is homogenised and conceived in terms of a lack to the complementary difference on the master's side. However, although this process of relational definition has to an extent formed subject identities on both sides, it still does not wholly account for the otherness which escapes the stereotyping of the master discourse.

However, Plumwood (1993: 65) argues that while we should not 'see all difference and all qualities characteristic of women as inseparably imbued with powerlessness, powerlessness is inherent in some kinds of femininity and is not detachable from some characteristics'. Here she gives the example of 'nurturance' and 'empathy', which can mean both 'supporting others, being receptive to their needs and being concerned for and skilful in promoting their growth and welfare; or they can mean making powerful others feel good, bolstering masculinity and ego-massaging, the sensitivity of the slave to the needs of the master' (Plumwood, 1993: 66). In the second sense it is the 'product of the master' and could not be empowered in an equal society. Fraser (1997: 204) touches upon the issue too. She describes three types of difference: i) differences as artifacts of oppression which should be abolished; ii) differences as marks of cultural superiority over the oppressors, which merit revaluation and extension, and; iii) differences as cultural variations which are neither superiorities nor inferiorities, should not be eliminated nor universalised but affirmed as valuable expressions of human diversity. The cultivation of otherised characteristics in the first, positive sense is something which needs to be revalued for the dominant self. So, for example, the common complaint that not enough female children aspire to go into the more technical and scientific professions (such as nuclear science and engineering) needs to be balanced by the cultivation of aspirations by male children to work in the caring professions – the characteristic or skill needs to be detached from its superficial and limiting markers of difference.

Although the present day context gives us much cause for pessimism and despair, histories of liberation politics (and attention to the hybrid nature of such politics) not only teach us to be wary of false hope, but also highlight the possibilities, slim though they might be, for agency and change on the part of the oppressed. So, for example, as Young (1990: 60) points out, W. E. B Du Bois's understanding of 'double consciousness', not only highlights the suffering of the oppressed, but also points to continued agency, the refusal to submit to the dominant discourse. Crucial to this is an ecological conception of agency which involves action for both self and other. The interaction between selves and others is a multi-valent process whereby witnessing disrespect for others also motivates action.

Schlosberg gives the example of 'Vernon Masayeva, a Hopi and executive director of the Black Mesa Trust, an organization dedicated to preserving reservation water from mining use' speaking of his inspiration for activism having come from seeing how 'the elders were being treated, ignored, and ridiculed' in the process of stopping a coal slurry pipeline when he was younger (Masayeva, in Schlosberg, 2007: 61-62). Injustices of recognition can therefore be understood to motivate action in the processes of representation. Understanding the process of motivation arising from witnessing of disrespect of others is important as it emphasises a shift from thinking about human and nonhuman relations in atomist terms, and has implications for the possibilities of human-nonhuman relations of recognition.

However, political efficacy is limited and counter-productive - tending to affirm the dominant structures through reversal rather than transform through displacement – if the articulation of recognition-based injustice succumbs to the dream of overcoming alienation and difference in self/other relations. For, while the desire to achieve this is understandable and perhaps inevitable, it responds to, yet fails to accept the differences as well as the continuities which constitute integrity in self/other relations. Attention to integrity involves ongoing, ineradicable risks 'of conflict, hostility, misunderstanding, opacity, and alienation' that characterise life among others (Markell 2003: 38). While articulating disrespect for integrity is helpful in highlighting continuities and differences, inherent tendencies within the politics of recognition, the desire for sovereignty and security, mean that an emphasis upon community can occur at the expense of the difference and independent agency of those with less power,

such as nonhuman nature. This can be seen in conceptions of the 'anthropocene' and certain constructions of a global human community which must act in the face of climate change. The danger here is that of slippage between the agency and interests of dominant humans and the diverse interests of all others, both humans and nonhuman nature, thus obscuring key power disparities, and perpetuating and deepening injustices.

This chapter has sought to reformulate the image of politics as recognition in order to find words to express how future generations, those in other countries, and nonhuman nature are affected in the politics of nuclear energy not only, as discussed in Chapter Three, by unjust distributions of the goods and burdens of common life, but also by the dominant value and meaning systems which structure understandings of who counts as what in the relations of common life. By way of this reconsideration of the politics of recognition I have adapted an expression of recognition-based injustice as the disrespect for integrity in self-other relations. I proposed an ecological understanding of integrity as signifying both continuities and differences between human and nonhuman selves and others. Contesting recognition-based injustices in this way draws attention to the inherent unpredictability in human and nonhuman interactions and exposes how relations of domination, which are perpetuated by nuclear energy and the prevailing forms of social organisation, mask the dependencies and vulnerabilities of the dominant human self. Integrity in self/other relations does not signify an undifferentiated holism, as is apparent in some conceptions of the 'anthropocene', but instead it highlights a more complex, unpredictable and ever incomplete understanding of self/other relations in common life. Articulating recognition-based injustices can help to contest assumptions about the controllability and acceptability of risk, unmasking dominant assumptions which background and take for granted certain continuities and differences of both human and nonhuman nature and thereby underestimate the vulnerability of the dominant human self in the unpredictable interactions of common life. Contesting recognition-based injustices in the dominant discourses can build common ground in struggles for alternative conceptions of self/other relations, and has potential for innovation

and the opening up of possibilities for alternative futures. Such potential was apparent in the alternative technology movements of the 1970s and 1980s. However, the politically transcendent hopes attached to alternative technologies, apparent in how the knowledge of these technologies has been taken up within dominant discourses, points to the desire to escape the inherent unpredictability of human and nonhuman interaction. Despite an ongoing desire on the part of the dominant human self for harmony and stability, alienation and unpredictability in self/other relations cannot be overcome. For this reason, contestation of recognition-based injustices is an important and ongoing task.

Articulation and contestation of recognition-based injustices can help us to apprehend certain important socially produced harms of nuclear energy regarding who counts as what within the dominant forms of social organisation that nuclear energy reinforces. However, as discussed, it is also important to consider such articulations of injustices in combination with distributive injustices, as interpretations of the status and standing of members of political community tends to be influenced by their relative access to basic necessities. Deprivation of basic necessities limits well-being of both human and nonhuman nature which can then impact upon how interactions between these occur. Those already deprived are either less likely to be able to contest domination in self/other relations, or may contest domination in ways which reinforce interpretations of both human and nonhuman others as threat to order and stability, an interpretation which can then reinforce the position and reduce reflexivity of the dominant human self at the expense of these others. Deprivation of basic necessities for well-being can reinforce and perpetuate limiting and often damaging stereotypical characteristics of the other that disrespect both continuities and differences between selves and others.

As this discussion implies, it is therefore also important that we consider who speaks and acts as what in the politics of nuclear energy. The desire for sovereignty on the part of the dominant self and the inevitable recognition-based injustices resulting from this can be more effectively contested through sensitivity to the agency of others in common life. The agency of others impacts upon the value and meaning systems which structure self/other relations. Greater awareness of this agency can assist in contesting disrespect for integrity by the dominant self. Considering the agency of selves and others in interaction prompts us to consider how the value and meaning systems

structuring self/other relations discussed in this chapter are constructed, perpetuated or transformed through the politics of representation. Articulating representation-based injustices provides yet another heuristic tool with which to apprehend and contest the socially produced harms of nuclear energy that are justified and normalised by the separation of nature/culture, and science/politics in the dominant discourses. This is the topic of the next chapter.

Chapter Five
Articulating Injustices of Representation:
Who acts for what in the politics of nuclear energy?

Within the dominant framings of debates, nuclear energy and the question of our energy future in the context of climate change are a matter for the scientific or technological and economic experts to decide. Influential climate scientists say that there is no place for 'emotions and biases' in addressing this problem; '[w]e ask only that energy systems decisions be based on facts' (Caldeira et al., 2013). As discussed in Chapter One, there is a tendency for government, industry and scientific experts as well as some environmental advocates to view democratic public consultation as counterproductive, an obstacle to the necessary clarity which blocks progress in addressing the complex technical problems upon which 'our' common future relies. The public is assumed to be largely ignorant of the interests of nonhuman nature and of the 'true' risks we face, and unable to objectively assess these. For the sake of all our futures we need 'objective' expert knowledge to cut through the troublesome misconceptions and political biases which block possibilities for urgent effective action.

When the debates are framed in the way just described, 'nature' is understood to be a domain of truth and authority which only a minority can represent, thereby reinforcing the hierarchical separation of nature/culture. The continued separation of nature/culture serves to mask and perpetuate significant harms of nuclear energy. As discussed in Chapters Three and Four, these harms can in part be contested by articulating distributive injustices, drawing attention to basic necessities for well-being and the connections between the distribution of goods and burdens of common life, and they can also be partially contested by articulating recognition-based injustices that draw attention to integrity in self/other relations and the inherent unpredictability in human and nonhuman interactions. In this chapter I complete the development of my heuristic framework for articulating injustices and argue that we can strengthen contestation of the separation of nature/culture and science/politics in the dominant framings of the debates about nuclear energy and our common futures by also articulating representation-based injustices of nuclear energy.

Using the ecological approach to taking all affected into account developed in Chapters One and Two, in this chapter I reformulate the image of

politics as representation in order to achieve yet another view of what is at stake in the thesis problem. Taking all affected into account entails reconsideration of the inescapability of negotiated processes of representation and the role which action, as well as speech, plays within these processes. I argue that we can articulate representative injustices of nuclear energy as denial of authorities of some by others, caused by the monopolisation of authority by disengaged forms of knowledge production.

In the first section, I draw upon justice and green theory to reformulate the image of politics as representation in terms of the ecological approach. Taking all affected into account entails rethinking representation and participation in representative processes beyond traditional state boundaries and the human/nature divide. This requires an expanded understanding of speech and communication to include protest and resistance of many kinds. This expanded understanding of representative processes also involves being aware of the role which action beyond speech and conscious communication may play in these processes. This can include signs of change within ecological systems in response to both our own actions and those of others. Taking all affected into account therefore requires an understanding of representation which accounts for the gaps between speech and action and acknowledges the important role played by both creative and destructive action in representative processes.

In the second section, drawing upon this reconsideration of the role of both speech and action in representative processes, I offer an articulation of representative injustices as denial of multiple authorities. I emphasise a more decentred, situated and multiple understanding of authority which involves a sense of 'authoring', of determining one's own narrative and life. This encompasses both speaking and acting and has both creative and destructive potentials. In redescribing the thesis problem, articulating representative injustices as the denial of authorities in the politics of nuclear energy helps to show how certain spokespeople claim a monopoly of authority, wielding scientific and economic facts and figures in authoritarian fashion, short-circuiting debate over the construction of such facts and figures. This fails to interrogate the ways in which claimed authority is always inevitably situated within political relations. Such denial of the important situated character of authority of both the dominant self and the denied other limits reflexivity and has serious implications

for creative or destructive possibilities of collaboration in common life, particularly in the context of such a politically controversial and high-risk business as nuclear energy.

In the final section of this chapter I evaluate the political efficacy of articulating representative injustices as denial of multiple authorities. This articulation provides a common frame of reference for contesting the monopolisation of authority by some over others. There is transformative potential in reclaiming authority to counter totalising forms of knowledge and the monopolisation of both decision-making and action by certain social actors. This includes potentials for grassroots politics as well as for a reclaiming of the production of scientific knowledge for a more democratic understanding of the common good which involves an ecological understanding of all affected. Crucially it allows for more responsive collaboration and reflexivity in relation to nonhuman nature in representative processes. Articulating and contesting denial of authorities also has political currency as it coincides with discussions of democracy and democratisation in mainstream discourses.

Ecologically reformulating representation:
understanding all affected in both speech and action

Representation has traditionally been understood to be about 'speaking for others in a largely settled institutional context' (Saward, 2010: 18). However, taking all affected into account in an ecological manner means that we need to rethink the image of politics as representation beyond the traditional 'political' sphere of electoral state politics, to include the economic, cultural, and international spheres, as well as think about implications of representations of future generations and nonhuman nature. In this section I argue that taking all affected into account requires us to rethink representation and participation in representative processes in two ways, i) as speech, and ii) as action, with attention to both the creative and destructive potentials of speaking and acting with others. While this more open understanding of representative processes may often though not always involve, in Hannah Pitkin's words, 'a substantive acting for others' or 'acting in the interest of the represented, in a manner responsive to them' (Pitkin 1967: 209; Saward 2010: 10), it will certainly involve attention to working together, or *acting with*, even in cases where one party to

this collaboration perhaps does not yet exist, or is not conscious in any way that humans can understand.

The problem of representing nonhuman nature, and future generations has posed a challenge which has been much discussed, particularly in green theory. Much of this has been concerned with the ways in which nonhuman nature can be represented in political decision-making processes. Robert Goodin (1996: 840) points out that the political mechanisms for considering nature's interests are not at all clear within dominant conceptions and institutions. Enfranchising nonhuman nature in the contemporary electoral sense appears absurd, while communication of nonhuman nature's intrinsic interests by nature itself is often deemed to be impossible, too (Goodin, 1996: 840-841). Similar problems arise with consideration of the interests of future generations, for as with nonhuman nature, those represented cannot speak. Dating back to Aristotle, the long-standing connection between speaking and politics makes it much more difficult to take those that cannot speak into account (Dobson, 2010).

This problem has been tackled in a variety of ways. Goodin (1996: 842) proposes the idea of 'encapsulated interests', which, despite having historically distasteful associations with the master/slave (or wife) relationship, is still considered legitimate in certain cases, for example with children, where humans are still deemed unable to speak for themselves. With nonhuman nature, rather than understanding the representation of interests and preferences as singular we can move towards a better understanding of how 'we come to internalize the interests of each other and indeed the larger world around us' (Goodin, 1996: 844). While 'slippage' between interests is inevitable, 'politically it is also unavoidable', meaning that a 'second-best' solution is necessary, and so also legitimate (Goodin, 1996: 844). In a similar fashion, John Dryzek (2000: 150) emphasises the importance of 'ecological selves' (which relates to discussion in the previous chapter), humans who ontologically 'recall their own situation as ecological rather than merely social beings.' While Robin Eckersley (2004: 132) argues for 'enlarged thinking' as a means of representing nonhuman nature and others who are not able to participate in representative processes.

To redress the anthropocentric imbalances in contemporary society these green thinkers often advocate the participation of specific humans or institutions that are considered more likely to have access to or understand the

interests of nonhuman nature. For example, Eckersley (2004: 134) proposes 'specialised environmental advocacy', drawing upon Andrew Dobson's suggestion of 'proxy representation for both non-human animals and future generations in representative assemblies by deputies elected from the environmental sustainability lobby' (see also Dobson, 1996). In a similar fashion, Bruno Latour (2004: 64, 67) gives particular consideration to the role of scientists, arguing that 'the notion of spokesperson lends itself admirably to the definition of the work done by scientists in lab coats', for these have 'invented speech prostheses *that allow nonhumans to participate in the discussions of humans*' (emphasis in original).

All of this is important for thinking about representation of those who cannot speak by those who can. However, while science and other particular social actors can play a vital role in ecologically rethinking representation and there is a need for better understanding of the roles which science can play in political representative processes, it is important to be aware of the potential dangers in ascribing knowledge of nature's interests only to particular social actors. As Latour (2004: 759) acknowledges, uncertainty and doubt about possibilities of representation accompany all spokespersons, and as the discussion of the dominant discourses in Chapter Two highlighted, particularly with regards to science there has been a tendency for 'scientific fact' to be used to short-circuit political process.

Michael Saward (2010: 2) too, points out that, while 'representation is an institutional fact in the contemporary world', we must not neglect that representation 'is a *multisided process* of claim-making and the reception and judgement of claims' (emphasis added). Saward (2006: 189) critiques Goodin (1996) for his use of the term 'objective values' to be found in 'nature' and the idea that these can be '*read off* nature, not *read into* it,' 'discerned rather than creatively construed' (emphasis in original). Saward's point is that this is a problematic, one-directional understanding of the representative process, for while Goodin (1996) acknowledges slippage of interests, we must question the straight-forward knowability of interests.

Saward (2006) highlights the constructive processes involved in representation. All representation involves creativity, imagination and interpretation in claim making rather than simple fact finding. To illustrate:

the green party (M [the claim maker]) offers itself (S [the subject]) as the protector of the interests of endangered species (O [the object]) with respect to the animals in question (R [the referent]) to governments and the broader media and public (A [the audience]) (Saward, 2006: 185).

Representation is constitutively bi- or multi-directional due to the 'interpretive and selectively creative role of makers and subjects in representation' (Saward, 2006: 188).

Saward is therefore critical of the idea of a more direct, participatory democracy put forward by many green thinkers. He interprets John Dryzek's (2000) work as also having this tendency, 'seeking to break the boundaries of representation, to find directness, engagement, contact, authenticity' (Saward, 2006: 195). Arguably there has been much attention to the epistemic dimension of representation in green thinking and not enough attention to the interpretive aspects. This emphasis exists because of 'the power of material consequences' of representations and the desire to overcome 'the undesirable consequences of the play of representation in political life' (Saward, 2006: 195).

Particularly in green theory, given the sense of urgency surrounding ecological crises, the urge to break through entrenched institutions and ways of doing things in order to effect change is understandably great. Science has been vitally influential in raising awareness of climate change, and remains an important asset in the ongoing contestation of the issue with climate change deniers and others who resist change having the weight of the dominant political, economic and cultural status quo behind them. To surrender epistemic certainty to interpretation and the play of representations would appear to concede vital political ground and damage rather than further the green cause. This is of particular concern when, in the name of neutrality, media organisations present the issue of climate change as a debate over the empirical evidence for climate change, rather than as a debate over the foreseeable consequences and ways of addressing these (Harvey, 2013). However, as discussed in Chapter Two, the translation of processes of scientific knowledge production and understanding into undisputable non-debateable facts, can have a tendency to 'abort politics' (Latour, 2004), by producing non-negotiable imperatives, such as population control, or carbon-emissions reduction, with 'a no-real-choice quality' (Saward, 1993: 64). It perhaps goes without saying that this applies to eco-authoritarians, yet 'even in more

mainstream versions the science-based objectivity that greens claim for their policies can acquire a "no-option" quality' (Dobson, 2010: 757).

Yet Saward (2006: 196) reminds us that 'we live in and by representations, and representation is a necessary human activity, not one that diminishes in importance just through physical proximity to or familiarity with 'nature' or anything else.' His warning against privileging certain representatives, and factifying the interests of nonhuman nature (and others), and instead giving attention to the constructive, productive, interpretive processes of representation is important. Ambiguity of representation is inescapable

> the desire to move beyond a politics of representation to a direct engagement with nature is understandable enough, but it is misconceived. Our need to 'make up nature' does not go away just because we are close to it (or even because we *are* it) (Saward, 2006: 196, emphasis in original).

This has broader implications for mainstream political theory. While the green temptation is to 'find better, alternative metaphors', there is no single 'unambiguous, good or bad, helpful or dangerous metaphor from a political ecological point of view' (Saward, 2006: 195). Ecological crisis (and the objectivity crises it brings with it – see Chapter Two) poses a challenge, as well as an opportunity 'to imagine in detail a democracy that revels in representative politics in the broader and deeper sense, since the metaphors and representations we invoke are critical in shaping political outcomes for 'nature' and for us as a part of it' (Saward, 2006: 198). As Steve Hinchcliffe et al. (2005: 652) also argue, it may be more helpful to think in terms of 'more circulating references' rather than 'better representation.'

This underlines the importance of political contestation, and the input and acknowledgement of as many representations from all affected as possible. In advocating variations of discursive democracy, the green theorists discussed here certainly take on board the importance of this at least with reference to 'human' issues, even if this understanding is not fully followed through with regards to representations of the nonhuman world or 'nature'. Goodin (1996: 846) describes the co-creative politicisation process characteristic of discursive or deliberative democratic theory whereby 'having to defend our positions publicly makes us suppress narrowly self-interested reasons for action and highlight public-spirited reasons in their place.'

Eckersley (2004: 132) emphasises that because representation is unavoidable, the primary aim must be to ensure that 'political representation is as diverse as possible' and 'representative in a double, reflexive sense.' By this she means that it needs to encourage 'enlarged thinking' as well as provide for enlarged, as in diverse, representation on the understanding that it is 'dangerous always to "trust" in the political imagination of the chosen or privileged few' (Eckersley, 2004: 132). According to Eckersley (2004: 132) there are many reasons why 'political representatives may find it difficult or impossible to understand or imagine the perspectives of all differently situated others in order to formulate norms that may be acceptable to those others', these include 'lack of personal experiences of the other, lack of information, or misinformation, or scientific uncertainty', as well as 'lack of the necessary motivation to treat the lifeworld and interests of differently situated others on an equal par with their own.' Despite at times relying upon a less mediated understanding of representation, particularly with regards to nonhuman nature, Eckersley (2004: 132) agrees with feminist difference theorists that 'all political arguments, however well intended, cannot be entirely detached from the experience, cultural and class background, and material interests of their proponents' (see also Young, 1990).

Due to the situated character of political arguments devices are needed which help to 'widen and deepen the horizons of those who are actually engaged in the making of risk-generating [or 'risk-displacing'] decisions', because such decisions are

> less likely to survive policy-making communities and legislative chambers that are inclusive in terms of class, gender, race and region, and so on, and especially so when deliberators are obliged to consider the effects of their decisions on social and ecological communities both within and beyond the formal demos (Eckersley, 2004: 133).

Such procedures would 'accommodate the relevant affected community in every potentially risk-generating decision' (Eckersley 2004: 133). Eckersley (2004: 133) specifically highlights the importance of diversity if not equality of representation, to enable the representation of disadvantaged groups and to prevent 'unfair displacement of ecological and social costs onto their communities.' Given existing empirical realities, social learning is an important and integral component here which in many ways facilitates the others. Eckersley (2004: 131) argues that understanding deliberative democracy as a

'school of social learning' requires active schooling 'in deliberative democracy' to enable it to flourish more widely. Such interactive learning processes also necessitate an encouragement to listen across differences (Dobson, 2010; Dryzek, 2000; Young, 2000).

Goodin (1996: 848-9) uses this to argue for decentralised participatory forms of representation, for in 'tolerably small groups, people listen to what one another says, internalize those new views and revise their own opinions appropriately.' However, given the sale of ecological problems, Dryzek (2002: 160) also envisions the possibilities for this across space and time through the reflexive linked spontaneous orders arising from the networked organizations of civil society and the discursive orders produced or challenged by them. He argues that 'especially when the institutional [representative] hardware is weak or absent, discourses as social phenomena can and do co-ordinate the understandings and actions of disparate actors' (Dryzek, 2000: 160). The advantage here is that discourses transcend geographical boundaries, and although 'it matters a great deal how and by whom their terms are set' there is a 'dispersed capacity to determine these terms of discourse' which 'finds expression in the network form of organization, itself at home in civil society and in the public sphere' (Dryzek, 2002: 160-161).

With his emphasis upon 'egalitarian listening' as part of a two-way communicative process, Dryzek (2000: 154) helps to counter assumptions that nature cannot communicate. In his earlier words, '[i]f the topsoil on which my crops depend is shrinking, then clearly nature is "telling" me something' (Dryzek, 1987: 207). Christopher Stone (1973: 450-501) has also argued, 'it is a lot easier for my lawn to communicate to me that it would be in its interests to be watered than it is for 'the United States to communicate to the Attorney General that it is in its interests for Al Capone to be prosecuted.' Dryzek (2000: 150) argues that continuity between the human and the nonhuman is apparent in 'nonverbal communication – body language, facial displays, pheromones, and so forth', for much goes on in human conversation which is beyond words. Dryzek (150-151) notes that

> some categories of human beings are not very good at challenging interpretations placed upon their needs: but we should try to listen to them, and be open to challenges to our interpretations from third parties concerned with these needs

While 'there can be no reciprocity of the sort commended by deliberative democrats', it is for this reason that listening is so central to an ecological understanding of representation (Dryzek, 2000: 149, see also Dobson, 2010).

It is important to be aware that relations of interpretation, justification and understanding exist not only between the representative and the constituent/represented, but also between the varying constituents (Young, 2000). Iris Young explicitly draws upon Haraway's (1988) theorisation of situated knowledges and partial objectivity, but proposes a relationally produced sense of objective representation as a 'product of inclusive democratic communication' (Young, 2000: 115). She argues that

> '[a]n objective account of social relations and social problems, and an objective judgement of what politics and actions would address those problems [..] are accounts and judgements people construct for themselves from a critical, reflective, and persuasive interaction among diverse experiences' (Young, 2000: 115).

Thus she points to both the constructive, creative as well as multi-sided processes of representation and pushes for an alternative understanding of 'objective' representation to account for this.

However, Young's work also addresses the problems with privileging a certain type of argumentation in deliberative democratic theories of representation. Indeed, although Eckersley (2004: 129) does not fully follow through the implications for her ideal of 'unconstrained dialogue' within the 'green state', this is something that she is also aware of, for she notes Edward Said's (2000: 298) point that 'the scrubbed, disinfected interlocutor is a laboratory creation with suppressed, and therefore falsified, connections to the urgent situation of crisis and conflict that brought him or her to attention in the first place'. Young's (2000, 2001) attention to situations of crisis and conflict, and to activist experiences of exclusion, as well as what she terms 'internal exclusion,' means that her work is particularly helpful in considering the limitations of ideal forms of deliberative representative process.

Young (2001: 685-686) notes the power of hegemonic discourses whereby 'the conceptual and normative framework of the members of a society is so deeply influenced by premises and terms of discourse that make it difficult to think critically about aspects of social relations or alternative possibilities of institutionalization and action'. She draws upon the early Habermasian notion of 'systematically distorted communication', which describes situations where

those deliberating 'may agree on premises, they may accept a theory of their situation and give reasons for proposals that the others accept, but yet the premises and terms of the account mask the reproduction of power and injustice' (Young, 2001: 685). In much deliberative democratic theory, the restriction of understandings of democratic discussion 'narrowly to critical argument' reinforces a 'culturally biased conception of discussion that tends to silence or devalue some people or groups' (Young, 2001: 120). Young (2000: 54) points to less noticed or more difficult to articulate forms of 'internal exclusion' where, although representatives are included, their participation is limited because 'the terms of discourse make assumptions some do not share, the interaction privileges specific styles of expression' or 'the participation of some people is dismissed as out of order.' Disruptive or emotional forms of expression are often a sign of long-standing, unremedied power disparities and injustices.

To push for passionate politics is controversial partly because politics, and particularly politics understood in traditional representative terms, has been associated with speaking and this has been used to police the inside/outside of politics as an exclusively rational sphere considered separate from emotions. However, as the discussion so far has shown, this definition poses serious problems for those who cannot speak or for those who do not speak in a manner acceptable in the dominant discourses. This discussion highlights some of the basic problems with considering representation only in terms of 'rational' speech.

Indeed, representation and 'speaking for others' has in any case been much criticised, particularly in more radical politics, including the green movement, with calls for more decentralised and participatory forms of democracy. It must not be forgotten that, historically, arguments for representation have been used to temper demands for social and political change and to retain 'aristocratic and elitist features of government' (Castiglione & Warren, 2006: 10). There is good reason for some of the contemporary disillusionment with existing forms of democratic representation. As Linda Alcoff (1991) explains, the 'crisis of representation' entails acknowledgement that because social location impacts upon representation, the act of 'speaking for others is arrogant, vain, unethical, and politically illegitimate' and can involve 'a kind of discursive coercion and even violence' (Alcoff, 1991: 7). Yet as

discussion in this chapter also shows, there is no escaping representation; the 'politics of presence' and the 'politics of ideas' are not mutually exclusive, participation is part of the representative process rather than an opposing ideal (Alcoff, 1991; Plotke, 1997; Young, 2000; Saward 2010). This is at least in part because even where participation is possible, speaking for oneself entails representation: 'in speaking for myself, I am also representing myself in a certain way, as occupying a specific subject-position, having certain characteristics and not others, and so on' (Alcoff 1991: 10).

As Alcoff (1991) points out, it is not only the unavoidability of representation which reinforces the continued significance of representation. It is important to bear in mind, particularly, if representation is being avoided for political and ethical reasons, that '[e]ven a complete retreat from speech is of course not neutral since it allows the continued dominance of current discourses and acts by omission to reinforce their dominance' (Alcoff, 1991: 20). In addition, the emphasis upon 'speaking for oneself' implicitly assumes a conception of the self as autonomous, assuming a lack of connection with others. To the contrary, Alcoff (1991: 21) argues that

> we cannot neatly separate off our mediating praxis that interprets and constructs our experiences from the praxis of others. We are collectively caught in an intricate delicate web in which each action I take, discursive or otherwise, pulls on, breaks off, or maintains the tension in many strands of a web in which others find themselves moving also.

This reinforces and deepens the point made by both Saward (2006, 2010) and Young (2000), about the entangled, multi-sided processes of representation. It also emphasises the *collaborative* character of representation beyond discursive action. Alcoff takes seriously Gayatri Chakravorty Spivak's (1988) warning that simply promoting 'listening to' as an alternative to 'speaking', 'essentializes the oppressed as nonideological subjects' (Alcoff, 1991: 22). This assumes the direct readability of interests in a similar fashion to that critiqued by Saward in his analysis of much green theory. Spivak's (1988) preference is 'speaking to' in a manner which neither abnegates [the intellectual's] discursive role nor presumes an authenticity of the oppressed but still allows for the possibility that the oppressed will produce a "countersentence" that can then suggest a new historical narrative' (Alcoff 1991: 23). Alcoff (1991: 23) agrees and emphasises that '[w]e should strive to create wherever possible the

conditions for dialogue and the practice of speaking with and to rather than speaking for others.'

Yet as Young's work underlines, this 'speaking with' must allow for difference, and involve attempts to understand the position of the other. I argue that this must involve attention to *action*, as well as speech. Implicit in Alcoff's (1991) discussion of the web of representative processes (above) is an understanding of both speech and other forms of action as playing a part in representation. It is important to consider Young's (2001: 687) defence of the activist acting outside of deliberative processes because 'he suspects some agreements of masking unjust power relations' and 'believes it is important to continue to challenge these discourses and the deliberative processes that rely on them' in ways which do not fit into the rational speech category, for example with 'pictures, song, poetic imagery and expressions of mockery or longing performed in rowdy and even playful ways aimed not at commanding assent but disturbing complacency.' The intention with this type of action or communication is to provoke questioning, to wake up people's minds, crack open their assumptions, 'make us wonder about what we are doing, to rupture a stream of thought, rather than to weave an argument' (2001: 687). Thus Young (2001: 688) points towards a conception of representative processes 'as far more rowdy, disorderly and decentred' and therefore potentially more open to contestation than conventional understandings of representation assume.

This discussion of activist practice in Young's (2001) work extends to a consideration of violence. While 'violence directed at others is not acceptable in most circumstances,' and while much debated in many activist circles, it becomes acceptable in defence of self and others, and some forms of damage to property 'need not be condemned' (2001: 674). Often this is interpreted in the dominant discourses as unreasonable or extremist, demonstrating unwillingness to engage in rational discussion, yet as Young (2001: 675-676) points out, '[o]ne can interpret such blanket labelling itself as a power ploy whose function is to rule out of bounds all claims that question something basic about existing institutions and the terms in which they put political alternatives.' Young (2001: 689) emphasises the legitimacy of both engaging in discussion with others 'to persuade them that there are injustices that ought to be remedied', and of protest and direct action.

Disruptive direct action and more orderly deliberation are often in tension; '[t]he two kinds of activities cannot usually occur together' and 'one of them is liable to eclipse the other' (Young, 2001: 689). Yet it is useful to think about this tension between speaking and acting and to consider that while this ever present representative tension - the gap between the represented and the representation - might seem a problem it is precisely this gap which we need to be paying attention to, because this is the space which makes contestation possible, and it is contestation which facilitates the multi-sided processes of representation. The fear for the 'absent referent' often discussed in critiques of the play of representations is valid, particularly when it comes to thinking about the role which nonhuman nature may play in representative processes, beyond simply being a passive object, spoken for in a speech dominated understanding of representation. However, that referent is never too far away if we pay heed to *action* and to the constant challenges to existing representations emerging from the spaces between.

I therefore argue that paying more attention to action as well as speech, may help us to gain a broader, more comprehensive understanding of representative processes, as well as helping us to better take all affected into account. Attention to action also enables us to bring nonhuman nature, much of which is understood as 'objects' within the dominant discourses, into understandings of representative processes as 'subjects' of representative action. This is evident in Latour's (2004: 66) argument for taking entities into account beyond the nature/human divide. In his alternative conception of the polity 'nonhumans are not in themselves objects, and still less are they matters of fact. They first appear as matters of concern', they are 'entities that provoke perplexity' and are not 'defined by necessity any more than they are defined by mute objectivity.' He (2004: 83) suggests that 'propositions' rather than speaking citizens are the named subject of politics: 'I am going to say that a river, a troop of elephants, a climate, El Nino, a mayor, a town, a park, have to be taken as propositions to the collective' (see also Dobson, 2010). Part of Latour's (2004: 237) recommendation for bringing the sciences into a democratic politics of representation, is to understand representative processes as scientific experiments, in which actors or 'actants' modify other entities and action 'is always recorded in the course of a trial and by an experimental protocol.'

As Dryzek (2000: 149) points out too, we need to be able to account for 'the ecological processes which transcend the boundaries of species (and the living and non-living), such as creation, modification, or destruction of niches; or cycles involving oxygen, nitrogen, carbon, and water.' Attention to such processes made up of multiple nonhuman and human activities is vitally important, and we need to be attentive to changes and disruptions in these which challenge existing representations in order to notice them, for example 'climate change, desertification, deforestation, and species extinction' (Dryzek, 2000: 149).

This emphasis upon the non-verbal action which plays a role in the contestation of representations is not intended to replace speaking and deliberative contestation. If we are to take Saward and others' multi-dimensional creative understanding of representative processes seriously we, as humans, cannot escape the mediation of speaking, and neither can the nonhuman world which has become woven up in our representative language and discourses. However, we can try to ensure that our understanding of the discursive or communicative sphere remains as diverse an arena as possible in order to enable ongoing contestation of representations. Action is an inherent component of representative processes; speech is just one aspect of the multi-dimensional processes of 'acting with' others. The implications of this are that we can try to understand representation as a multi-way collaboration between humans and between human and nonhuman nature (with this distinction between the two in many cases being difficult to determine). As Young's (2001) discussion of disruptive and sometimes even violent action and Dryzek's (2000) concern for disruption of ecological systems suggest, such collaboration can be both constructive and destructive.

The reciprocity involved in this is of a different kind to that of more conventional understandings of representation. Yet it is in any case not clear how much we can separate out 'speaking' from the rest of the world of action. If we understand discourse to be more than simply speaking, to involve the processes of co-creation involving other significations and practices, then the line between speech and other forms of action is less clear cut (Ferree, 2009: 87-88; Spivak, 1988). Alcoff points out that just '[a]s my practices are made possible by events spatially far from my body so too my own practices make possible or impossible practices of others' (1991: 20). Opening up an

understanding of representation to include action brings the contestatory gap of representation into focus and makes space for better contestation of both creative and destructive representative processes between humans, and between humans and nonhumans. The significance of paying attention to this gap and enabling contestation reinforces the importance of articulating injustices resulting from both the creative and destructive forces of representation. This is the focus of the next section.

Articulating representation-based injustices:
denial of multiple authorities in the politics of nuclear energy

If we widen our understanding of representation to include both speech and action more broadly, we can consider that, to use Dryzek's terms, there are 'numerous loci of political authority' (Dryzek, 2000: 157), ranging across, within and between human and nonhuman entities. These authorities are both creative and destructive, depending on perspective or location, and participate through both speech and other forms of action in representative processes which inform our constructions of common life. Taking these multiple authorities into account is important if we are to encourage contestation and make space for the play of representations, which as Saward says, 'are critical in shaping political outcomes for "nature" and for us as a part of it' (Saward, 2006: 197-198), and help to mitigate the unavoidable problem of speaking and acting for and with others, with its attendant violence and misrepresentations. Articulating injustices can play an important part in the freeing up of representative contestation.

I suggest therefore, that the injustices which arise in the politics of representation can be articulated as *denial of multiple authorities.* The intention is to draw upon a more decentred and situated understanding of the word authority which encompasses both speaking and acting. While authority has traditionally been used to designate either a more centralised codified form of state legal power and leadership, or an institutionalised form of expertise, it also describes individual or specific knowledge of some thing or situation and can therefore chime with understandings of 'situated knowledge' (Haraway, 1988). In his discussion of authorisation and authenticity in representative processes beyond the traditional electoral sphere of government Saward (2009: 21) points out that both 'share a common root in the idea of "authoring", being one's own author, telling one's own story (and being self-determining).' With a more

decentred and situated understanding of authority I seek to capture a sense of authorship which includes creative (or destructive) power and consequence of action, and a sense of freedom of participation in the multi-constitutive processes of representation. Part of the risk 'of speaking for others' involves 'expanding one's own authority and privilege, and a generally imperialist speaking ritual' (Alcoff, 1991: 23), which brings about or reinforces 'authoritarianism derived from the dominance of partial perspective' (Young, 2000: 84). Denial of authority then entails a form of silencing and disempowerment, refusal of another authority, or the refusal of accountability and responsibility for one's own authority.

To return to the problem of the thesis then, how does articulating injustices of representation as denial of multiple authorities help to redescribe the problem whereby important harms of nuclear energy are naturalised and justified within dominant discourses and in debates within green politics and politics more generally? The dominance of abstract economic and scientific facts and figures in the arguments both for and against nuclear energy suggests the seduction of the illusion of a directness of representation pointed out by Saward and Latour. The authority of economics and science are wielded 'as fact' in authoritarian fashion over other arguments deemed to have less authority due to their association with political or ideological bias, opinion or emotion. Both sides of the nuclear debate engage in this, although as discussed, the green anti-nuclear side is often at a disadvantage for it is more obviously against the dominant status quo. Economic and scientific facts and figures are used to reinforce and naturalise the authority of the state and dominant (political) conceptions of energy security and other aspects of the 'public good'.

This temptation to use the idea of a higher authority to cut a way through contestation is particularly strong for those in green politics because the authority of ecological claims - drawing attention as it does to the need to take into account nonhuman nature and others traditionally deemed outside of the political realm - has been denied and disadvantaged in the conventional sphere of government and governance. Yet the continued reliance upon the authority of economics and science and certain exclusionary notions of the public good within debates over nuclear energy only serves to reinforce the dominant discourses which deny the authority of others.

In the politics of nuclear energy this plays out in three interrelated ways with distinctly unecological consequences. Firstly, it reinforces the monopolisation of authority by those in powerful discursive positions, in particular, the authority of state governments, the authority of the nuclear industry, and the authority of those scientists who deny the implications of their own authority by claiming disengagement and neutrality. The second consequence is that this denies authority to other humans who would propose alternative interpretations of the problem of nuclear energy, drawing upon different experiences and concerns for the future. Thirdly, it denies authority to nonhuman nature in discursive processes, dulling human attention to the actions and reactions of nonhuman nature in the continued constructive and destructive processes of life on earth, thereby denying possibilities for responsible collaboration.

First, the monopolisation of authority by the state is hardly a new problem, indeed a substantial degree of centralisation of authority at this level of political organisation is often deemed a necessity and an inescapable reality (e.g. see Eckersley 2004). However as many greens have long argued, the centralisation of authority in the state poses many problems from an ecological point of view. For example, as Dryzek (2000: 156) points out; 'a bureaucracy with a well-developed internal culture may prove highly inattentive to its environment.' Dryzek (2000: 155) argues that 'a bureaucratic hierarchy pretty much ensures distortion and loss of information across the levels of hierarchy.' However, taking on board Saward's critique of any 'direct' and straightforward understanding of information means that this is not only about a loss or distortion of information, but about the ways in which the creation or interpretation of information and understandings about the world can become a bureaucratic monoculture; the dominance of one way of understanding, speaking and acting in the world at the expense of others. Although there is often, understandably, slippage between interpretation and 'reality', it is this denial of the authority of others which underlies the green scepticism about centralised authority, and we do not have to believe in the possibility of undistorted communication to see that this reinforces injustices and is therefore unecological. This has been apparent in the Japanese government's handling of the Fukushima disaster, for example, but it has also been the finding of many studies and exposés of the entwined government and nuclear industry's

handling of numerous nuclear plants both military and civilian, all over the world, not only in times of obvious crisis (Wynne, 2011; Sovacool & Valentine, 2012; Breach, 1978; Walker, 1999).

While liberal democratic states are arguably designed to enable the play of representations and the contestation of multiple authorities, carrying a kind of authority which represents the 'public good', they retain bureaucratic structures and cultures entailing power asymmetries passed on from (even) less liberal times and suffer from the dominance of cultures which are insensitive to all sorts of injustices. The dependence of the authority of states upon the instrumental capitalist economic growth imperative in particular, and with the need to power the economy at all costs used as a justification for the securitisation and centralisation of energy production in the hands of a few, little obvious room is left for genuine contestation. In some ways this explains reliance upon the authority of science, as a means of competing with economic authority and/or contesting other dominant authorities to effect change.

Yet science in many of its institutionalised forms contains its own authoritarian strands which involve a history of representative processes which deny the authority of both human and nonhuman others and increase the authority of economic power at the expense of others. The underlying 'instrumental, human-centred goals and methodologies aimed narrowly at prediction and control' cannot simply be written off as 'bad science' for they have been 'an established part of modern science since its inception' (Plumwood, 2002: 40). Plumwood (2002: 40) illustrates the problem, describing how a combination of scientific, political, administrative and economic authorities reinforced each other in the case of overfishing in the Canadian Atlantic. Technology design and research orientations of science in this case were dominated by productivist goals, exemplifying a 'production model view of nature', a reductive view which treated 'appropriate knowledge in the instrumental terms of development and production.' The danger in this approach is that it ascribes authority only to a few dominant sources which reinforce anthropocentric instrumentalisation of nonhuman nature. This monopolisation of authority is dangerously monological, particularly in contexts where we press limits 'we have not gauged' (Plumwood, 2002: 40). The monopolisation of authority produces knowledge and power which is 'very narrow, focusing on just those aspects of the other that can be exploited' and

capitalised upon (2002: 40). In a similar way, the emphasis upon particular technologies as a solution to climate change also emerges from the same logics. Economic growth cannot be questioned and it is easier to try to find low-carbon ways of accommodating the existing system and therefore narrowly focus on counting carbon emissions than to attend to the bigger picture which involves other ecological crises resulting from the overconsumption and production inherent in the dominant socio-economic structures. Increasing the levels of radiation in the biosphere and the effects of long-term storage of nuclear waste, particularly under increasingly unpredictable conditions of climate change, are just some of the other limits we have not gauged. While radiation exposures are obsessively counted and the numbers of deaths from coal and from nuclear are weighed up against each other we miss the chance to attend to other loci and forms of authority which might bear upon our current situation.

The authoritarian strands in science which make it more likely to either be held up as higher authority or succumb to instrumental and exploitative authorities can be traced back to Platonic rationalism and the idea that knowledge and authority can be won in spite of bodily hindrances and Cartesian rationalism wherein knowledge is understood as freedom from doubt, the body and its deceptions and weaknesses, including personal and emotional ties (Plumwood, 2002: 46-50). Such rationalism is strongly gendered and adheres to mind/body and reason/emotion dichotomies whereby authority can only be assured through exclusion of 'the emotional, the bodily, the particular, the personal, and of course especially the political' (Plumwood, 2002: 42). This history of 'empiricist-rationalism' is authoritarian for it stems from 'the idea that the knower is superior to the object of study, that the other can be known completely, and in the absence of consent – knowledge can be wrung from it, as a form of power over it' (Evelyn Fox Keller, in Plumwood, 2002: 42). Disengagement and emotional detachment from the object of research, the denial of connections of care and respect between knower and known, enables and reinforces instrumentalist approaches to knowledge which deny authority to others.

The intention of overcoming individual self-interest in this type of disengagement has the opposite effect, for ruling out 'care and respect for what is studied and of responsibility for those who will be affected by it' means that

'the knowledge relation is constructed as one in which the known is merely a means to the knower's ends', or to the ends of the power which, without engagement, the scientist will come to serve, as 'appearance of neutrality conceals capitulation to power' (Plumwood, 2002: 43). Therefore, to be positioned as an authority in science, or to make an authoritative scientific claim, is to be positioned within this methodological history of disengagement, separation from objects of study, and impartiality towards potential social effects and outcomes. The disengaged knower uses the denial of attachment and location in order to 'present themselves and their knowledge as absolute and transcending location' and 'the limits of social shaping of knowledge imposed by the knower's identity and their cultural or personal "slant" or "set" are disappeared in the presentation of such knowledge as emerging from a universal perspective' (Plumwood, 2002: 42). This mechanism justifies monopolisation of authority, particularly in the scientific disciplines of privileged expert knowledge.

The monopolisation of authority is inherently related to the second way in which denial of multiple authorities plays out in the politics of nuclear energy. The authority of science denies the authority of others in the representative knowledge construction processes and the active processes of common life. Such denial of the authority of others is problematic because it denies that

> the knower is active not only in seeking and selecting observational input but in constructing knowledge, that knowledge is a social activity, not the passive "neutral" reception of raw, 'pure' observational data by presocial individuals (Plumwood, 2002: 43).

An outcome of this authoritarianism in scientific knowledge claims is that those claims which reinforce the (already authoritarian tendencies of the) status quo, or are not obviously critical, are seen as universal, impartial forms of authority, while the more marginalised perspectives of 'the oppressed must act to disrupt the status quo from a passion for change' (Plumwood, 2002: 44) and are interpreted and represented in the dominant discourses as 'emotional', 'biased', and 'political' and their authority therefore remains denied.

Such denial of other authorities is a problem because it constitutes injustice, but importantly it also 'hinders self-critical forms of engagement which can acknowledge the limitations of particular knowledge locations and place the subject of knowledge on the same critical causal plane as the objects of

knowledge' (Plumwood, 2002: 44) it thus has a tendency to encourage hubris. The trouble is that the dominant forms of authority – state, economic-industrial and scientific – become mutually reinforcing. As Brian Wynne (2011: xxii) has argued, 'if a technology requires for its existence such socially remote development and control institutions that those arrangements themselves become (as they have for nuclear power) a point of public concern, that very remoteness precludes the achievement of social credibility'. Such loss of credibility produces ruptures in public or common life, which are unsustainable.

Wynne (2011: 22) discusses the idea of 'public good science' in his updated discussion of the implications of the 1977 Windscale Inquiry. The idea of the deterrent of the nuclear bomb as necessary for the public good

> was invested implicitly but fervently in nuclear science and technology. Of course this definition of public good science enjoyed no kind of informed democratic debate, accountability nor sceptical reflection about what might be the proper human ends of knowledge and technical power. No human hand was recognized to be at work in shaping them; just the force of history and necessity – benign or not (Wynne, 2011: 22).

Similar tendencies can be seen again in the conversion of greens to the necessity of nuclear energy in the context of climate change (e.g. see *Pandora's Promise*, 2013). The idea of a 'public good science' claims a higher authority; 'the attempted construction of public authority through particular constructs of science and rationality' (Wynne, 2011: xiii), yet it relies upon privileging certain authorities over others and while this constructed public authority might claim legitimacy and universality for the greater good, it is more often the case that 'high-science big technologies' are being pursued 'with fundamentalist quasi-religious fervour yet denying any emotive charge', so that there are 'inevitable tensions between ideals of rationality, and the "noble lie" which has to declare that politically charged commitments have been determined by expert revelation alone' (Wynne, 2011: 21).

Attending to the grassroots and to other forms of authority, such as the points of view and actions of the subjugated, is of course not a guarantee of a 'better' or clearer perspective or form of authority. Rather it is here that it is more likely that there are perspectives that have been denied and that see through attempts to claim authority over others in totalizing and universalising ways which are insensitive to other authorities at local levels. Plumwood emphasises the importance of the capacity to hear 'the bad news from below'

(2002: 91), and Dryzek (2000: 154) draws upon this to emphasise that it is relatively straightforward 'to criticize institutions that try to subordinate nature on a large scale, and those that are remote and so incapable of hearing any news from below, be it good or bad.' The point is that to claim transcendence, universality and neutrality is what is really unobjective and unrealistic and not in the interests of the common good: 'knowledge from the point of view of the unmarked is truly fantastic, distorted, and irrational' (Haraway, 1988: 587). It is this, along with force, which enables authoritarianism, the monopolisation of authority, rather than the creative meeting of different authorities from different positions.

The 'distortion' of the potentially creative processes of communication through the monopolisation of authority often occurs in very subtle ways which tend to go unnoticed by participants. It affects

> the conceptual and imagistic frame for discussion, which often contains falsifications, biases, misunderstandings, and even contradictions that go unnoticed and uncriticized largely because they coincide with hegemonic interests or reflect existing social realities as though they are unalterable. (Young, 2001: 686).

As a result of such monopolisation of authority in hegemonic discourses, the authority of others is weakened or rendered ineffective.

Young (2000: 57) points out that '[a]rguments require shared premises […] which are not always present in a situation of conflict.' She also points out that 'a norm of "articulateness" devalues the speech of those who make claims and give reasons, but not in a linear fashion that makes logical connections explicit' (2000: 57). Like Plumwood (2002), she critiques the 'norm of dispassionateness' which 'dismisses and devalues embodied forms of expression, emotion, and figurative expressions', which mean that as a result, 'contributions to discussion tend to be excluded from serious consideration not because of what is said, but how it is said' (2000: 57). Young (2000: 124) points out that 'norms of assertiveness, combativeness, and speaking by the contest rules are powerful silencers or evaluators of speech' which are apparent 'in many actual speaking situations where culturally differentiated and socially unequal groups live together.' The problem is not only the silencing, but that the dominant groups 'often fail entirely to notice this devaluation and silencing' with the result that those whose authority is denied 'often feel put down or frustrated, either losing confidence in themselves or becoming angry (Young, 2000: 124).

Anger, and the disruptive behaviour which often accompanies it, tends to disqualify those engaging in it from taking part. For example, in October 2011 security was called to escort 'female hecklers' out of the hall where the University of Exeter's Debating Society were debating the motion 'This House believes that nuclear power is unsafe' (Wynick, 2011). Green Party MEP, Keith Taylor, guest speaker for the motion walked out of the debate in protest, saying he was 'shocked at this heavy handed and draconian approach' (Wynick, 2011). He left behind only Audaye Elesedy, chair of Exeter Green Party, to defend the motion against Nigel Knee, Head of Nuclear Power at EDF energy, guest speaker for the opposition. The latter commented that he'd recognised the women from previous protests and: 'was impressed by the way the chairman retained order throughout'. The other guest speaker for the opposition, Roger Helmer, MEP for UKIP, later commented on his blog that he was 'certain that the antics of these green zealots inclined the audience against the motion' (Wynick, 2011). Although away from the university at the time I knew the women who were handled in this manner and had in fact asked if they could attend the debate in my absence. Speaking to them afterwards I felt their anger and frustration at the imbalance in the speakers and the failure to address important aspects of the debate.

In another example, from the preliminary meeting of the Infrastructure Planning Commission's examination of EDF's application to build Hinkley C in March 2012 'local resident and single mother Nikki Clarke asked who would look at the dangers of nuclear power to the health of local children if the IPC were not prepared to do so' (Stop Hinkley, 2012). The IPC lead commissioner told her that 'her point was irrelevant,' and 'when she tried to continue he had her microphone switched off and adjourned the meeting, asking her to leave' (Stop Hinkley, 2012). Many other participants at the meeting 'were left shaken and angry at the way they had been treated', as the lead commissioner impatiently interrupted those brave enough to speak in front of a crowd of hundreds, 'saying he couldn't hear them and what they were saying was not relevant' (Stop Hinkley, 2012).

Given the recurring dismissal of concerns (problems also of recognition) it is hardly surprising that people should become angry and frustrated and turn to other forms of action to try to get their message across. The accident at

Fukushima once again demonstrated that the authority of expert assurances of risk management and government and industry authority over nonhuman nature is limited. The assumption of knowledge and power neglected the authority of nonhuman nature through its capacity to disrupt and destroy the best made plans. This has impacted in turn upon the authority of the local people over their own lives and livelihoods. The World Nuclear Association (WNA, 2014) asserts that '[o]fficial figures show that there have been well over 1000 deaths from maintaining the evacuation, in contrast to little risk from radiation if early return had been allowed'. Rather than acknowledge the impact of the disaster and of the continued risks that nuclear energy poses to the authority of others, this instead shores up their own sense of authority whilst at the same time denying responsibility for the low, yet still existing raised risks of radiation exposure which have been shown to have serious effects upon peoples well-being, whether they ultimately manifest or not (Fairlie, 2010).

It is also important to bear in mind again the multi-sided character of representative processes, for the point is that activist political engagements are not simply directed at the powers that be, but also 'aim to communicate specific ideas to a wide   public' (Young, 2001: 676). This means that representative 'processes of engaged and responsible democratic communication' can be expanded to 'include street demonstrations and sit-ins, musical works, and cartoons', for example (Young, 2001: 688). And if responsibility entails disrupting complacency, then 'public noise outside when deliberation is supposedly taking place inside', or invading places of deliberation and disrupting 'by unfurling banners, throwing stink bombs, or running and shouting through the aisles' may also be deemed important aspects of the representative process, as are attempts to disrupt business as usual, for example with blockades (Young, 2001: 673). This shifts an understanding of communicative representation processes 'from simply a willingness to give reasons for one's claims and listen to others to a broader understanding of the generation and influence of public opinion' (Young, 2001: 688). Attempts to assert authority in such ways against monopolisation of authority is often dismissed, within the terms of the dominant discourse, as 'extremist', 'irrational' or biased. As Young (2001: 675-676) points out however, an alternative response to this is to argue that 'the charge of being an irrational extremist' invokes 'far too narrow an understanding of what is reasonable', indeed it entails the injustice of denying

another's authority and failing to reflect upon the limitations of one's own authority.

The third way in which denial of authorities plays out in the politics of nuclear energy is that it denies authority to nonhuman nature and ecological processes and events of which humans are a part, but over which they have little control or knowledge. The monopolisation of authority by industry, government and scientific spokespeople who claim 'sovereignty or scientific knowledge over public concerns, by defining the public issue as a "risk issue," and thus a scientific issue' (Wynne, 2011: xv) denies the authority of both human and nonhuman others in the issue. Risk assessments cannot fully account for myriad potential - and in many ways unpredictable - actions of both human and nonhuman nature. They fail to account for human error, or as activists also continue to point out, the possibilities of breaches of security and safety procedures by either humans or nonhuman nature. The failure to adequately take into account the implications of the ongoing Fukushima disaster is an example of this. While activists are criticised for scare-mongering or extremist and often illegal action, they are demanding a say in the risk assessment process which has been shut off from them and deemed above their level of authority. For example, in July 2013 Greenpeace activists in France broke into Tricastin, an EDF nuclear power plant to expose security flaws and also highlight the potential of a disaster at one of France's oldest plants (Chrisafis, 2013).

Pointing to the possibilities for disaster is a way of highlighting the authority of the nonhuman, and the limits to human authority and control. The assumption of authority in issues of nuclear safety on the part of industry, government and regulators rules out any such doubts. The counting and measuring of radioactivity is an important means for understanding risks, yet it dominates understandings of safety and gives a semblance of authority and certainty about an area that still contains much scientific uncertainty. Exposures to radiation are confidently compared to 'natural' background levels and thus normalised and rendered harmless. The long-term effects of raising overall background levels of radiation through large increases in the numbers of nuclear plants worldwide (if nuclear energy really is to provide an alternative to fossil fuels) are not known.

Plumwood's discussion of the Atlantic cod fisheries is again instructive. Here, the science which was funded 'focused almost exclusively on ways to find, count and catch more fish' and other research was neglected (2002: 40). Marine researcher, Richard Beamish, noted 'we… sacrificed the opportunity to understand the mechanisms of the ecosystem better' (in Plumwood, 2002: 40). The neglect of 'non-production goals' that aim 'to know the object in its fullness' reinforced 'mechanist illusions that nature is passive and open for the taking', embedding these in research which then analyses the process of taking and exploitation 'down to some subset of self-contained technological problems that can always be solved' (Plumwood, 2002: 40). Where this type of tendency prevails, science's claimed authority over understandings of nonhuman nature is extremely problematic and is compromised by a 'kind of crudely instrumental research direction' (Plumwood, 2002: 40).

As Hinchcliffe et al. (2005: 652) point out, 'Science declares the truth of the matter and Politics sorts out the interests and passions and adds up the numbers for and against'. In the nuclear energy issue the claimed public authority remains sceptical of public passions and tends to focus instead upon weighing up the numbers - be they millisieverts (or rem) of ionizing radiation, or grams per kilowatt-hour of carbon dioxide - and certain interests and passions are disguised as fact and necessity, whilst others are marked as unacceptable and irrelevant to discussion of the issue. 'Ideal forms (often but not only species) are turned into manageable and manipulable data' (Hinchcliffe et al., 2005: 652) and (in the case of nuclear energy) are modelled into risk assessments claiming uncontestable authority and leaving little room for alternative understandings of the authority of nonhuman nature.

It should now be clearer how the denial of multiple authorities in the politics of nuclear energy is a double-edged problem, whereby the assertion of authority of the dominant forces and knowledge production processes denies responsibility for this authority and its effects in denying the authority of others, both of human and nonhuman nature. As discussed in the first section of this chapter, this is a problem of representation regarding the possibility of being represented through both speech and action. The denial of multiple authorities perpetuated by nuclear energy constitutes a denial of the inherently ecologically situated and potentially powerful character of *all* action. This articulation contributes to the first part of the ecological knowledge construction process in

answering the question of 'how many (and who) we are' by pointing to multiple authorities among humans and nonhuman nature and cautioning us not to ignore these. The next section will more fully evaluate the political efficacy of this articulation, in particular considering it in terms of the next step in the ecological knowledge construction processes which asks 'how we might live together.' I consider how well the articulation works in generating transformative political potential to counter the dominant discourses and in opening up possibilities for effective political action to resist injustices.

Political efficacy of articulating representation-based injustices: transformative possibilities for multiple authorities in common life

This chapter has suggested an understanding of multiple loci of authority comprising participation of both speech and other forms of action in processes of representation, and an articulation of injustices of representation as the denial of multiple authorities, which can apply to both human and nonhuman nature and the spaces in between. In considering the political efficacy of this articulation I am interested in the ways in which it may be considered to be effective, not only for the process of taking all affected into account, but also for the process of putting in order and opening up answers to the question of how we might live together. The previous section already indicated some potential of this articulation for taking all affected into account as I highlighted possibilities for articulating denial of authority to human and nonhuman nature, as well as the intersections between. Articulating injustices entails translating them into a common language so that diverse experiences and observations might be taken into account as relevant to our understandings of common life. In this sense the aim is to facilitate possibilities for alliances between the marginalised and less powerful in order to produce more effective challenges to the dominant discourses (Hall, 1996). Highlighting intersections and points of solidarity can help us attend to new possibilities for answering the question of how we might live together. Opening up answers to this question also involves the practical action problem of how we might best collaborate in common life. It is this potential for both translating experiences of representative injustices and effectively challenging and facilitating the development of practical alternatives to dominant discourses that I seek to evaluate in this section. Firstly I consider

the potential and power of the multiple authorities of 'civil' and 'uncivil' society to contest the authoritarian tendencies of dominant capitalist state and market structures, as well as the potential for transforming our understanding of scientific production to better enable the contestation of multiple authorities. Secondly, I begin to point out the limits to contesting representation-based injustices alone, pointing to the ways in which disrespect for integrity, for the continuities and differences between selves and others, is intertwined with the denial of authorities of others. Thirdly, I emphasise that the contestation of both recognition-based and representation-based injustices may be undermined without contestation of distributive injustices in the context of a highly uneven playing field in the distribution of basic necessities.

First of all I consider the potential of articulating representation-based injustices. While the dominant authorities of the capitalist state, markets and industries will continue to deny the multiple authorities of others, asserting their own disengaged authority and denying their own responsibility for the effects of this authority, articulating the denial of authorities can help to reinforce the existing potential and power of civil society networks and social movement actors and the power these have for contesting authoritarianism and the denial of multiple authorities, as well as enabling effective political action in response to the problems faced. In combining the articulations of multiple representative injustices there are possibilities for challenging the status quo. It is clear that '[t]he state and its environmental problem-solving capacities are likely to be with us for the foreseeable future' as are the often mutually reinforcing authorities of the market, transnational corporations and international institutions (Dryzek, 2000: 117, 158). Yet, taking the authority of all affected into account, 'an ecological perspective [also] points to the [efficacy of] kinds of co-ordination that are not organized centrally (as in the state), but arise as emergent properties as the scale of ecological and social organization arises' (Dryzek, 2000: 158).

Dryzek (2000: 157) and many others have pointed to the limits of the dominant authorities, particularly with regards to the needs for coordination 'given that one cannot (for example) resolve air pollution problems while completely ignoring the issue of water pollution, or deal with local sulphur dioxide pollution while ignoring the long-distance diffusion of sulphur dioxide in acid rain'. And while the free market is championed by many as a spontaneous order for coordinating multiple authorities in the interests of the common good,

depending on 'partisan mutual adjustment' and 'a complex mix of talk, strategy, commitment and individual action' (Dryzek, 2000: 158), this free market does not exist under conditions of capitalism where monopolies become inevitable, and from an ecological perspective markets are highly problematic within the dominant anthropocentric capitalist culture.

Despite these obstacles to the transformative potential of multiple authorities contesting the dominant discourses, Dryzek insists that there is still a great deal of promise in the challenges to dominant authorities posed by networks of organizations of civil society and social movements in public spheres, and their participation in the discursive order (2000: 159). This is not to idealize the creative authority of networks and discourses. Dryzek points out that 'in practice they feature information asymmetries, conflicts, and misunderstandings' and that they are not guaranteed to prevail when confronted with other centres of political power (2000: 160). However, this is the case for imposed authority too, with the state, legal systems, bureaucracies and liberal constitutions. The advantage of considering the power of authorities of civil society and discourse is that they tend to be 'problem-driven' and 'unlike, for example, state bureaucracies' do not tend to encroach beyond the relevant problem or 'outlive their usefulness' (Dryzek, 2000: 160). Such forms of authority are also more open to contestation.

The articulation of 'denial of multiple authorities' then has political currency, particularly with notions of democracy and democratisation at the global level. Lack of representation, and demands to 'speak for ourselves', have become prevalent worldwide, and authoritarianism in government at least, but also increasingly in global institutions and corporations, is a widely acknowledged form of injustice. We can understand, as Saward too (2006) points out, the authority of green theorists as playing a part in this broader contestation of authority in the processes of representation. '[T]he ecological communicative ideal' has the potential to expose the huge ecological problems with existing 'political (and economic) mechanisms' (Dryzek, 2000: 155) While '[t]he idealizing force of the deliberative model must confront the limitations and practical exigencies of real world political decision-making where time, information, and knowledge constraints abound' we can understand the idea of ecological democracy as an 'ambit claim' which may help us to '"unrig" the anti-ecological biases of liberal democracy' (Eckersley, 2004: 129, 131).

Social movement and activist groups have a long history in the development of ideas of representative contestation and are well-versed in this potential for disrupting existing forms of authority and asserting their own authorities, as well as the creative process of bringing multiple authorities together. Articulating the denial of multiple authorities in terms of speech and action has the potential to reinvigorate participation in representative processes, traditional and otherwise. This potential lies in raising awareness of the more varied locations of authority. As individuals, groups and communities both local, national and trans-national become more aware of their own capacity for authoritative judgements in context, and the confirmation and affirmation of their own authority, there is an increased possibility for empowerment and contestation. This has the potential to counter the dominant 'top-down', passive understanding of authority, the centralisation and monopolisation of authority and the accompanying lack of responsibility which reliance upon institutionalised technocratic management reproduces.

There is also transformative potential of a more empowering and ecologically responsible understanding of scientific production processes attentive to multiple authorities and how this might challenge, in particular, the lack of reflexivity in the science of nuclear energy. Attending to multiple authorities and the possibilities for contesting injustices through articulations of the denial of authority to both human and nonhuman nature might also be good for both existing scientific practice and it's attitudes to other humans and to nonhuman nature, as well as public understandings and interactions with science. As Latour (2004: 64) has emphasised, epistemologically, awareness of 'intermediary states' of 'translation, betrayal, falsification, invention, synthesis, or transposition' are the norm in much scientific practice, and Saward (2006: 193) too reminds us that 'the claims of scientific knowledge rest upon assumptions about the social dimension of creating scientific knowledge and on the Popperian fallibilist view that science proves nothing but offers "conjectures and refutations."' This highlights awareness of the limits to scientific authority which tends to be lost as it combines with - or succumbs by default to - the instrumental, capitalist productivist purposes of state or economic authorities. Donna Haraway (1988: 580) similarly argues that we need to reclaim understandings of science, which has always been about 'a search for translation, convertibility, mobility of meanings', but has been warped by the

desire for universal truth (higher authority) and reductionism (denial of the authority of others), where 'one language (guess whose?) must be enforced as the standard for all the translations and conversions.'

This is of particular importance in the context of nuclear science and technology. Can it become more power-sensitive, less authoritarian, more engaged, locatable, situated and reflexive? Brian Wynne (2011: 21) has asked, in response to his analysis of the 1977 Windscale Inquiry, 'whether highly sophisticated technologies that demand even more collective human self-belief, commitment, discipline and responsibility' than he had imagined even at that time, are even capable of sustaining the 'essential "reflexive" *sui generis* counter-discipline of appropriate scepticism towards their own defining faiths.' He argues that if institutional reflexivity of this kind is not sustainable, 'then such technoscientific social programmes turn relentlessly into hegemonic, dangerous and provocative fundamentalisms' (Wynne, 2011: 21).

And yet, at the other extreme to fundamentalism, in the context of dominant understandings of scientific authority, a more interpretive and less direct and literal understanding of representation also carries with it the fear that the play of representations becomes detached from the referents, and as Ariel Salleh (1997: 176) has warned, this pluralism can then become 'neoliberalism by default.' Saward (2006: 193) does not argue 'that there is no referent, or extra-discursive reality. Certain forms of knowledge of [nonhuman and human nature], in this respect can have a particular, if contingent validity,' and it is important to acknowledge that 'broad and deep consensus among specialists with expertise is a powerful thing.' Yet it is the authoritative power of this, and the ways in which this may exclude and deny other important forms of authority of which we need to be vigilant, particularly where consensus and expertise are generated within structures which encourage emotional detachment and neutrality, denying the impact of scientists' own authority upon others and the responsibility which comes with this.

Contrary to assumptions about the efficacy of uncertainty and doubt, there is much transformative potential in greater awareness of the limits of authority; the ever present potential for denying the authority of others and the dangers in ignoring the potential fallibility of one's own authority are of vital importance. Haraway (1988: 586) reminds us that 'the split and contradictory self is the one who can interrogate positionings and be accountable, the one

who can construct and join rational conversations and fantastic imaginings that change history.' She emphasises that

> we need the power of modern critical theories of how meanings and bodies get made, not in order to deny meanings and bodies, *but in order to build meanings and bodies that have a chance for life*' (Haraway, 1988: 780, emphasis added).

In this respect, articulating the injustices of denied authorities provides a crucial means for contesting nuclear energy and the scientific promise of technological development when posed as an imperative solution to the current problems of common life in the context of climate change. It helps to resist, in Haraway's (1988: 589-590) words, 'dreams of the perfectly known in high-technology, permanently militarized scientific productions and positionings, the god trick of a Star Wars paradigm of rational knowledge.' Yet the challenge remains as to whether or not we can move beyond the temptations of looking to a specific definition of rational knowledge as higher authority. It is for this reason that contestation of authority is so important.

In part such contestation relies upon the potential for moving beyond understandings of particular rationalities as higher authority, and hence upon the continued contestation of authority denied - injustices of representation. However, this takes me to the second point I wish to emphasise here as we hit upon the limits to the efficacy of articulating injustices of nuclear energy in terms of representation alone. Limits to the articulation of representation-based injustices demonstrate the importance of also contesting recognition-based injustices. Articulating such injustices is important because we cannot understand the causes of the lack of reflexivity in dominant authoritarian forms of science without understanding how this is influenced by a desire for sovereignty and control of the inevitable unpredictability inherent in common life. Given the power of the dominant discourses it is also important to be aware that it is likely that the authority of nonhuman nature and of future generations will be adequately taken into account and considered in re-examining the question of how we might live together because both do not speak in human terms, and the latter is also unable to act. While there is much scope for contestation of denial of the authority of nonhuman nature and future generations by human others in the present this is likely to be undermined if recognition-based injustices continue and humans fail to respect integrity,

227

involving both continuities and differences between the past, the present and the future, for both humans and nonhuman nature.

The wish to be right, to claim true authority and to avoid consideration of the inevitable implications of one's authority upon others may arise from the desire to avoid criticism, or to avoid errors (Alcoff, 1991). This '[d]esire to find an absolute means to avoid making errors comes perhaps not from a desire to advance collective goals but a desire for personal mastery' (Alcoff, 1991: 22). Such desire for mastery results from the desire 'to establish a privileged discursive position wherein one cannot be undermined or challenged' and to avoid engaging in the 'emotionally troublesome' practice of ongoing 'interrogation and critical reflection' (Alcoff, 1991: 22).

Thus, resisting denial of authorities also requires an articulation of recognition-based injustice as disrespect for integrity of self and other in relation. As the previous chapter has shown, this disrespect, tending towards the desire for mastery emerges from insecurity and the desire to control unavoidable unpredictability in interaction as well as to insulate oneself from the implications of dependency upon others. Wynne (2011: 22) has pointed out that hubris was a key cause of public mistrust of nuclear energy programmes, yet this hubris 'embodies profound insecurities on the part of its hubristic subject-agents'. The 'necessity' for nuclear energy remained bound up with the necessity of the nuclear weapons deterrent which involved the 'threat of mind-numbing physical violence and technological terror over others who were assumed to be intrinsically lethally threatening, thus requiring control by unambiguously genocidal counter-threat' (2011: 22). Wynne argues that 'a similar if far more deeply buried sense of insecurity prevails with respect to the publics that those institutional powers cultivate, and supposedly represent' (2011: 22). In order to get at the values and presuppositions which motivate monopolisations of authority an ecological understanding of recognition, and contestation of injustices of disrespect for integrity, is also important.

There is, for example, some transformative potential for reclaiming multiple authorities in ideas of bioregionalism which rejects the generally 'ecologically arbitrary political units' which exist at multiple levels in favour of 'watershed, topography, or species composition of ecosystems' (Dryzek, 2000: 156-7). Similarly to Murray Bookchin's (1993) eco-anarchism, this enables more dispersed representation of humans and nonhumans by those who are less

remote from contestation of the consequences of such representations. Yet bioregionalism and eco-anarchism are also explicitly linked to the concept of ecological selves through the ecological awareness of 'living in place' (Dryzek 2002: 157). As Dryzek (2000: 141) points out 'decentralization of political authority would have decidedly anti-ecological substantive consequences in a lot of places with natural-resource-based local economies'. For example,

> many counties in the Western United States have tried to assert their authority against federal environmental legislation (so far with little success in the courts) in order that mining, grazing on federal lands, and forest clearcutting can proceed unchecked (Dryzek, 2000: 141).

Thus it is clear that not only must centralised and remote or universalising forms of authority be contested, but also disrespect for integrity, for '[d]ecentralization will only work to the extent local recipients of authority subscribe to ecological values' (Dryzek, 2000: 141). Without possibilities for contesting recognition-based injustices it is likely that much that is local might still be disrespected. Sole reliance on the local is no guarantee against disrespect for integrity, particularly when it comes to considering transnational and future continuities and differences and the effects of creative and destructive authorities upon integrity across time and space.

The importance of also contesting recognition-based injustices is particularly clear when we consider the problem that future generations, while they can be spoken for, cannot act, and therefore challenging representations of them, whilst still an important activity, may be harder to do amongst all the other authorities vying for representation. For this reason too, challenges to authority require recognition of status and integrity. As Dobson (2010: 754) points out, even on rare occasions of consideration, for example, when the committee on Radioactive Waste Management (CoRWM) appointed by the UK government 'explicitly counted future generations among the stakeholders whose interests should be taken into consideration in the process of deciding how and where waste should be disposed of', this has remained nominal without significant counter-weight authority. The accounting of those who cannot speak remains 'some way down the list due to the equivocal status they hold as 'speechifiers' and therefore as bonafide political beings' (Dobson, 2010: 754). Even if we take on board the possibilities of moving beyond speech as a determiner of political relevance, future generations also hold equivocal ecological political status as actors or actants. Children may play a role here, of course, but for the more

distant future we need to contest more than just authority, but also integrity, the continuities and differences between the past, the present and the future, for both humans and nonhumans, and also consider the potential injustices of disrespect for integrity should we fail to take these into account.

This vigilance towards potential disrespect for integrity of course doesn't only affect future generations, but also all who participate in representative processes – in order to be taken seriously, in order for action and communication to be given authority it requires recognition. For nonhuman nature, and others who do not speak, attention must not be of the disengaged, remote sort, but requires respect and awareness of both continuities and differences between selves and others, both human and nonhuman. If we do not hold respect and care for those with whom we interact we are unlikely to ascribe authority to them and are more likely to succumb to using them in purely instrumental ways to enhance our own authority vis-à-vis other authorities. Without the ecological awareness of injustices of recognition, injustices of representation will not be adequately contested.

However, finally, I argue that in contesting representation-based and recognition-based injustices of authority it is also important to do so in relation to the contestation of distributive injustices over basic necessities. This is so because injustices of both representation and recognition are also influenced by the fear of deprivation of basic necessities (as well as disregard for such deprivation of others) and are perpetuated by uneven distributions of these. Representative processes of creative and destructive authority are always incomplete, and there is an ever present possibility for monopolisation and totalisation of authority, denying the authorities of others. This stems in part from the ever-present possibility for alienation and the desire for domination which we see through the politics of recognition, but it also stems from both greed, and fear of deprivation of basic necessities which also require contestation in terms of the politics of distribution. After all, as Aldo Leopold (1968 [1949]: 203), noted in 'The Land Ethic': 'The land-relation is still strictly economic entailing privileges but not obligations'. This entails contestation of purely instrumental attitudes partly of course as a matter of recognition, but also a matter of contesting greed and asserting need; a matter of the distribution of basic necessities. In judging claims of representative injustices and challenges to the authoritarian character of dominant interpretations of scientific authority it

is important to also bear in mind the highly uneven playing field in the resourcing of scientific knowledge construction.

The dominant discourses which structure both the values which influence the quality of interaction (recognition), and understandings of communication and awareness of constructive and destructive authorities (representation), are themselves 'complex product[s] of structural inequality' (Young, 2001: 685). It is all very well to suggest that we all speak and/or act for ourselves (and each other), but to really understand, judge between authorities and aim at more responsible forms of collaboration in context we also need to be able to evaluate what is at stake in the politics of distribution of any given issue. As Wynne (2011: 21) argues, we must be concerned with

> the continuing intensification and enlargement of the instrumental expectations of science, its commercial-instrumental imaginaries and cultures that dominate it, and its purely knowledge-economy competitive meaning in modern funding and policy.

Purely instrumental attitudes which deprive others - both human and nonhuman - of basic necessities also require contestation.

So, in judging between authorities and moving towards responsible collaboration between them, the politics of distribution also needs to be taken into account. We 'have to make credibility judgements about alleged authorities and experts' (Dryzek, 2000: 166). The dominant discourses structuring both processes of representation and recognition are intertwined with and reinforced by structural inequalities in the distribution of basic necessities which limit, constrain and sometimes undermine the authority of those contesting the dominant authorities. Taking such structural inequalities into account involves considering whether or not claims reinforce an unjust distributive status quo, and how claims are positioned within this.

Many of the authoritative voices denying climate change, or asserting environmental skepticism, claim to be 'speaking truth to power', yet they reinforce dominant financial, and other elite political interests (Jacques, 2006: 78). This can also be said of the distributive agenda which pro-nuclear greens and prominent climate scientists end up reinforcing. The instrumental approach to solving the climate crisis reinforces the existing power and resource inequalities which exist. As Luke (2008a: 1819) argues, sustainable development 'ranging from green venture capital, cradle-to-cradle design, safe nuclear energy, and green engineering' in the projections of such authorities is

usually actually the same old 'sustainable degradation.' The dominant discourse of sustainable development

> embraces decarbonisation as a mode of development, since it celebrates capitalists for embracing an ecology of commerce that wrings waste from existing conditions of production by stemming needless / profitless / senseless losses of material, energy, money, and labor (Luke, 2008a: 1819).

In this way the ecological crises are addressed in ways which become 'fresh opportunities to produce power and profit' for a limited, already elite few (Luke, 2008a: 1818).

Yet we must also beware of simplistically reducing our understanding of the claims and actions of various authorities to their positions, within social or ecological relations, distributive or otherwise. Our understanding of multiple authorities and the assertion and acceptance – including political efficacy - of these, does depend in large part on respect for integrity and the supply of basic necessities. But, it is also important that we bear in mind Spivak's (1988) warning, that seeking to simply reverse our current understandings of authority and assert those neglected carries the danger of assuming that the subaltern can straightforwardly represent their own 'true' interests, that the authority of the subaltern can somehow cut through the dominant discourses. While this is tempting in the context of the dominant anthropocentric separations of science/politics, and nature/culture which block change and awareness of multiple authorities, it is too simplistic and risks affirming rather than transforming liberal anthropocentric understandings of representative democracy. Frustration with the latter leads to the temptation to by-pass politics and deny the authorities of others, which then perpetuates rather than remedies the denial of multiple authorities amongst humans and nonhuman nature and limits possibilities for action in response to the problems we face. It is therefore important to resist simply asserting the authority of those neglected and denied.

This chapter has focused upon finding a language to express injustices to all affected in terms of an ecologically reformulated image of politics as representation. Emphasising the significance of both speech and action within representative processes understood beyond the separation of nature/culture, I

have offered an articulation of representative injustice as the denial of multiple authorities. I proposed a decentred conception of authorities as involving both speech and other forms of action in the multi-valent 'authoring' of the realities that comprise common life. Contesting the denial of authorities assists in unmasking the monopolisation of authority by certain social actors within dominant discourses at the expense of other forms of authority in common life, particularly apparent in the politics of nuclear energy where government, industry and scientists monopolise authority with a disengaged form of knowledge which denies the situated and political character of their own authority as well as denying the potential of multiple authorities of both human and nonhuman others in the constructive and destructive representative processes of common life. The concerns about risk, health, nonhuman others, and the future, raised by, for example, indigenous peoples, women, and others who carry authority arising from their own positionings within the power structures of common life, are denied authority in the face of expert scientists' and risk management experts' authoritarian monopolisation of the facts and probability figures. Contesting the denial of multiple authorities insists upon the potential effectiveness i.e. the constructive and destructive potential of all speech and action within representative processes.

However, current dominant representative processes are limited for taking all affected in representative processes into account because they continue to adhere to the separation of science/politics and nature/culture. There is a risk that revelling in the play of representations without also taking injustices of both distribution and recognition into account, will simply affirm, rather than transform liberal anthropocentric understandings of representative democracy. It is from frustration with the difficulties in negotiating multiple and diverse representations that the temptation to by-pass politics and to deny the authority of others through use of some kind of privileged authority that appears beyond contestation emerges, as in the use of reductive constructions of science and economics in the nuclear debates. While this frustration is understandable in situations of crisis, it perpetuates rather than remedies the denial of authority to aspects of both human and nonhuman nature and thereby limits possibilities for ecologically sensitive action in response to the problems we face. It is for this reason that I have sought to encourage the contestation of injustices emerging from all three images of politics examined in this thesis;

233

distribution, recognition and representation. Paying attention to injustices emerging from each of these, and considering them in relation to each other can provide us with much needed political efficacy, a way of navigating and responding to the problems we face, whilst also opening up rather than shutting down the continued contestation of ecological injustices in this process.

Conclusion

"To those who care about people and planet
but who advocate nuclear power…"[21]

This thesis began with the problem of communicating harms of nuclear energy within mainstream debates about climate change and our energy options. Part I described how reductive conceptions of science and economics, understood to be separate from politics, pervade such debates, reinforcing dominant forms of political organisation, and fragmenting and blocking understandings of other realities and possibilities. It sought to retrieve and develop the radical intersectional potential of the early green movement in an ecological redescription which explicitly challenges the separation of nature/culture inherent in dominant understandings of legitimate and effective knowledge, which are structured around the separation of science (traditionally understood to be about 'what is') and politics (traditionally understood to be about 'what could be' and the power relations which make up political community). These separations have naturalised and reinforced socially produced harms of contemporary life, making them more difficult to contest and articulate as significant. I suggested that these harms, including those produced by nuclear energy, might be better contested if articulated as injustices emerging from the inherent politics of ecological interaction. My concern with articulation arose from the difficulty of i) making the harms of nuclear energy heard and understood as significant within the dominant discourses, and of ii) resisting fragmentation, and finding points of solidarity and political efficacy in the articulation of these harms as injustices alongside other injustices produced by contemporary life.

In Part II of the thesis I developed a heuristic framework for articulating injustices in accordance with my ecological normative and ontological commitments. Taking three images of politics connected to the political imagination – politics as distribution, recognition, and representation – I reformulated each image of politics so as to take all affected, understood ecologically beyond the separation of nature/culture, into account. This first step helped to pave the way for the second step where I drew upon the ecological

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[21] In response to the open letter from climate scientists Caldeira et al. (2013): 'To those influencing environmental policy but opposed to nuclear power..'

reformulation of each image of politics to articulate political intuitions of injustices in the politics of nuclear energy.

In Chapter Three, ecologically reformulating an answer to the question 'who gets what?' drew attention to the connections between uneven distributions of the burdens as well as the goods of common life, and the limits of human and nonhuman capacity to sustain these. The political intuition of distributive injustices of nuclear energy could then be articulated as the exacerbation of the deprivation of basic necessities of both human and nonhuman nature across time and space. In Chapter Four, answering the question 'who counts as what?' in ecological terms drew attention to the unpredictability of complex interactions involving both continuities and differences in self/other relations (integrity) beyond the separation of nature/culture, highlighting limits to the independence and control of the dominant human self. The political intuition of recognition-based injustices of nuclear energy could then be articulated as the disrespect for integrity in relations between the dominant human self and both human and nonhuman others, through the dominant illusion of independence and control of unpredictable human and nonhuman interactions. In Chapter Five, ecologically considering the question 'who acts for what?' highlighted the multi-valent constructive and destructive power of both speech and action in processes of representation involving both human and nonhuman entities across time and space. The political intuition of representative injustices of nuclear energy could then be articulated as the denial of multiple authorities of other humans and nonhuman nature, by government, industry and scientists' monopolisation of particularly remote and disengaged forms of authority.

In the last sections of Chapters Three, Four, and Five I reflected upon some possibilities and limits of each articulation for a transformative ecological politics. In this conclusion to the thesis I seek to further underline the political efficacy of articulating ecological injustices beyond the separation of nature/culture, by drawing them together in response to three powerful, interlinked and mutually reinforcing arguments for nuclear energy. These arguments are all implicit in the case of pro-nuclear greens, in the UK government's justification of the harms and risks of nuclear energy in accordance to the guidelines of the International Committee for Radiological Protection (ICRP), and in the governments' nuclear energy policy more broadly.

The first of these arguments I broadly summarise as the 'no alternative, lesser evil' argument, which posits nuclear energy as the only realistic alternative to carbon-intensive fossil fuels, with all the greater risks and consequences, including climate change, which these entail. This argument for the further development of nuclear energy is a forceful one. At time of writing the need to reduce carbon emissions to prevent 2 degrees warming which could trigger runaway climate change is more urgently apparent than ever (IPCC, 2013). Human caused climate change is already exacerbating disruption and harm to those who are worst positioned to respond (IPCC, 2014). The argument for nuclear energy is that without it, governments will depend more heavily upon fossil fuels, thereby increasing the risks and damage of climate change. Not only this, fossil fuels are doubly evil; the industry has a notorious safety record worldwide, with coal-mining accidents causing thousands of deaths annually, not to mention the harmful emissions for those living close to coal-fired power stations. As extraction of oil and gas becomes more technologically complex in response to less readily accessible supplies, harms from these are also increasing.

None of this will be news to most environmental and global justice activists. The trouble with this framing of the problem and the difficulty in countering it lies in how the dominant discourses pit harms from energy sources against each other. The appeal to numbers and 'facts' in the face of the overwhelming problems we face is an attempt to find a way of comparing options so that we can then act in response to them. But this way of understanding the issue continues to separate scientific facts from political values, relying upon and reinforcing the separation of nature/culture, and using the former to avoid serious reconsideration of the latter. To navigate the problem in reductive comparative terms blocks understanding of its inherent politics.

From the point of view of an image of politics as distribution, we can see that nuclear energy causes deprivation of basic necessities to those in other countries, to those who suffer the after effects of accidents, and to future generations, both human and nonhuman. Not only this however. Those impacted by such distributive injustices are also more likely to be subjected to deprivation of basic necessities caused by other factors, including fossil fuels. If we choose the nuclear energy option, future generations are likely to be

impacted upon by *both* the long-term effects of climate change and of nuclear energy. In the context of a disaster such as Fukushima it is the poorest and those otherwise disadvantaged who will suffer effects the most. Both nuclear and fossil-fuel energy produce distributive injustices as a result of the production of burdens as well as goods, and the deprivation of basic necessities this entails is likely to be exacerbated in the context of climate change and various other linked ecological crises (water shortages, soil depletion, deforestation, flooding etc.).

It might be contested that if nuclear energy helps us to combat the effects of climate change through reducing reliance upon fossil fuels then this is still justified. However, reconsidering this in terms of an image of politics as recognition, shows how this assumption that nuclear energy can help us to control the forces which production of carbon emissions has put in motion disrespects the integrity of both humans and nonhuman nature. As discussed in Chapter Four, integrity involves both the continuities and the differences between ecological selves and others and entails inevitable vulnerabilities and dependencies in, often impossible to predict, interactive processes of ecological life. In the politics of nuclear energy, some humans (industry, government and scientific experts) assume the controllability of nuclear energy and the possibilities of minimising risk through control and coercive protective measures. In assuming independence and control of nonhuman nature they deny human fallibility, and vulnerability to factors in nonhuman nature beyond human control, thereby disrespecting the ecological integrity of both themselves and others. Nuclear energy causes additional recognition-based injustices, which compound and add to, rather than alleviate, injustices produced by the overuse of fossil fuels. In addition, as they are both base-load forms of energy supply nuclear and fossil-fuel energy as they currently stand do not challenge the existing electricity grid structure nor encourage more careful and context-sensitive uses of energy. This means that they reinforce (except in times of crisis disruption) the illusion of independence from and control of the human and nonhuman world, and the idea that we can continue to live as we do, disrespecting the integrity of this world and the effects of our actions upon both ourselves and others within it.

The 'no alternative, lesser evil argument' also perpetuates representation-based injustices. Those adopting this argument monopolise

authority, both in terms of language and action. While potentially engrossing and all-consuming, responding to utilitarian moral calculations of relative deaths by reemphasising the disputed figures of actual and potential deaths from nuclear energy, or to the facts about radiation with another set of facts about radiation from another set of experts, again neglects the inherent politics. Disputing numbers in this way denies authority to those who do not have access to the production and evaluation of numbers, but it also denies the authority of those who have experienced losses and damage from nuclear energy, regardless of quantity. The authoritarian use of numbers also encourages disengagement and a lack of self-critical reflexivity in the authority of those wielding them, as they abdicate political responsibility for the lives which these numbers do or do not represent. In countering the 'no alternative, lesser evil' argument it is important to bear in mind that both fossil fuels and nuclear energy perpetuate representation-based injustices because they allow the authority of a minority of large energy corporations to continue, denying the potential of multiple decentralised authorities to negotiate energy production in a manner potentially more responsive and sensitive to the authorities in nonhuman nature.

This takes us to the second, linked argument for nuclear energy in the context of climate change. This argument can be formulated as the 'poverty, security and development' argument. This posits nuclear energy as necessary to secure energy security and therefore addresses problems of poverty and economic development. The 'poverty, security and development' argument is made in both industrialised and industrialising countries, but is often considered especially relevant for the latter. This argument builds on the idea that nuclear energy is the lesser evil and the only currently viable alternative to fossil fuels as a motor for economic growth, national security and human well-being. As with the Atoms for Peace program in the 1950s, nuclear energy is promoted as a means to help countries develop and to alleviate global poverty. Building on the logic of the previous 'lesser evil' argument, nuclear energy is seen as a solution to the impasse between industrialised and industrialising countries over the right to industrialise and the problem of reducing carbon emissions in the context of climate change. Nuclear energy is put forward in both parts of the world as producing jobs and enabling economic development in underdeveloped regions, providing energy security and thereby preventing

certain forms of deprivation such as fuel poverty and poverty in general. Yet here again, countering the facts and figures and projections for economic growth, growth in demand and the ability of certain technologies to meet these demands or not, fails to address the inherent politics of the issue.

Responding to this argument about poverty and economic development from the perspective of politics as distribution, understood in ecological terms, involves thinking about the deprivation of basic necessities across time and space, as well as how these relate to each other through rising inequalities in distributions of many kinds. Bearing in mind the burdens as well as the goods of energy production means taking into account not only nuclear waste, but also the effects of a continued rise in energy production, consumption of goods and production of other hazardous wastes. Taking into account how this deprives humans and nonhuman nature across time and space exposes the limits to human and nonhuman capacities to sustain endless material economic growth, as hazardous waste will impact most upon those already deprived, both human and nonhuman. According to the existing forms of social organisation nuclear energy will profit those already benefiting disproportionately from unequal distributions, and it will exacerbate rather than alleviate the deprivation of others as the risks will be distributed unevenly. Proposing nuclear energy on the grounds of security, alleviating poverty and encouraging economic development is therefore flawed when considered in relational distributive terms. We can see that it encourages rather than solves continued deprivation of basic necessities of both human and nonhuman nature.

This might be contested with the liberal argument that this deprivation of basic necessities can be compensated for by the trickle-down effect resulting from the production of wealth by the few. It might be argued that economic development can reduce the production of burdens which deprive basic necessities of human and nonhuman, as through the production of wealth and development, environmental regulation standards increase. However, this is also a matter of the quality of relations between selves and others in (an expanded understanding of) political community, and therefore also a matter of recognition.

If we think about the 'poverty, security, and development' argument from the point of view of an image of politics as recognition we can challenge the dominant conceptions of development and state security as something to aspire

to, as something which solves the problems of the relations of political community. This conception of well-being and security is predicated on an inside/outside understanding of political community which seeks security and sovereignty through relations of domination which mask and deny both continuities and differences between human and nonhuman selves and others. The emphasis upon nuclear energy to promote energy security and state development perpetuates disrespect for the integrity of relations between ecological entities across time and space as the capitalist economic growth model backgrounds and instrumentalises much of human and nonhuman nature. This argument reproduces the dominant understandings of basic necessities and perpetuates the illusion of human independence from nonhuman nature. Because of its high risk character nuclear energy is also highly securitised, promoting state security over individual security of both humans and nonhuman nature, as well as potentially endangering international security. To advocate nuclear energy to address security and economic development problems of specific national areas or countries also disrespects the integrity of other cultures which do not subscribe to the dominant understandings of human well-being that problematically insulate humans from both each other and nonhuman nature.

It is therefore helpful to respond to the 'poverty, security and development' argument by looking at it in terms of an image of politics as representation, too. To advocate nuclear energy for state security and development denies the authority of those who do not subscribe to this understanding of well-being and detracts from the representation and development of alternative possibilities for self/other relations. The 'poverty, security and development' argument for nuclear energy reinforces the non-reflexive authority of a dominant culture and of the dominant state and scientific and economic powers. In this framing, expert authorities represent well-being of other humans and nonhuman nature in reductive terms of GDP growth and unemployment and job statistics which fail to account for the multiple authorities and potentials of both human and nonhuman nature. In addition, because nuclear energy is such a highly centralised technology, the forms of state and industrial authority it encourages are highly centralised, denying the potential of a more multiple and reflexive understanding of both human and nonhuman authorities in the construction and interactions of common life. It is questionable

how resilient such centralised forms of authority may be in the context of the long-term effects of climate change. Promoting nuclear energy encourages reliance upon a dominant source of energy which denies the potential for multiple authorities to negotiate multiple sources of energy which may be more adaptive and respond more quickly and flexibly in times of change and crisis. To advocate nuclear energy as alleviating poverty, promoting economic development and security is to encourage a path which would limit the capacity of multiple authorities to be flexible and adapt in an ecologically sensitive manner to the difficult-to-predict changes which the future will bring.

Finally, I broadly summarise the third argument for nuclear energy as the 'path-dependency and trust in techno-scientific solutions' argument. This combines the inescapable legacy of the problems we already face in tackling nuclear waste storage with the idea that science and industry will develop the solutions to both these and climate change. Furthermore, through continued investment in nuclear technology we may still fulfil our dreams for limitless low-carbon energy. This argument ties into the first two, as it combines a sense of no alternative with the hope that existing dominant systems and lines of thinking about the world might still help to get 'us' out of the mess that 'we' are in. Given that we already have nuclear waste, so the argument goes, we need to trust the nuclear industry to solve this problem. We need to place our faith in fast-breeder and fourth generation nuclear reactors which will help us to 'recycle' the high-level radioactive waste which we already have as a result of irresponsible industry and governance of the past. The industry needs to continue in order to help to solve the problems it created. Not only this, but we should put our faith in the idea of nuclear fusion which could provide us with limitless energy, or in thorium which is also abundant.

To address this argument with the help of an image of politics as distribution, we can highlight again how this perpetuates and exacerbates the unequal distribution of basic necessities of common life. Large corporations which are the only ones capable of this scale of project are guaranteed government loans, insurances and price-assurances, thereby limiting investment in other potential forms of energy and efficiency technologies as well as a more widespread distribution of the benefits of energy production and efficiency measures. Centralised nuclear energy is also less sensitive to the basic necessities of both human and nonhuman others than other technologies

242

might be. In the context of the dominant political and economic structures the dream of a limitless supply of energy would reinforce rather than alleviate deprivation of basic necessities as it would lead to increased material production and consumption, generating more goods, but also more burdens which would exacerbate deprivation of basic necessities for many humans and much of nonhuman nature.

Seen from the perspective of an image of politics as recognition, this trust in science to address the problems already produced by nuclear energy, and modern society as a whole, perpetuates an understanding of science as something separate from the rest of our complex political relations and fails to adequately comprehend our own embeddedness in the world and the effects of our actions within it. It perpetuates the mastery of a disengaged form of science which disrespects the integrity of ecological self/other relations. While limitless energy by itself might not be an issue, it is the failure to challenge the dominant conceptions of political community which make it potentially dangerous, for this would enable us to continue to isolate ourselves from each other and nonhuman nature. Placing faith in techno-scientific solutions and the idea of limitless energy feeds understandings of human security as entailing independence from, and control of, the nonhuman world. The problem of existing nuclear waste does indeed need to be addressed, and it challenges us as humans in both our power and our powerlessness. Similarly to the problem of climate change it is tempting to respond by turning to the mechanisms we have developed for dealing with the uncertainties which pervade common life – through relations of disengagement, domination and control. However, conceptions of science, industry, and governments as being capable of such control disrespects integrity, that is, the continuities and differences between both humans and nonhuman nature which make common life inherently unpredictable. Such unpredictability implies inevitable fallibility and vulnerabilities. The trust that nuclear and other forms of science as they currently stand can help us to solve the problems of nuclear waste and climate change assumes a degree of control and power that is an illusion of the dominant human self, perpetuated through hierarchical relations of domination.

This can also be understood in terms of an image of politics as representation. The 'path dependency and trust in techno-scientific solutions' argument places faith in forms of authority which claim to be able to describe

reality from above, to present the 'one' truth and account of reality, thereby denying the authorities, the power of others. It reinforces the dominant conceptions of authority in an industry, and a science, which has been shown to lack reflexivity and responsibility in understanding its own authority and the impact of this upon others both historically and up to the present day. Trust in the safety of nuclear energy relies upon an understanding of total authority that is neither a desirable, nor a likely possibility.

These three arguments for nuclear energy combined assert a sense of the power of humans over other humans and nonhuman nature. However, the understanding that we must choose this path and that we cannot devise alternative responses to the problems we face, also plays on our insecurities, on the sense of powerlessness that we have. We are thus potentially doomed by a double-edged sense of both the power of a dominant culture and its wretchedness. That this age, the Holocene, might be renamed the Anthropocene is symptomatic of this simultaneous double-edged awareness. In this thesis I have argued that if we as humans can learn anything in our development of knowledge about common life, it might be something about the problem of how those contradictions might be negotiated, through ongoing attention to and contestation of multiple injustices.

The heuristic framework I adopted and adapted in this thesis drew upon and brought together some of the knowledge from the history of justice and liberation struggles so as to challenge the separation of nature/culture which perpetuates ecological injustices and limits awareness of these. I applied a particularly ecofeminist sensibility to this undertaking, seeking to demonstrate the value of an ecofeminist inspired toolkit for negotiating the ecological challenges with which we are confronted. In this way I have sought to translate the importance of ecofeminist thinking into the language of *politics*, and to help remedy the relative neglect of vital insights from ecofeminism within green political theory (cf. MacGregor, 2003, 2004, and 2009). If understood in abstract terms according to the dominant logics, this framework may seem too radical, too demanding, too critical, too impossible or idealistic. And yet given the extent of the ecological crises we face, it is important that we find stronger ways of contesting the dominant discourses, because '[r]ealistically the only longterm option available is radical' (Barry & Doran, 2006: 251). The point of this thesis has not been to describe an impossible ideal, but to enable the contestation of

injustices, and to attend to and negotiate these in the everyday decisions we make. I contend that the heuristic framework developed in this thesis is particularly useful from an ecological perspective which takes on board the reflexive insights of ecofeminist attention to all affected in an ecological understanding of common life, beyond the contradictory yet powerful hierarchical separations of science/politics and nature/culture. This framework can help us to consider, as we carefully pick our ways forward, how and where deprivation of basic necessities, disrespect for integrity, and denial of multiple authorities occur, to attend to the various ways in which they are articulated, and then negotiate how best to respond to and reduce their occurrence for both humans and nonhuman nature.

By articulating deprivation of basic necessities, disrespect for integrity, and denial of multiple authorities in the politics of nuclear energy the intention has been to open up political contestation so as to take (as far as possible) all affected into account. I have also shown how ecological injustices tend to intersect and reinforce each other. Just as science and economics cannot be understood to be separate from politics, nuclear energy cannot be considered separate from the dominant forms of social organisation. This has implications beyond the issue of nuclear energy, for green politics more generally. Efficiency and renewable energy technologies cannot in and of themselves be seen as solutions to the ecological problems which a rejection of nuclear energy leaves in its wake. Depending upon how these technologies are used, they too will generate and perpetuate ecological injustices. Taking away the 'technofixes' leaves us with an apparently stark political picture which may seem stripped of much hope, particularly according to the dominant discourses. It is this condition of hopelessness that may be seen as a key reason for green capitulation to dominant discourses and to the idea of nuclear energy as a solution to climate change.

Yet the double-edged tension between urgency and hopelessness, which has encouraged many along the nuclear energy path, remains trapped within the dominant discourses which paint such a limited picture of the possibilities the world still holds. This attitude both over- and underestimates human and nonhuman potentials. There are other ways of confronting the contradictory politics of common life. In the words of Theo Simon (Monbiot & Simon, 2012), in times of despair 're-assess your thinking, and then figure out who your allies are

and start to make a plan.' There is potential in this shocking awareness of our predicaments. The loss of the idea of the 'technofixes' removes a mediating and insulating factor in common life, confronting us with both ourselves and with each other. This is not to dismiss the role which technologies do and will play in ecological relations, but it is to caution us to be explicit about the inherent politics of these. As such, this thesis has sought to reiterate the old radical green critique in a renewed form. I have suggested that we pay more attention to the connections between those injustices resulting from common life which have been separated out and pitted against each other according to the dominant logics. Such articulations are in vital need of strengthening and encouraging. Historically, the odds have always been stacked against movements for social change, but that has never been considered a valid reason to give up the struggle against injustices.

Bibliography

ALCOFF, L. (1991) The Problem of Speaking for Others. *Cultural Critique*. 20: 5-32.

AGYEMAN, J. (2002) 'Constructing Environmental (In)Justice: Transatlantic Tales', *Environmental Politics*, 11(3): 31–53.

AGYEMAN, J., HALUZA-DELAY, R. & O'RILEY, P. (eds) (2009) *Speaking for ourselves : environmental justice in Canada.* Vancouver: UBC Press.

ALLDRED, M. & SHRADER-FRECHETTE, K. (2009) Environmental Injustice in Siting Nuclear Plants. *Environmental Justice.* 2(2): 85-96.

ALLISON, W. (2009) *Radiation and reason: the impact of science on a culture of fear.* York: York Publishing Services.

AMOS, J. (2014) North American scientists track incoming Fukushima plume. BBC News. [Online]. 25th February 2014. Available from: http://www.bbc.co.uk/news/science-environment-26329323 [Accessed: 21st March 2014].

ANDERSON, R. (2014) German coal industry underpins renewable push. BBC News. [Online]. 10th April 2014. Available from: http://www.bbc.co.uk/news/business-26820405 [Accessed: 14th April 2014].

ARCHIBUGI, D. & HELD, D. (eds.) (1995) *Cosmopolitan democracy: an agenda for a new world order.* Oxford: Polity Press.

ARNESON, R. J. (2008) Justice after Rawls. In: Dryzek, J., Hong, B. & Phillips, A. (eds.) *The Oxford Handbook of Political Theory*. Oxford University Press, pp. 45–64.

ATHANASIOU, T. & BAER, P. (2002) *Dead Heat: Global Justice and Global Warming.* New York: Seven Stories Press.

AVERYT, K. et al. (2011) *Freshwater use by U.S. Power Plants. Electricity's thirst for a precious resource.* A report of the Energy and Water in a Warming World Initiative. Cambridge, MA.: Union of Concerned Scientists.

BALL, J. (2013) E.ON lobbied for stiff sentences against Kingsnorth activists, papers show. *The Guardian.* [Online]. 19th February. Available from: http://www.theguardian.com/environment/2013/feb/19/eon-lobbied-miliband-sentences-kingsnorth [Accessed: 21st February 2013].

BARNETT, C. (2012) Situating the geographies of injustice in democratic theory. *Geoforum.* 43: 677–686.

BARRY, B. (1999) Sustainability and Intergenerational Justice. In: Dobson, A. *Fairness and Futurity. Essays on Environmental Sustainability and Social Justice.* Oxford: Oxford University Press.

BARRY, J. & DOHERTY, B. (2001) The Greens and Social Policy: Movements, Politics and Practice? *Social Policy & Administration.* 35 (5): 587-607.

BARRY, J. & PATERSON, M. (2004) Globalisation, Ecological Modernisation and New Labour. *Political Studies.* 52: 767–784.

BARRY, J. & DORAN, P. (2006) Refining Green Political Economy: From Ecological Modernisation to Economic Security and Sufficiency. *Analyse & Kritik.* 26: 250-275.

BARRY, J. (2012) *The politics of actually existing unsustainability: human flourishing in a climate-changed, carbon constrained world.* Oxford: Oxford University Press.

BARRY, R. (2005) Special Report: Plugging the Energy Gap. *Prospect.* November: 50–4.

BATTY, P. (2005) Private Politics, Public Strategies: White Advisers and Their Aboriginal Subjects. *Oceania.*, 75(3): 209-221.

BAUER, M. (ed.) (1995) *Resistance to New Technology. Nuclear Power, Information Technology and Biotechnology.* Cambridge: Cambridge University Press.

BAXTER, B.H. (2000) Ecological justice and justice as impartiality. *Environmental Politics.* 9: 43–64.

BAXTER, B. (2005) *A theory of ecological justice.* London: Routledge.
BBC (2012) Sellafield Thorp site to close in 2018. *BBC News Cumbria.* [Online]. 7th June. Available from: http://www.bbc.co.uk/news/uk-england-cumbria-18353122 [Accessed: 23rd March 2014].

BBC (2013a) Japan nuclear agency upgrades Fukushima alert level. *BBC News Asia.* [Online]. 21st August. Available from: http://www.bbc.co.uk/news/world-asia-23776345 [Accessed: 24th March 2014].

BBC (2013b) Lib Dem vote backs nuclear power plants, BBC News. [Online]. 15th September. Available from: http://www.bbc.co.uk/news/uk-politics-24100833 [Accessed: 13th February 2014].

BECK, U. (1992) *Risk Society: Towards a New Modernity.* Longon: Sage.

BECK, U. (1995) *Ecological enlightenment: essays on the politics of the risk society.* New Jersey: Humanities Press.

BEGON, M., TOWNSEND, C.R. & HARPER, J.L. (2006) *Ecology: From Individuals to Ecosystems.* Oxford: Blackwell.

BENN, T. (2009) In Conversation.. Tony Benn. Interview by Ian Dale. *Total Politics.* [Online] Available from: http://www.totalpolitics.com/print/1288/in-conversation-tony-benn.thtml [Accessed: 23rd March 2014].

BENNETT, J. (2004) The Force of Things: Steps toward an Ecology of Matter. *Political Theory*. 32(3): 347–372.

BENNETT, J. (2010) *Vibrant matter : a political ecology of things*. Duke University Press, Durham.

BENNETT, N. (2012) Nuclear power is the Betamax of the energy world. The Guardian. [Online]. 28th September. Available from: http://www.theguardian.com/environment/blog/2012/sep/28/nuclear-power-betamax-energy-world [Accessed: 21st March 2013].

BENTON, T. (1999) Sustainable Development and the Accumulation of Capital: Reconciling the Irreconcilable? In: Dobson, A. (ed.) *Fairness and Futurity Essays on Environmental Sustainability and Social Justice*. Oxford: Oxford University Press.

BERR (2008) Meeting the Energy Challenge. A White Paper on Nuclear Power. [Online]. January 2008. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228944/7296.pdf [Accessed: 21st March 2013].

BICKERSTAFF, K. et al. (2008) Reframing nuclear power in the UK energy debate: nuclear power, climate change mitigation and radioactive waste. *Public Understanding of Science.* 17: 145–169.

BIRD, S. (2013) Deaths, chilling safety lapses, lawsuits, huge cost over-runs and delays: Why we can't trust the French with Britain's nuclear future. *Daily Mail*. [Online]. 26th October. Available from: http://www.dailymail.co.uk/news/article-2477202/Deaths-chilling-safety-lapses-lawsuits-huge-cost-runs-delays-Why-trust-French-Britains-nuclear-future.html [Accessed: 22nd November 2013].

BIRD, W. (2013) Two years on, Fukushima evacuees seek justice and a normal life. *The Japan Times*. [Online]. 10th March 2013. Available from: http://www.japantimes.co.jp/life/2013/03/10/people/two-years-on-fukushima-evacuees-seek-justice-and-a-normal-life/#.U000S1dWg40 [Accessed 11th March 2013].

BLACK, R. (2005) Britain Facing Large Energy Gap. *BBC News* [Online]. 9th September. Available from; http://news.bbc.co.uk/1/ [Accessed 25th March 2011].

BLACK, R. (2011) EDF fined for spying on Greenpeace nuclear campaign. BBC News. [Online]. 10th November. Available from: http://www.bbc.co.uk/news/science-environment-15683090 [Accessed: 10th February 2012].

BLOWERS, A., LOWRY, D. & SOLOMON, B.D. (1991) *The international politics of nuclear waste*. Basingstoke: Macmillan.

BLOWERS, A. (2010) Why dump on us? Power, pragmatism and the periphery in the siting of new nuclear reactors in the UK. *Journal of Integrative Environmental Sciences*, 7: 157–173.

BLOWERS, A. (2011) Why Fukushima is a moral issue? The need for an ethic for the future in the debate about the future of nuclear energy. *Journal of Integrative Environmental Sciences.* 8(2): 73-80.

BLÜHDORN, I. & WELSH, !. (2007) Eco-Politics beyond the Paradigm of Sustainability: A Conceptual Framework and Research Agenda, *Environmental Politics.* 16(2): 185–205.

BOHMAN, J. (2007) *Democracy across borders: from Deˆmos to Deˆmoi.* Cambridge, Mass.: MIT Press.

BOOKCHIN, M. (1962). *Our Synthetic Environment.* New York: Knopf (published under the pseudonymn 'Lewis Herber').

BOOKCHIN, M. (1993) What is Social Ecology? In: Zimmerman, M. E. (ed.) Environmental Philosophy: From Animal Rights to Radical Ecology. Englewood Cliffs, NJ: Prentice Hall.

BOOTH, R. (2009) G20 protestors 'offered cash' by police to spy on environmental groups. The Guardian. [Online]. 27th April. Available from: http://www.theguardian.com/environment/2009/apr/27/police-spies-environmentalists-scotland-protesters [Accessed: 17th April 2011].

BRAND, S. (2009a) *Whole earth discipline: an ecopragmatist manifesto.* New York: Viking.

BREACH, I. (1978) *Windscale Fallout.* Harmondsworth: Penguin Books.

BROWN, P. (2004) Friends like these, *The Guardian.* [Online]. 4th August. Available from: http://www.theguardian.com/society/2004/aug/04/environment.environment1 [Accessed: 21st March 2014].

BROWNING, G. & KILMISTER, A. (2006) *Critical and post-critical political economy.* Basingstoke: Palgrave Macmillan.

BUFACCHI, V. (2012) *Social injustice: essays in political philosophy.* New York: Palgrave Macmillan.

BULLARD, R. (1999) Environmental justice challenges at home and abroad. In N. Low (ed.) *Global Ethics and Environment.* London: Routledge.

CALDEIRA, K. et al. (2013) To those influencing environmental policy but opposed to nuclear power, *CNN.* [Online]. 3rd November. Available from: http://edition.cnn.com/2013/11/03/world/nuclear-energy-climate-change-scientists-letter/ [Accessed: 21st March 2014]

CALDICOTT, H. (2011) How nuclear apologists mislead the world over radiation, *The Guardian*. [Online]. 11th April. Available from: http://www.guardian.co.uk/environment/2011/apr/11/nuclear-apologists-radiation [Accessed: 17th April 2011].

CAMILLERI, J. (1984) *The State and Nuclear Power : Conflict and Control in the Western World*. Brighton: Wheatsheaf.

CANNAVO, P. F. (2008) In the Wake of Katrina: Climate Change and the Coming Crisis of Displacement. In: Vanderheiden, S. (ed.) *Political theory and global climate change*. London: MIT Press.

CARRINGTON, D. (2013) Centrica withdraws from new UK nuclear projects. *The Guardian*. [Online]. 4th February. Available from: http://www.theguardian.com/environment/2013/feb/04/centrica-withdraw-new-nuclear-projects [Accessed: 21st April 2013].

CARSON, R. (1962) *Silent spring*. Boston: Houghton Mifflin.

CASTIGLIONE, D. & WARREN, E. (2006) Rethinking Representation: Eight Theoretical Issues. In: *Rethinking Democratic Representation*. Centre of Democratic Institutions. University of British Colombia. 18th-19th May.

CENTRE FOR ALTERNATIVE TECHNOLOGY (GREAT BRITAIN) (2013). *Zero Carbon Britain: Rethinking the Future*. Centre for Alternative Technology Publications, Wales. [Online] Available from: http://www.zerocarbonbritain.org/index.php/report [Accessed 21st March 2014].

CHARLEY, P. et al., 2004. Navajo Uranium Education Programs: The Search for Environmental Justice. *Applied Environmental Education & Communication*. 3(2): 101-108.

CHAZAN, G. & BARKER, A. (2013) Brussels to probe UK nuclear power plant deal. *Financial Times*. [Online]. Available from: http://www.ft.com/cms/s/0/677ddc64-6274-11e3-bba5-00144feabdc0.html#axzz2whFhTouW [Accessed 22 March 2014].

CHENEY, J. (1991) Post Modern Environmental Ethics: Ethics as Bioregional Narrative. In: Oelschlaeger, M. (ed.) *Postmodern Environmental Ethics*. Albany: State University of New York Press.

CHRISAFIS, A. (2013) French Greenpeace activists break into nuclear power plant. The Guardian. [Online]. 15th July. Available from: http://www.theguardian.com/environment/2013/jul/15/french-greenpeace-activists-nuclear-power [Accessed: 21st March 2014].

CHRISTOFF, P. (1996) Ecological modernisation, ecological modernities. *Environmental Politics*. 5: 476–500.

CLARK, B. (2002) The Indigenous Environmental Movement in the United States: Transcending Borders in Struggles against Mining, Manufacturing, and the Capitalist State. *Organization & Environment*. 15(4): 410-442.

CLARKE, N. (2011) Emergency tree protection order granted at Hinkley Point. [Online]. 7th March 2011. Available from: http://sayingnotohinkleycround2.blogspot.co.uk/2011/03/emergency-tree-protection-order-granted.html [Accessed: 22nd February 2012].

CNN (2011) Three nuclear reactors melted down after quake, Japan confirms. *CNN International*. [Online]. 7th June. [Online]. Available from: http://edition.cnn.com/2011/WORLD/asiapcf/06/06/japan.nuclear.meltdown/ [Accessed 24th March 2014].

CODE, L. (2006) *Ecological thinking : the politics of epistemic location*. Oxford: University Press.

CRENSHAW, K. (1991) Mapping the margins: intersectionality, identity, politics, and violence against women of color, *Stanford Law Review*, 43: 1241-1299.

CRENSHAW, K. (1998) Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory, and Antiracist Politics. In: Philips, A. (ed.) *Feminism and Politics*, Oxford: Oxford University Press.

CUDWORTH, E. (2003) *Environment and Society*. London: Routledge.

CUDWORTH, E. (2005) *Developing ecofeminist theory : the complexity of difference*. Basingstoke: Palgrave Macmillan.

CUOMO, C. J. (1998) *Feminism and Ecological Communities: An Ethic of Flourishing*. London: Routledge.

DAY, B. (2011) Ratcliffe case: Police smear campaign continues despite Mark Kennedy revelations. The Guardian. [Online]. 17th January. Available from: http://www.theguardian.com/environment/cif-green/2011/jan/17/ratcliffe-police [Accessed: 17th April 2011].

DECC (2009) Draft national policy statement for nuclear power generation (EN-6). [Online]. November 2009. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228630/9780108508332.pdf [Accessed 17th April 2011].

DECC (2010) The Justification of Practices Involving Ionising Radiation Regulations 2004. [Online]. October 2010. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47936/666-decision-EPR-nuclear-reactor.pdf [Accessed 17th April 2011].

DECC (2011a) The Government Response to Consultation on the Revised Draft National Policy Statements for Energy Infrastructure. [Online]. June 2011. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/37053/1945-govt-resp-consultation-on-nps.pdf [Accessed: 17th April 2012].

DECC (2011b) Overarching National Policy Statement for Energy (EN-1). [Online]. July 2011. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf [Accessed: 24th March 2014].

DECC (2014) UK and France sign declaration on nuclear energy and agree cooperation on ambitious climate change action. [Press Release]. 31st January. Available from: https://www.gov.uk/government/news/uk-and-france-sign-declaration-on-nuclear-energy-and-agree-cooperation-on-ambitious-climate-change-action [Accessed 22nd March 2014].

DEL CALLAR, A. (1991) The Impact and Safety of Commercial Nuclear Energy: Perspectives from the Philippines. In: Shrader-Frechette, K. (ed.) *Nuclear Energy and Ethics*. Geneva: World Council of Churches Publications.

DEMETRIOU, D. (2011) Japan: Fukushima 50 criticise 'inconsistent' information. *The Telegraph*. 22 April 2011. Available from: http://www.telegraph.co.uk/news/worldnews/asia/japan/8468970/Japan-Fukushima-50-criticise-inconsistent-information.html [Accessed: April 24th 2011].

DEMOCRACY NOW! (2011) "Prescription for Survival": A debate on the future of nuclear energy between anti-coal advocate George Monbiot and anti-nuclear activist Dr. Helen Caldicott, [Online video] 30th March. Available from: http://www.democracynow.org/2011/3/30/prescription_for_survival_a_debate_on [Accessed 22 March 2014].

DI CHIRO, G. (2006) Teaching Urban Ecology: Environmental Studies and the Pedagogy of Intersectionality. *Feminist Teacher*. 16(2): 98-109.

DI CHIRO, G. (2007) Indigenous Peoples and Biocolonialism: Defining the Science of Environmental Justice in the Centruy of the Gene. In: Sandler R. & Pezzullo, P. C. (eds.) *Environmental Justice and Environmentalism: the social justice challenge to the environmental movement.* Cambridge, Massachusetts: MIT.

DI CHIRO, G. (2008) Living environmentalisms: coalition politics, social reproduction, and environmental justice. *Environmental Politics.* 17(2): 276-98.

DOBSON, A. (1996) Representative democracy and the environment. In: Lafferty, W. M. & Meadowcroft, J. (eds.) *Democracy and the Environment: Problems and Prospects*. Cheltenham: Edward Elgar.

DOBSON, A. (1998) *Justice and the environment : conceptions of environmental sustainability and theories of distributive justice.* Oxford: Oxford University Press.

DOBSON, A. (1999) *Fairness and Futurity Essays on Environmental Sustainability and Social Justice*. Oxford: Oxford University Press.

DOBSON, A. (2007) *Green Political Thought*, London: Routledge.

DOBSON, A. (2010) Democracy and Nature: Speaking and Listening. *Political Studies.* 58: 752–768.

DOHERTY, B. (1992) The fundi-realo controversy: An analysis of four European green parties. *Environmental Politics.* 1:95–120.

DORFMAN, P. (2011) Who to trust on nuclear? *The Guardian.* [Online]. 13th April. Available from: http://www.theguardian.com/commentisfree/2011/apr/13/nuclear-power-sustainable-energy [Accessed 22 March 2014].

DOWIE, M. (2009) Nuclear Caribou. On the front lines of the new uranium rush with the Inuit of Nunavut. Orion. [Online]. January/February 2009. Available from: http://www.orionmagazine.org/index.php/articles/article/4247/ [Accessed: 22nd June 2011].

DRAKE, M. S. (2010) *Political sociology for a globalizing world*. Cambridge: Polity.

DRYZEK, J. (1987) *Rational Ecology: Environment and Political Economy*. Oxford: Blackwell.

DRYZEK, J. S. (2000) *Deliberative democracy and beyond : liberals, critics, contestations*. Oxford: Oxford University Press.

DRYZEK, J. et al. (2003) *Green States and Social Movements : Environmentalism in the United States, United Kingdom, Germany, and Norway*, Oxford: Oxford University Press.

DRYZEK, J. (2005) *Politics of the Earth. Environmental Discourses*. Second Edition. Oxford: Oxford University Press.

DTI (2003) Energy White Paper: our energy future – creating a low carbon economy [Online]. February 2003. Available from: http://www.berr.gov.uk/files/file10719.pdf [Accessed 24th March 2014].

DTI (2006) Our Energy Challenge. Securing clean, affordable energy for the long-term. [Online]. Consultation Document. January 2006. Available from: http://fire.pppl.gov/uk_energy_review_2006.pdf [Accessed: 24th March 2014].

DTI (2007) Meeting the Energy Challenge. A White Paper on Energy. [Online]. May 2007. Available from: http://www.berr.gov.uk/files/file39387.pdf [Accessed 24th March 2014].

DTI (2011) *Nuclear Lines Safety of Nuclear*. [Emails Released under the Freedom of Information Act]. 13th March 2011. Available from: http://www.theguardian.com/environment/interactive/2011/jun/30/email-nuclear-uk-government-fukushima [Accessed: 17th April 2012].

EARTH FIRST! (2014) *What is Earth First?* [Online]. Available from: http://earthfirst.org.uk/actionreports/whatisef [Accessed: 20th March 2014].

ECKERSLEY, R. (1992) *Environmentalism and Political Theory. Towards an Ecocentric Approach*. London: Routledge.

ECKERSLEY, R. (2004) *The green state: rethinking democracy and sovereignty.* Cambridge Mass. : MIT Press.

EDF (2014a) The energy gap. [Online]. Available from: http://www.edfenergy.com/energyfuture/key-info/the-energy-gap [Accessed 25th March 2014].

EDF (2014b) New Nuclear: Building a reliable and affordable energy supply. [Online]. Available from: http://www.edfenergy.com/about-us/energy-generation/new-nuclear/ [Accessed: 27th March 2014].

EDWARDS, P.N. & HECHT, G. (2010) History and the Technopolitics of Identity: The Case of Apartheid South Africa. *Journal of Southern African Studies* 36: 619–639.

EDWARDS, R. (2011) Revealed: British government's plan to play down Fukushima. The Guardian. [Online]. 30th June. Available from: http://www.theguardian.com/environment/2011/jun/30/british-government-plan-play-down-fukushima [Accessed: 17th April 2012].

EDWARDS, R. (2012) Police trying to neuter anti-nuclear protest. *Spinwatch. Public Interest Investigations*. [Online]. 2nd October. Available from: http://www.spinwatch.org/index.php/issues/climate/item/438-police-trying-to-neuter-anti-nuclear-protest [Accessed 21st March 2013].

EFN (2012) Environmentalists for Nuclear Energy. [Online] Available from: http://www.ecolo.org/base/baseen.htm [Accessed 28th May 2012].

ELLIOTT, D. (ed.) (2010a) *Nuclear or Not? Does Nuclear Power Have a Place in a Sustainable Energy Future?* Basingstoke: Palgrave Macmillan.

ELLIOTT, D. (2010b) Nuclear power and renewables in the UK: Can we have both? In: Elliott, D. *Nuclear or Not? Does Nuclear Power Have a Place in a Sustainable Energy Future?* Basingstoke: Palgrave Macmillan.

ELLIOTT, M. (ed.) (1977) *Ground for concern. Australia's Uranium and Human survival*. Middlesex: Penguin Books Ltd.

ENDRES, D. (2009) From wasteland to waste site: the role of discourse in nuclear power's environmental injustices. *Local Environment*. 14: 917–937.

EPSTEIN, B. (1997) The Environmental Justice/Toxics Movement: Politics of Race and Gender. *Capitalism, Nature, Socialism.* 8(3): 63 – 87.

ESCHLE, C. (2001) *Global Democracy, Social Movements and Feminism*. Oxford: Westview Press.

ESCHLE, C. & MAIGUASHCA, B. (2010) *Making feminist sense of the global justice movement*. Lanham, Md.: Rowman & Littlefield Publishers.

EVANS, R. & LEWIS, P. (2013). *Undercover: the true story of Britain's secret police*. London: Faber & Faber.

FABER (2005) Building a Transnational Environmental Justice Movement: Obstacles and Opportunities in the Age of Globalization. In: Bandy, J. & Smith, J. (eds.) *Coalitions across Borders. Transnational Protest and the Neoliberal Order*. Oxford: Rowman and Littlefield.

FAIRCHEALLAIGH, C. (1996) *Resource Development and Inequality in Indigenous Societies.* Brisbane: Centre for Australian Public Sector Management Griffith University. [Online]. Available at: http://www.griffith.edu.au/business-commerce/griffith-business-school/pdf/research-paper-1996-resource-development-inequality.pdf [Accessed: 22nd August 2011].

FAIRLIE, I. (2010) New Information on Radiation Health Hazards. In: Elliott, D. (ed.) *Nuclear or not? Does nuclear power have a place in a sustainable energy future?* Basingstoke Palgrave Macmillan.

FALK, J., Green, J. & Mudd, G. (2006) Australia, uranium and nuclear power. *International Journal of Environmental Studies*. 63: 845–857.

FAN, M.-F. (2006) Environmental justice and nuclear waste conflicts in Taiwan. *Environmental Politics.* 15(3): 417–434.

FASLANE PEACE CAMP (2014) *Faslane Peace Camp. Taking action against nuclear weapons*. [Online]. Available from: http://faslanepeacecamp.wordpress.com/ [Accessed 21st March 214].

FELDMAN, L. C. (2002). Redistribution, Recognition, and the State: the Irreducibly Political Dimension of Injustice. *Political Theory*. 30: 410–440.

FERRARESE, E. (2011) Judith Butler's "not particularly postmodern insight" of recognition. *Philosophy & Social Criticism.* 37(7): 759–773.

FERREE, M. M. (2009) Inequality, intersectionality and the politics of discourse. Framing feminist alliances. In: Lombardo, E., Meier, P. & Verloo, M. (eds.) *The discursive politics of gender equality: stretching, bending, and policy-making.* Abingdon: Routledge.

FIGUEROA, R. M. (2003) Bivalent Environmental Justice and the Culture of Poverty. *Rutgers University Journal of Law and Urban Policy*, 1(1): 27-44.

FISCHER, F. (2005) Are scientists irrational? Risk assessment in practical reason. In: Leach, M., Scoones, I. & Wynne, B. (eds.), *Science and Citizens. Globalization and the Challenge of Engagement*. London: Zed Books.

FISHER, M. (2009) *Capitalist realism: is there no alternative?* Winchester: Zero Books.

FISHKIN, James (1992) *The Dialogue of Justice: Toward a Self- Reflective Society.* New Haven: Yale University Press.

FITZGERALD, R. (1985) Human Needs and Politics: The Ideas of Christian Bay and Herbert Marcuse. *Political Psychology.* 6(1): 87-108.

FLEISCHACKER, S. (2004) *A short history of distributive justice.* London: Harvard University Press.

FOE CANBERRA (1984) Strategy against nuclear power, *Social Alternatives,* 5 (2): 9-16.

FORSYTH, T. (2003) *Critical political ecology : the politics of environmental science.* London: Routledge.

FORTSON, D. (2013) Davey woos China over nuclear plants, Sunday Times. [Online] 8th September. Available from: http://www.thesundaytimes.co.uk/sto/business/Industry/article1310872.ece [Accessed 22nd March 2014].

FOUCAULT, M. (1980) Power/Knowledge: Selected Interviews and Other Writings, 1972-1977. Brighton: Harvester.

FRASER, N. (1997) *Justice interruptus : critical reflections on the "postsocialist" condition.* New York: Routledge.

FRASER, N. (2000). Rethinking Recognition. *New Left Review.* 3: 107–20.

FRASER, N. (2001) Recognition without Ethics? *Theory, Culture & Society.* 18: 21–42.

FRASER, N. & HONNETH, A. (2003) *Redistribution or recognition?: a political-philosophical exchange.* London: Verso.

FRASER, N. (2007) Transnationalizing the Public Sphere. On the Legitimacy and Efficacy of Public Opinion in a Post-Westphalian World. *Theory, Culture & Society.* 24(4): 7-30.

FRASER, N. (2008). *Scales of justice : reimagining political space in a globalizing world.* Cambridge: Polity.

FRICKER, M. (2007) *Epistemic injustice: power and the ethics of knowing.* Oxford: Oxford University Press.

FUKUYAMA, F. (1992) *The end of history and the last man.* London: Hamish Hamilton.

GAARD, G. (2001) Women, Water, Energy. An Ecofeminist Approach. *Organization & Environment*, 14(2):157-172 14.

GABE, T., FALK, G. & MCCARTY, M. (2005) *Hurricane Katrina: Social Demographic Characteristics of Impacted Areas*. Washington D.C.: Congressional Research Service.

GALLOWAY MCLEAN, K. et al. (2009) Report of the Indigenous Peoples' Global Summit on Climate Change. 20-24 April 2009, Anchorage, Alaska. United Nations University – Traditional Knowledge Initiative, Darwin, Australia.

GAMBLE, A. (1999), Marxism after Communism: beyond Realism and Historicism. *Review of International Studies.* 25 (5): 127-144.

GARB, Y. (1996) Change and Continuity in Environmental World-View: The Politics of Nature in Rachel Carson's *Silent Spring*. In: Macauley, D. (ed.) *Minding Nature: The Philosophers of Ecology*. New York: The Guilford Press.

GARDINER, S. (2008) A Perfect Moral Storm: Climate Change, Intergenerational Ethics, and the Problem of Corruption. In: Vanderheiden, S. (ed.) *Political theory and global climate change*. London: MIT Press.

GIBSON-GRAHAM, J.K., (2006) *The end of capitalism (as we knew it) a feminist critique of political economy*. New edition. University of Minnesota Press, Minneapolis.

GLOBAL GREENS (2012), *Charter of the Global Greens*. [Online]. Updated in Dakar, 2012. Available from: http://www.globalgreens.org/sites/globalgreens.org/files/Charter%202012_1.pdf [Accessed: 22nd October 2013].

GOODIN, R.E. (1996) Enfranchising the Earth, and its Alternatives. *Political Studies.* 44: 835–849.

GORDON, U. (2008) *Anarchy Alive!: Anti-Authoritarian Politics from Practice to Theory.* London: Pluto Press.

GOSDEN, E. (2013a) The birthing pains of new nuclear. *The Telegraph*. [Online]. 5th October. Available from: http://www.telegraph.co.uk/finance/newsbysector/energy/10358139/The-birthing-pains-of-new-nuclear.html [Accessed: 21st March 2104].

GOSDEN, E. (2013b) EDF Hinkley Point deal: an overview. *The Telegraph*. [Online]. 21st October. Available from: http://www.telegraph.co.uk/finance/newsbysector/energy/10395169/EDF-Hinkley-Point-nuclear-deal-an-overview.html [Accessed: 24th March 2014].

GREENPEACE (2006) *The Chernobyl Catastrophe. Consequences on Human Health*. Greenpeace, Amsterdam. [Online] Available from: http://www.greenpeace.org/international/en/publications/reports/chernobylhealthreport/ [Accessed 21st March 2014].

GREENPEACE (2012) *The EPR nuclear reactor. A dangerous waste of time and money*. Amsterdam. [Online]. January 2012. Available from:

http://www.greenpeace.org/international/Global/international/publications/nuclear/2012/EPR/399%20-%20EPR%20reportDEF-LR.pdf [Accessed 24/03/2014].

GREENPEACE UK (2013) Nuclear power – the problems. [Online]. Available from: http://www.greenpeace.org.uk/nuclear/problems [Accessed 29th June 2013].

GUNDJEIHMI ABORIGINAL CORPORATION (2011a) The Mirarr oppose the Jabiluka Mine. [Online]. Available from: http://www.mirarr.net/jabiluka.html [Accessed: 16th January 2011].

GUNDJEIHMI ABORIGINAL CORPORATION (2011b) History of Binninj Opposition. [Online]. Available at: http://www.mirarr.net/history.html [Accessed: 16th January 2011].

GUNDJEIHMI ABORIGINAL CORPORATION (2014) Uranium Mining. [Online]. Available from: http://www.mirarr.net/uranium-mining [Accessed 20th March 2014].

HAJER, M. A. (1995) *The politics of environmental discourse ecological modernization and the policy process*. Oxford: Oxford University Press.

HALL, S. (1996) On postmodernism and articulation: an interview with Stuart Hall. ed. by Grossberg, L. In: Morley, D. & Kuan-Hsing, C. (eds.) *Critical Dialogues in Cultural Studies*. London: Routledge.

HAMBLIN, J. D. (2008) Poison in the Well: Radioactive Waste in the Oceans at the Dawn of the Nuclear Age. New Brunswick, NJ.: Rutgers University Press.

HARAWAY, D. (1988) Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective. *Feminist Studies*. 28: 575–599.

HARAWAY, D. (2004) Modest_Witness@Second_Millennium. In: *The Haraway Reader*. London: Routledge.

HARVEY, D. (1996) *Justice, nature and the geography of difference.* Cambridge Mass.: Blackwell.

HARVEY, F. (2013) BBC coverage of IPCC climate report criticised for sceptics' airtime. The Guardian. [Online]. 1st October. Available from: http://www.theguardian.com/media/2013/oct/01/bbc-coverage-climate-report-ipcc-sceptics [Accessed: 5th April 2014].

HASKELL, M. A. (1977) Green Bans: Worker Control and the Urban Environment. Industrial Relations. 16(2): 205-214.

HAWKINS, R. Z. (1998) Ecofeminism and Nonhumans: Continuity, Difference, Dualism and Domination. Hypatia. 13(1): 158-197.

HAYWARD, T. (1998) *Political theory and ecological values*. Cambridge, UK.: Polity Press.

HECHT, G. (2002) Rupture-Talk in the Nuclear Age: Conjugating Colonial Power in Africa. *Social Studies of Science*. 32: 691–727.

HECHT, G. (2003) Globalization meets frankenstein? Reflections on terrorism, nuclearity, and global technopolitical discourse. *History and Technology*. 19: 1–8.

HECHT, G. (2010a) The Power of Nuclear Things. *Technology and Culture*. 51: 1-30.

HECHT, G. (2010b) Hopes for the radiated body: uranium miners and transnational technopolitics in Namibia. Journal of African History. 51: 1-22.

HECHT, G. (2012) *Being nuclear: Africans and the global uranium trade*, Cambridge, Mass.: MIT Press.

HEIDENREICH, A. (1991) Future energy choices in light of the greenhouse effect. In: Shrader-Frechette, K. (ed.) *Nuclear Energy and Ethics*. Geneva: World Council of Churches Publications.

HERRING, H. (2005) *From Energy Dreams to Nuclear Nightmares : Lessons from the Anti-Nuclear Power Movement in the 1970s*, Charlbury: Jon Carpenter.

HERRING, H. (2010) Opposition to Nuclear Power: A Brief History. In: Elliott, D. *Nuclear or Not? Does Nuclear Power Have a Place in a Sustainable Energy Future?* Basingstoke: Palgrave Macmillan.

HILGARTNER, S., BELL, R.C., & O'CONNOR, R., (1983) *Nukespeak. The Selling of Nuclear Technology in America.* Harmondsworth: Penguin Books Ltd.

HILL COLLINS, P. (2000) *Black feminist thought: knowledge, consciousness, and the politics of empowerment.* London: Routledge.

HINCHCLIFFE, S. (2001) Indeterminacy in-decisions – science, policy and politics in the BSE (Bovine Spongiform Encephalopathy) crisis. Transactions of the Institute of British Geographers. 26(2): 182-204.

HINCHCLIFFE, S. et al. (2005) Urban wild things: a cosmopolitical experiment. *Environment and Planning D: Society and Space.* 23: 643–658.

HINTJENS, H. (2000) Environmental direct action: the case of the Jabiluka Mine. *Community Development Journal.* 35(4): 344-90.

HINTON, T. (2010) Radiation Effects on Plants and Animals. IRSN French Institute for Radiation Protection and Nuclear Safety.

HMIC (Her Majesty's Inspectorate of Constabulary) (2012) *A review of national police units which provide intelligence on criminality associated with protest.* [Online] Available from: http://www.hmic.gov.uk/media/review-of-national-police-units-which-provide-intelligence-on-criminality-associated-with-protest-20120202.pdf [Accessed 24th March 2014].

HOFFMAN, S. M. (2001) Negotiating Eternity: Energy Policy, Environmental Justice, and the Politics of Nuclear Waste. Bulletin of Science, Technology and Society. 21(6): 456-472.

HOFRICHTER, R. (ed.) (1993) *Toxic struggles: The theory and practice of environmental justice.* Philadelphia: New Society.

HOLLAND, I. (2002) Waste not want not? Australia and the Politics of High-level Nuclear Waste. *Australian Journal of Political Science.* 37(2): 283-301.

HOLLYDAY, J. (1991) In the Valley of the Shadow of Three Mile Island. In: Shrader-Frechette (ed.). *Nuclear Energy and Ethics.* Geneva: World Council of Churches Publications.

HONNETH, A. (1992) Integrity and Disrespect: Principles of a Conception of Morality Based on the Theory of Recognition. *Political Theory.* 20: 187–201.

HONNETH, Axel. (1995) *The Struggle for Recognition: The Moral Grammar of Social Conflicts.* Cambridge MA: MIT Press.

HOOKS, B. (1981) *Ain't I a woman: Black women and feminism.* Boston, MA: South End Press.

HUDSON, K. (2005) *CND - now more than ever: the story of a peace movement.* London: Vision Paperbacks.

HUNOLD, C. & YOUNG, I. M. (1998) Justice, Democracy, and Hazardous Siting. *Political Studies.46(1):* 82-95.

IAEA (1992) *Effects of Ionizing Radiation on Plants and Animals at Levels Implied by Current Radiation Protection Standards.* Technical Reports Series No. 332. Vienna: International Atomic Energy Agency.

IAEA (2008) *INES: The International Nuclear and Radiological Event Scale.* User's Manual. 2008 Edition. [Online]. Available from: http://www-pub.iaea.org/MTCD/publications/PDF/INES2009_web.pdf [Accessed: 12th February 2014].

INAJIMA, T. (2013) Japan Utilities Use Record Coal, LNG Following Nuclear Shutdowns. Bloomberg. [Online]. 13th December. Available from: http://www.bloomberg.com/news/2013-12-13/japan-utilities-use-record-coal-lng-following-nuclear-shutdowns.html [Accessed: 22nd March 2014].

INGRAM, J.D. (2008) What is a "Right to Have Rights"? Three Images of the Politics of Human Rights. *American Political Science Review.* 102: 401–416.

IPCC (2013) Summary for Policymakers. In: Stocker, T.F. et al. (eds.) *Climate Change 2013: The Physical Science Basis.* Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, UK: Cambridge University Press.

IPCC (2014) Summary for Policymakers. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. [Online]. Available from: http://www.ipcc.ch/report/ar5/wg2/ [Accessed: 15th April 2014].

Into Eternity (2010) Film. Directed by Michael Madsen. [DVD].UK: Magic Hour Films.

JACQUES, P. (2006) The Rearguard of Modernity: Environmental Skepticism as a Struggle of Citizenship. *Global Environmental Politics.* 6: 76–101.

JAMIESON, D. (2007) Justice at the Heart of Environmentalism. In: Sandler R. & Pezzullo, P. C. (eds.) *Environmental Justice and Environmentalism: the social justice challenge to the environmental movement.* Cambridge, Massachusetts: MIT.

JASANOFF, S. (2005) 'Let them eat cake': GM foods and the democratic imagination. In: Leach, M., Scoones, I. & Wynne, B. (eds.), *Science and Citizens. Globalization and the Challenge of Engagement.* London: Zed Books.

JENKINS, H. (2004) Corporate social responsibility and the mining industry: conflicts and constructs. *Corporate Social Responsibility and Environmental Management.* 11(1): 23-34.

JHA, A. & BOSELEY, S. (2010) Irrational fears give nuclear power a bad name, says Oxford scientist. The Guardian. [Online]. 10th January. Available from: http://www.theguardian.com/environment/2010/jan/10/nuclear-power-irrational-fears [Accessed 3rd May 2011].

JOHNSON, D. (2011) Why Germany said no to nuclear power. *The Telegraph.* [Online] 30th May 2011. Available from: http://www.telegraph.co.uk/news/worldnews/europe/germany/8546608/Why-Germany-said-no-to-nuclear-power.html [Accessed 22nd March 2014].

JOHNSTONE, P. (2010) The Nuclear Power Rennaissance in the UK. *Human Geography.* 3: 91–104.

JOWIT, J. (2010) Labour, Conservatives and Lib Dems clash over environment policies. The Guardian. [Online]. 22nd April. Available from: http://www.theguardian.com/environment/2010/apr/22/climate-change-environment-debate-election [Accessed: 20th April 2011].

KASSENOVA, T. (2009) Kazakhstan's "Nuclear Renaissance." S*t. Anthony's International Review.* 4(2): 51-74.

KATONA, J. (1998) If Native title Is Us, It's Inside Us: Jabiluka and the Politics of Intercultural Negotiation. *Australian Feminist Law Journal.* 10: 1–34.

KEELING, A. & SANDLOS (2009) Environmental Justice goes Underground? Historical Notes from Canada's Norther Mining Frontier. *Environmental Justice.* 2(3): 117-125.

KELLER, C. VISSCHERS, V. & SIEGRIST, M. (2012) Affective Imagery and Acceptance of Replacing Nuclear Power Plants. *Risk Analysis.* 32 (3): 464–477.

KELLY, J. (2011) The fear of nuclear. *BBC News Magazine.* [Online]. 15th March. Available from: http://www.bbc.co.uk/news/magazine-12746129 [Accessed 22nd March 2014].

KELLY, R. (2012) Flooding at Ranger uranium pit may hit Energy Resources production. The Australian. [Online]. 12th January 2012. Available from: http://www.theaustralian.com.au/business/mining-energy/flooding-at-ranger-uranium-pit-may-hit-energy-resources-production/story-e6frg9df-1226242462597 [Accessed 20th March 2012].

KIDD, S. W. (2010) Time for a fresh look at nuclear? In: Elliott, D. *Nuclear or Not? Does Nuclear Power Have a Place in a Sustainable Energy Future?* Basingstoke: Palgrave Macmillan.

KING, D. (1988) Multiple Jeopardy, Multiple Consciousness: the Context of a Black Feminist Ideology. *Signs.* 14(1): 42-72.

KINGSNORTH, P. (2004) *One no, many yeses: a journey to the heart of the global resistance movement.* London : Free Press.

KINGSNORTH, P. (2011) The quants and the poets. Dark Mountain Project. [Online]. 4th April 2011. Available from: http://www.dark-mountain.net/wordpress/2011/04/02/the-quants-and-the-poets/ [Accessed: 25th May 2011].

KINGSNORTH, P. (2012) The New Environmentalism: Where Men Must Act "as Gods" to Save the Planet, *The Guardian,* [Online]. 1st August. Available from: http://www.theguardian.com/commentisfree/2012/aug/01/neogreens-science-business-save-planet?mobile-redirect=false [Accessed 6th August 2012].

KINGSNORTH, P. (2013) Dark Ecology. Searching for truth in a post-green world. *Orion.* [Online]. January/February 2013. Available from: http://www.orionmagazine.org/index.php/articles/article/7277 [Accessed: 25th June 2013].

KINGSTON, M. H. (1977) The Woman Warrior. New York: Vintage.

LADUKE, W. (1993) A society based on conquest cannot be sustained: Native peoples and the environment crisis. In: Hofrichter, R. (ed.) *Toxic struggles: The theory and practice of environmental justice.* Philadelphia: New Society.

LADUKE, W. (2009) Uranium Mining, Native Resistance and the Greener Path. Orion. [Online]. January/February 2009. Available from: http://www.orionmagazine.org/index.php/articles/article/4248/ [Accessed: 21st March 2012].

LASH, S. & FEATHERSTONE, M. (2001) Recognition and Difference: Politics, Identity, Multiculture. Theory. *Culture & Society.* 18: 1–19.

LASLETT, P. & FISHKIN, J. (1992) Processional Justice. In Laslett, P. & Fishkin, J. (eds.) (1992) J*ustice between Age Groups and Generations.* New Haven: Yale University Press.

LASSWELL, H. D. (1958) [1936] *Politics: who gets what, when, how.* Cleveland: World Publishing Company.

LATHAM, R. (1997) *The liberal moment: modernity, security, and the making of postwar international order, New directions in world politics.* New York: Columbia University Press.

LATOUR, B. (2004) *Politics of nature : how to bring the sciences into democracy.* London: Harvard University Press.

LEAKE, J. (2005) The nuclear charm offensive. New Statesman. [Online]. 23rd May. Available from http://www.newstatesman.com/node/150675 [Accessed: 21st March 2011].

LEOPOLD, A. (1968) *A Sand County Almanac, and Sketches here and there.* London: Oxford University Press.(p.203)

LEWIS, P., HIRSCH, A. & Evans, R. (2011) Activists challenge convictions in wake of police spy revelations. The Guardian. [Online]. 13th January. Available from: http://www.theguardian.com/environment/2011/jan/13/activists-kennedy-stone-police-undercover [Accessed: 21st March 2011].

LICHACZ, W. & MYERS, S. (1977) Uranium Mining in Australia. In: Elliott, M. (ed.) Ground for Concern. Australia's Uranium and Human Survival. Harmondsworth: Penguin.

LIGHT, A., de SHALIT, A. (eds.) (2003) *Moral and political reasoning in environmental practice.* Cambridge Mass.: MIT Press.

LISTER, R. (2007) Inclusive citizenship: Realizing the Potential. Citizenship Studies. 11(1): 49-61.

LOVELACE, R. (2009) Notes from Prison: Protecting Algonquin Lands from Uranium Mining. In: Agyeman, J. et al. (eds.) *Speaking for ourselves: environmental justice in Canada.* Vancouver: UBC Press.

LOVELOCK, J. (2006) *The revenge of Gaia: why the earth is fighting back - and how we can still save humanity.* London: Allen Lane.

LOW, N. (ed.) (1999) *Global Ethics and Environment.* London: Routledge.

LUBBERS, E. (2012) *Secret manoeuvres in the dark: corporate and police spying on activists.* London: Pluto Press.

LUKE, T.W. (2008a) The politics of true convenience or inconvenient truth: struggles over how to sustain capitalism, democracy, and ecology in the 21st century. *Environment and Planning A.* 40: 1811–1824.

LUKE, T. W. (2008b) Climatologies as Social Critique: The Social Construction of Global Warming, Global Dimming, and Global Cooling. In: Vanderheiden, S. (ed.) *Political theory and global climate change*. London: MIT Press.

LYNAS, M. (2008) Mark Lynas: The green heretic persecuted for his nuclear conversion, *The Sunday Times*. [Online]. 28th September. Available from: http://www.thesundaytimes.co.uk/sto/Migration/article238506.ece [Accessed 21st March 2014].

LYNAS, M. (2013) Interview by Stephen Sackur. *Hardtalk*, BBC News, 2nd February 2013. Television.

MACALISTER, T. (2013) Hinkley Point C nuclear plant £128m windfall dismissed as 'social bribe'. The Guardian. [Online]. 17th July. Available from: http://www.theguardian.com/business/2013/jul/17/hinkley-point-nuclear-plant-windfall-bribe [Accessed 3rd September 2013].

MACGREGOR, S. (2003) From Ecological Crisis to Environmental Culture. *Trumpeter* 19: 110–115.

MACGREGOR, S. (2004) From Care to Citizenship: Calling Ecofeminism Back to Politics. *Ethics & the Environment*. 9: 56–84.

MACGREGOR, S. (2009) A stranger silence still: the need for feminist social research on climate change. *The Sociological Review*. 57: 124–140.

MACGREGOR, S. (2013) Only Resist: Feminist Ecological Citizenship and the Post-politics of Climate Change. Hypatia. 10(10): 1-17).

MACKAY, D.J.C. (2009) *Sustainable energy - without the hot air*. Cambridge: UIT.

MACKERRON, G. (2011) Foreword. In: Wynne, B. (2011) *Rationality and Ritual: Participation and Exclusion in Nuclear Decision-Making*, London: Earthscan.

MACLEOD, R. (1995) Resistance to nuclear technology: optimists, opportunists and opposition in Australian nuclear history. In: Bauer, M. (ed.) *Resistance to New Technology. Nuclear Power, Information Technology and Biotechnology*. Cambridge: Cambridge University Press.

MARKELL, P. (2003) *Bound by recognition*. Princeton, N.J.: Princeton University Press.

MARKELL, P. (2008) Recognition and Redistribution. In: Dryzek, J., Honig, B. & Phillips, A. (eds.) *The Oxford Handbook of Political Theory*. Oxford: Oxford University Press.

MARSHALL, E. (2005) Is the Friendly Atom Poised for a Comeback? *Science*. 309: 1168–9.

MARTIN, B. (1982) The Australian anti-uranium movement. *Alternatives: Perspectives on Society and Environment.* 10(4): 26-35.

MARTIN, B. (1986a) Nuclear suppression. *Science and Public Policy*, 13 (6): 312-320.

MARTIN, B. (1986b) Science policy: dissent and its difficulties. *Philosophy and Social Action.* 12 (1): 5-23.

MARTIN, B. (2007) Opposing nuclear power: past and present. *Social Alternatives.* 26(2): 43-47.

MARTINEZ-ALIER, J. (1993) Distributional Obstacles to International Environmental Policy: The Failures at Rio and Prospects after Rio. Environmental Values. 2(2): 97-124.

MARTINEZ-ALIER. J. (2001) Mining conflicts, environmental justice, and valuation. Journal of Hazardous Materials. 86: 153-170.

MARTINEZ-ALIER, J. (2004) Ecological DistributionConflicts and Indicators of Sustainability. International Journal of Political Economy. 34(1): 13-30.

MASON, R. (2009) AREVA hopes nuclear option won't go into meltdown. The Telegraph. [Online]. 30th November. Available from: http://www.telegraph.co.uk/finance/newsbysector/energy/6695036/Areva-hopes-nuclear-option-wont-go-into-meltdown.html [Accessed: 17th April 2011].

MASON, R. (2010) UK taxpayers face unlimited nuclear waste bills if costs spiral. *The Telegraph.* [Online]. 8th December. Available from: http://www.telegraph.co.uk/finance/newsbysector/energy/8187222/UK-taxpayers-face-unlimited-nuclear-waste-bills-if-costs-spiral.html [Accessed: 17th April 2011].

MCCALL, L. (2005) The complexity of Intersectionality. *Signs: Journal of Women in Culture and Society.* 30(3): 1771-1800.

MCCURRY, J. (2013) Plummeting morale at Fukushima Daiichi as nuclear cleanup takes its toll. *The Guardian.* [Online]. 15th October 2013. Available from: http://www.theguardian.com/environment/2013/oct/15/fukushima-nuclear-power-plant-cleanup [Accessed: 24th October 2013].

MCCURRY, J. (2012) Tuna contaminated with Fukushima radiation found in California. The Guardian. [Online]. 29th May 2012. Available from: http://www.theguardian.com/world/2012/may/29/tuna-contaminated-radiation-fukushima-california [Accessed: 28th June 2012].

MCNEILL. D. (2014) Concerns over measurement of Fukushima fallout. The New York Times. [Online]. 16th March 2014. Available from: http://www.nytimes.com/2014/03/17/world/asia/concerns-over-measurement-of-fukushima-fallout.html?_r=0 [Accessed: 21st March 2014].

MCQUEEN, P. (2013) Social and Political Recognition. The Internet Encyclopedia of Philosophy. [Online]. 20th June 2013. Available from: http://www.iep.utm.edu/recog_sp/ [Accessed: 20th June 2013].

MELLOR, M. (1992) *Breaking the Boundaries: Towards a Feminist Green Socialism*. London: Virago.

MENON, M. (2012) Greenpeace dropout champions nuclear energy. The Hindu. [Online]. 13th October 2012. Available from: http://www.thehindu.com/sci-tech/energy-and-environment/greenpeace-dropout-champions-nuclear-energy/article3992213.ece [Accessed: 3rd March 2013].

MILLER, D. (1976) *Social Justice*. Oxford: Oxford University Press.

MILLER, D. (1999) Social Justice and Environmental Goods. In: Dobson, A. (ed.) *Fairness and Futurity Essays on Environmental Sustainability and Social Justice*. Oxford: Oxford University Press.

MILLER, P. & WESTRA, L. (eds.) (2002) *Just Ecological Integrity: The Ethics of Maintaining Planetary Life*. Lanham, MD: Rowman & Littlefield.

MINCHIN, L. & MURDOCH, L. (2006) Aboriginal cancer doubles near uranium mine. The Age. [Online]. November 23rd. Available from: http://www.theage.com.au/news/national/aboriginal-cancer-doubles-near-uranium-mine/2006/11/22/1163871482163.html [Accessed: 21st March 2012].

MINING WATCH CANADA (2006) Declaration of the Indigenous World Uranium Summit. [Online]. 4th December 2006. Available from: http://www.miningwatch.ca/declaration-indigenous-world-uranium-summit [Accessed 20th March 2012].

MITCHELL, C. & WOODMAN, B. (2006) *New nuclear power: implications for a sustainable energy system*. [Online] London: Green Alliance. Available from: http://www.wbs.ac.uk/downloads/multimedia/enclosures/new-nuclear-power.pdf [Accessed 22 March 2014].

MONBIOT, G. (2004) There is an alternative. *The Guardian*. [Online]. Available from: http://www.theguardian.com/environment/2004/sep/07/energy.greenpolitics [Accessed 21st March 2011].

MONBIOT, G. (2011a) Why Fukushima made me stop worrying and love nuclear power. *The Guardian*. [Online]. 21st March. Available from: http://www.theguardian.com/commentisfree/2011/mar/21/pro-nuclear-japan-fukushima [Accessed 21st March 2011].

MONBIOT, G. (2011b) The double standards of green anti-nuclear opponents. *The Guardian*. [Online]. 31st March. Available from: http://www.guardian.co.uk/environment/georgemonbiot/2011/mar/31/double-standards-nuclear [Accessed 17th April 2011].

MONBIOT, G. (2011c) The unpalatable truth is that the anti-nuclear lobby has misled us all. The Guardian. [Online]. 5th April. Available from: http://www.guardian.co.uk/commentisfree/2011/apr/05/anti-nuclear-lobby-misled-world [Accessed 17th April 2011].

MONBIOT, G. (2011d) Nuclear opponents have a moral duty to get their facts straight. *The Guardian*. [Online]. 13th April. Available from http://www.theguardian.com/environment/georgemonbiot/2011/apr/13/anti-nuclear-lobby-interrogate-beliefs [Accessed 15th April 2011].

MONBIOT, G. (2011e) Let's face it: none of our environmental fixes break the planet-wrecking project. *The Guardian*. [Online]. 2nd May. Available from: http://www.theguardian.com/commentisfree/2011/may/02/environmental-fixes-all-greens-lost (Accessed 12th May 2011].

MONBIOT, G. & SIMON, T. (2012) The Heart of the Matter. Debate between George Monbiot and Theo Simon over the course of eight months. [Online]. 9th October 2012. Available from: http://www.monbiot.com/2012/10/09/the-heart-of-the-matter/ [Accessed: 10th December 2012].

MONBIOT, G. (2013) Power Crazed. [Online]. 16th December 2013. Available from: http://www.monbiot.com/2013/12/16/power-crazed/ [Accessed: 21st March 2014].

MOORE, (2009) Uranium mines 'flood prone'. Brisbane Times. [Online]. 22nd May 2009. Available from: http://www.brisbanetimes.com.au/queensland/uranium-mines-flood-prone-20090522-bhzo.html [Accessed: 19th March 2012].

MORRIS, S. (2011) Hinkley C nuclear power station gets green light for preparatory work. *The Guardian*. [Online]. 29th July. Available from: http://www.theguardian.com/environment/2011/jul/29/planners-approve-nuclear-power-station-preparatory-work?guni=Article:in%20body%20link [Accessed 4th August 2011].

NAKANO GLENN, E. (1992) From Servitude to Service Work: Historical Continuities in the Racial Division of Paid Reproductive Labor, *Signs*, 18(1): 1-43.

NELKIN, D. & POLLAK, M. (1980a) Political Parties and the Nuclear Energy Debate in France and Germany. *Comparative Politics.* 12(2): 127–141.

NELKIN, D. & POLLAK, M. (1980b) Ideology as Strategy: The Discourse of the Anti-Nuclear Movement in France and Germany. *Science, Technology, and Human Values*. 5(30): 3–13.

NELKIN, D. & POLLAK, M. (1981) *The atom beseiged: extraparliamentary dissent in France and Germany*. Cambridge, MA: MIT Press.

NELSON, L. (1984) Promise Her Everything: The Nuclear Power Industry's Agenda for Women, *Feminist Studies*, 10 (2): 291–314.

NEOCLEOUS, M. (2006) From Social to National Security: On the Fabrication of Economic Order. *Security Dialogue* 37: 363–384.

NICOLA, S. & ANDRESEN, T. (2012) Merkel's green shift forces Germany to burn more coal. Bloomberg. [Online]. 20th August. Available from: http://www.bloomberg.com/news/2012-08-19/merkel-s-green-shift-forces-germany-to-burn-more-coal-energy.html [Accessed 22nd March 2014].

NOYES, T. (2011) The incalculable cost of nuclear power, The Guardian. [Online]. 3rd April. Available from: http://www.guardian.co.uk/commentisfree/cifamerica/2011/apr/03/nuclearpower-japan?INTCMP=SRCH [Accessed 17th April 2011].

NPOIU (2013) The National Public Order Intelligence Unit. [Online]. Available from: http://www.acpo.police.uk/NCDE/NPOIU.aspx [Accessed: 21st April 2013].

NUSSBAUM, M. C. (2006) *Frontiers of justice: disability, nationality, species membership*. Cambridge, MA. : Harvard University Press.

OELSCHLAEGER, M. (ed.) (1995) *Postmodern environmental ethics*. Albany: State University of New York Press.

O'NEILL, J. (2006) Who speaks for nature? In: Haila, Y. & Dyke, C. (eds.) *How Nature Speaks. The Dynamics of the human ecological condition*. Durham: Duke University Press.

ONR (2011) Japanese earthquake and tsunami: Implications for the UK nuclear industry. Mike Weightman, HM Chief Inspector of Nuclear Installations, Office for Nuclear Regulation. [Online]. September 2011. Available from: http://www.hse.gov.uk/Nuclear/fukushima/final-report.pdf [Accessed: 24th March 2014].

ORESKES, N., SHRADER-FRECHETTE, K. & BELITZ, K. (1994) Verification, Validation, and Confirmation of Numerical Models in the Earth Sciences. Science. 263(5147): 641-646.

PALMER, L. (2007) Interpreting `nature': the politics of engaging with Kakadu as an Aboriginal place. *Cultural Geographies*. 14(2): 255-273.

Pandora's Promise (2013) Film. Directed by Robert Stone. [DVD]. UK: November Films.

PARRY, S. & DOUGLAS, E. (2011) In China, the true cost of Britain's clean, green wind power experiment: pollution on a disastrous scale. *Daily Mail*. [Online] 26th January. Available from: http://www.dailymail.co.uk/home/moslive/article-1350811/In-China-true-cost-Britains-clean-green-wind-power-experiment-Pollution-disastrous-scale.html [Accessed 23rd March 2014].

PATERSON, M. (2005) Green Politics. In: Burchill, S. et al. (eds.) *Theories of International Relations.* Third Edition. Basingstoke: Palgrave Macmillan.

PEARSON, J. (1980) Hazard visibility and occupational health problem solving: The case of the uranium industry. *Journal of Community Health.* 6(2): 136-147.

PENTREATH, R. J. (1998) Radiological Protection Criteria for the Natural Environment. *Radiation Protection Dosimetry.* 75: 175–179.

PEPPER, D. (1993) *Eco-Socialism: From Deep Ecology to Social Justice.* London: Routledge.

PERERA, S. & PUGLIESE, J. (1998) Parks, mines and tidy towns: Enviro-panopticism, 'post' colonialism, and the politics of heritage in Australia. *Postcolonial Studies.* 1(1): 69-100.

PETERSON, S. (2003) *A Critical rewriting of Global Political Economy: Integrating Productive, Reproductive and Virtual Economies.* London: Routledge.

PIDGEON, N. F., LORENZONI, I. & POORTINGA, W. (2008) Climate change or nuclear power – No thanks! A quantitative study of public perceptions and risk framing in Britain. *Global Environmental Change.* 18(1):69-85.

PITKIN, H. F. (1967) *The Concept of Representation.* Berkeley and Los Angeles, CA: University of California Press.

PLATFORM & PUBLIC INTEREST RESEARCH CENTRE (2011) *Energy Security: A toxic frame for progressives?* Discussion Paper for Workshop, 4th November, 2011, Welsh Institute for Sustainable Education at the Centre for Alternative Technology, Machynlleth.

PLOTKE, D. (1997) Representation is democracy. *Constellations.* 4(1): 19-34.

PLUMWOOD, V. (1984) The state and the explanation of nuclear technology. In *1984 and Social Control Conference*, Sydney, 1984. [Online]. Available from: http://www.takver.com/history/aia/aia00046.htm [Accessed: 10th October 2010].

PLUMWOOD, V. (1991) Nature, Self, and Gender: Feminism, Environmental Philosophy, and the Critique of Rationalism. *Hypatia.* 6(1): 3–27.

PLUMWOOD, V. (1993) *Feminism and the mastery of nature.* London: Routledge.

PLUMWOOD, V., (1995) Has democracy failed ecology? An Ecofeminist perspective. *Environmental Politics.* 4: 134–168.

PLUMWOOD, V. (1999) Ecological Ethics from rights to recognition: multiple spheres of justice for humans, animals and nature. In: Low, N. (ed.) *Global Ethics and Environment.* London: Routledge.

PLUMWOOD, V. (2002) *Environmental culture : the ecological crisis of reason.* London: Routledge.

PLUMWOOD, V. (2006) Feminism. In: Dobson, A. & Eckersley, R. (eds.) *Political Theory and the Ecological Challenge*. Cambridge: Cambridge University Press.

PORITT, J. (2013) *It can't be easy being George Monbiot*. [Online]. 5th December 2013. Available from: http://www.jonathonporritt.com/blog/it-can%E2%80%99t-be-easy-being-george-monbiot [Accessed 21st March 2014].

PULIDO, L. (1996) *Environmentalism and economic justice : two Chicano struggles in the Southwest*. Tucson: University of Arizona Press.

RAWLS, J. (1971) *A theory of justice*. Cambridge, Mass.: Belknap Press.

RENN, O. (1990) Public responses to the Chernobyl accident. *Journal of Environmental Psychology*. 10: 151-167.

REUTERS (2011) Japan, U.S. plan nuclear waste storage in Mongolia. *Reuters*. {online]. 8th May 2011. Available from: http://www.reuters.com/article/2011/05/09/us-energy-nuclear-mongolia-idUSTRE74805020110509 [Accessed: 22nd June 2011].

ROBERTS, F. (1999) *Sixty years of nuclear history: Britain's hidden agenda*. Charlbury: Jon Carpenter.

ROGERS, R. A. (2008) Beasts, Burgers, and Hummers: Meat and the Crisis of Masculinity in Contemporary Television Advertisements. *Environmental Communication*. 2 (3): 281-301.

ROYAL COURTS OF JUSTICE (2007) The Queen on the applications of Greenpeace limited V. Secretary of State for Trade and Industry. [Online]. 15th February. Available from: http://www.greenpeace.org.uk/MultimediaFiles/Live/FullReport/ERJRSullivanJudgement.pdf [Accessed 21st March 2014].

RUCHT, D. (1995) The impact of anti-nuclear power movements in international comparison. In: Bauer, M. (ed.) *Resistance to New Technology. Nuclear Power, Information Technology and Biotechnology*. Cambridge: Cambridge University Press.

RÜDIG, W. (2000) Phasing out nuclear energy in Germany. *German Politics*. 9(3): 43-80.

RÜDIG, W. (1990) Protest movements against nuclear energy and the British state. *Strathclyde Papers on Government and Politics* [Online] 74. Available from: https://pure.strath.ac.uk/portal/en/publications/protest-movements-against-nuclear-energy-and-the-british-state%28d2c0e31c-c282-4ef7-8960-a62488ccc67b%29.html [Accessed: 24th March 2014].

RUSTIN, S. (2011) Is nuclear power still the answer to our energy problems? Interview with George Monbiot and Caroline Lucas. The Guardian. [Online] 26th March. Available from: http://www.theguardian.com/environment/2011/mar/26/conversation-monbiot-

caroline-lucas-nuclear-power?guni=Article:in%20body%20link [Accessed 22nd March 2014].

RYALL, J. (2013) Japan raises severity rating for Fukushima leaks. The Telegraph. [Online]. 21st August 2013. Available from: http://www.telegraph.co.uk/news/worldnews/asia/japan/10256128/Japan-raises-severity-rating-for-Fukushima-leaks.html [Accessed: 20th September 2013].

SAID, E.W. (2000) *Reflections on exile and other essays.* Cambridge, Mass.: Harvard University Press.

SALE, K. (1996) *Rebels against the future: the Luddites and their war on the Industrial Revolution: lessons for the computer age.* New York: Addison-Wesley.

SALLEH, A. (1995) Class, Race, and Gender Discourse in the Ecofeminism/Deep Ecoogy Debate. In: Oelschlaeger, M. (ed.) *Postmodern Environmental Ethics.* Albany: State University of New York Press.

SALLEH, A. (1997) *Ecofeminism as politics : nature, Marx, and the postmodern.* London: Zed Books.

SALLEH, A. (ed.) (2009) *Eco-sufficiency and Global Justice. Women write Political Ecology.* London: Pluto.

SAWARD, M. (1992) *Co-optive Politics and State Legitimacy.* Aldershott: Dartmouth.

SAWARD M., (1993) Green Democracy? In: A. Dobson and P. Lucardie (eds.), *The Politics of Nature: Explorations in Green Political Theory.* London: Routledge.

SAWARD, M. (2006) Representation. In: Dobson, A. & Eckersley, R. (eds.) *Political theory and the ecological challenge.* Cambridge, UK: Cambridge University Press.

SAWARD, M. (2009) Authorisation and Authenticity: Representation and the Unelected. *The Journal of Political Philosophy.* 17(1): 1-22.

SAWARD, M. (2010) *The Representative Claim.* Oxford: Oxford University Press

SCHLOSBERG, D. (1999) *Environmental justice and the new pluralism : the challenge of difference for environmentalism.* Oxford: Oxford University Press.

SCHLOSBERG, D. (2003) The Justice of Environmental Justice: Reconciling Equity, Recognition, and Participation in a Political Movement. In: Light, A. & de Shalit. A. (eds.) *Moral and political reasoning in environmental practice.* Cambridge Mass.: MIT Press.

SCHLOSBERG, D. (2004) Reconceiving Environmental Justice: Global Movements and Political Theories. *Environmental Politics.* 13: 517–540.

SCHLOSBERG, D. (2007) *Defining environmental justice : theories, movements and nature.* Oxford: Oxford University Press.

SCHLOSBERG, D. (2009) Capacity and Capabilities: A Response to the Greenhouse Development Rights Framework. *Ethics, Place & Environment.* 12: 287–290.

SCHLOSBERG, D. & CARRUTHERS, D. (2010) Indigenous Struggles, Environmental Justice, and Community Capabilities. *Global Environmental Politics.* 10: 12–35.

SCHLOSBERG, D. (2013) Theorising environmental justice: the expanding sphere of a discourse. *Environmental Politics*, 22: 37–55.

SCHUMACHER, E. F. (1973) *Small is beautiful. A study of economics as if people mattered.* London: Blond & Briggs.

SCURLOCK, J. (2010) Can Nuclear power ever be green? In: *Nuclear or Not? Does Nuclear Power Have a Place in a Sustainable Energy Future?* Basingstoke: Palgrave Macmillan.

SEN, A. (2010) *The idea of justice.* London: Penguin.

SHIVA, V. (1997) *Biopiracy: The Plunder of Nature and Knowledge.* Boston, MA: South End Press.

SHIVA, V. (2000) *Stolen Harvest: The Hijacking of the Global Food Supply.* Boston, MA: South End Press.

SHALYA, C. (2013) Greenpeace condemns French President's promotion of nuclear interests in India. *The Times of India.* [Online]. 15th February. Available from: http://timesofindia.indiatimes.com/city/mumbai/Greenpeace-condemns-French-Presidents-promotion-of-nuclear-interests-in-India/articleshow/18519261.cms [Accessed: 24th March 2014].

SHKLAR, J. (1990) *The faces of injustice.* New Haven: Yale University Press.

SHRADER-FRECHETTE, K. (1980) *Nuclear Power and Public Policy: The Social and Ethical Problems of Fission Technology.* Boston: D. Reidel Publishing Company.

SHRADER-FRECHETTE, K. (ed.) (1991a) *Nuclear Energy and Ethics.* Geneva: World Council of Churches Publications.

SHRADER-FRECHETTE, K. (1991b) Nuclear Wastes and Ethics. In: *Nuclear Energy and Ethics.* Geneva: World Council of Churches Publications.

SHRADER-FRECHETTE, K. (2002) *Environmental justice : creating equality, reclaiming democracy.* Oxford: Oxford University Press.

SIMON, T.W. (1995) *Democracy and social injustice : law, politics, and philosophy*. Lanham, Md.: Rowman & Littlefield Publishers.

SMITH, A. (2005) The Alternative Technology Movement: An Analysis of its Framing and Negotiation of Technology Development. *Society for Human Ecology*. 12(2): 106-119.

SMITH, M. (1995) Cheney and the Myth of Postmodernism. In: Oelschlaeger, M. (ed.) *Postmodern Environmental Ethics*. Albany: State University of New York Press.

SOVACOOL, B. K. & Valentine, S. V. (2012) *The National Politics of Nuclear Power : Economics, Security and Governance*. London: Routledge.

SPIEGEL (2009) Recycling Atomic Waste: Nuclear Materials Stored in Siberian Parking Lots. Spiegel International. [Online]. 13th October 2009. Available from: http://www.spiegel.de/international/europe/recycling-atomic-waste-nuclear-materials-stored-in-siberian-parking-lots-a-654969.html [Accessed: 22nd June 2011].

SPIVAK, G. C. (1988) Can the Subaltern Speak? In: Nelson, C. & Grossberg, L. (eds.) *Marxism and the interpretation of culture*. Urbana: University of Illinois Press.

STOETT, P. (2003) Toward Renewed Legitimacy? Nuclear Power, Global Warming, and Security. *Global Environmental Politics.* 3 (1): 99–116.

STOETZLER, M. & YUVAL-DAVIS, N. (2002) Standpoint theory, situated knowledge and the situated imagination. *Feminist Theory.* 3(3): 315–333.

STOKES, D. (2007) Blood for oil? Global capital, counter-insurgency and the dual logic of American energy security. *Review of International Studies.* 33: 245-264.

STONE, A. (2006) Adorno and the disenchantment of nature. *Philosophy & Social Criticism.* 32: 231–253.

STONE, C. (1973) Should trees have standing? *Southern California Law Review*, 45: 450-501.

STOP HINKLEY (2012) *Government bully boy Sir Andrew Phillipson sets the tone of Infrastructure Planning Commission's examination of EDF's application to build Nuclear Power Station in Somerset*. [Press Release]. 22nd March. Available from: http://stophinkley.org/PressReleases/pr120322.pdf [Accessed: 17th April 2012].

STURGEON, N. (1997) *Ecofeminist natures: race, gender, feminist theory, and political action.* Routledge, New York.

SUNSTEIN, C. R. (2002a) Probability Neglect: Emotions, Worst Cases, and Law. The Yale Law Journal. [Online]. 23rd September. Available from:

http://www.yalelawjournal.org/images/pdfs/458.pdf [Accessed 22nd March 2014].

SUNSTEIN, C.R. (2002b) *Risk and reason: safety, law, and the environment*. Cambridge: Cambridge University Press.

SWYNGEDOUW, E. (2009) The Antimonies of the Post-Political City. *International Journal of Urban and Regional Research*. 33(3): 601-620).

SWYNGEDOUW, E. (2010) Apocalypse forever? Post-political populism and the spectre of climate change*. Theory, culture & society.* 27(2): 213–32.

TAYLOR, C. (1992) *Multiculturalism and "the politics of recognition" : an essay*. Princeton: Princeton University Press.

TAYLOR, C. (1994) The Politics of Recognition. In Gutman, A. (ed.) *Multiculturalism: Examining the Politics of Recognition*. Princeton: Princeton University Press.

TAYLOR, D. E. (2000) The Rise of the Environmental Justice Paradigm: Injustice Framing and the Social Construction of Environmental Discourses. *American Behavioral Scientist.* 43(4): 508-580.

The Guardian. (2013) Nuclear power: limits of compromise. [Online] 15th September. Available from http://www.theguardian.com/commentisfree/2013/sep/15/nuclear-power-limits-compromise-editorial [Accessed 22nd March 2014].

THE LAND (2012) Hinkley C Nuclear Site Squatted. The Land. [Online]. 29th February. Available from http://www.thelandmagazine.org.uk/news/0096/hinkley-c-nuclear-site-squatted [Accessed: 21st March 2014].

THOMAS, S. et al. (2007) *The Economics of Nuclear Power*. London: Greenpeace International. [Online] Available from: http://gala.gre.ac.uk/3142/1/2007-06-E-the-economics-of-nuclear-power.pdf [Accessed 22nd March 2014].

TIMMONS ROBERTS, J. (2007) Globalizing Environmental Justice. In: Sandler R. & Pezzullo, P. C. (eds.) *Environmental Justice and Environmentalism: the social justice challenge to the environmental movement.* Cambridge, Massachusetts: MIT.

TINDALE, S. & Hewett, C. (1999) Must the Poor Pay More? Sustainable Development, Social Justice, and Environmental Taxation. In: Dobson, A. (ed.). *Fairness and Futurity Essays on Environmental Sustainability and Social Justice*. Oxford: Oxford University Press.

TOKE, D. (2011) Ecological modernisation, social movements and renewable energy. *Environmental Politics*. 20(1): 60–77.

TOKE, D. (2013a) *Give community wind power the same EMR terms as Hinkley C!* [Online] 22nd October. Available from: http://realfeed-intariffs.blogspot.co.uk/2013/10/give-community-wind-power-same-emr.html [Accessed 22nd March 2014].

TOKE, D. (2013b) *Hinkley C to be paid more than twice as much as German solar pv arrays*. [Online] 27th October. Available from: http://realfeed-intariffs.blogspot.co.uk/2013/10/hinkley-c-to-be-paid-more-than-twice-as.html [Accessed 22nd March 2014].

TOKE, D. (2013c) Climate change and the nuclear securitisation of UK energy policy. *Environmental Politics*. 22(4): 553-570.

TOURAINE, A. (1995) The Crisis of 'Progress.' In: Bauer, M. (ed.) *Resistance to New Technology. Nuclear Power, Information Technology and Biotechnology*. Cambridge: Cambridge University Press.

TRAPESE COLLECTIVE (eds.) (2007) *Do it yourself: a handbook for changing our world*. London: Pluto Press.

TUFTS, H. (2010) The impacts of uranium mining on indigenous communities. Justice News. [Online]. 12th Febraury. Available from: http://www.pejnews.com/index.php?option=com_content&view=article&id=8041&catid=74:ijustice-news&Itemid=216 [Accessed 21st March 2012].

TULLY, J. (2002) Political Philosophy as a Critical Activity. *Political Theory.* 30(4): 533–555.

UK GREEN PARTY (2013) The Green Party Vision for Britain [Online]. Available from: http://greenparty.org.uk/policies.html [Accessed: February 22, 2013].

UN GENERAL ASSEMBLY (1948) The Universal Declaration of Human Rights. [Online]. Available from: http://www.un.org/en/documents/udhr/index.shtml [Accessed: 21st March 2014].

VANDERHEIDEN, S. (ed.) (2008a) *Political theory and global climate change*. London: MIT Press.

VANDERHEIDEN, S. (2008b) Climate Change, Environmental Rights, and Emissions Shares. In: Vanderheiden, S. (ed.) *Political theory and global climate change*. London: MIT Press.

VANDERHEIDEN, S. (2008c) *Atmospheric Justice. A Political Theory of Climate Change.* Oxford: Oxford University Press.

VIDAL, J. (2004) Nuclear plants bloom. *The Guardian*. [Online] 12th August. Available from: http://www.theguardian.com/science/2004/aug/12/nuclear.environment [Accessed: 21st March 2014].

VIDAL, J. (2008) Not guilty: the Greenpeace activists who used climate change as a legal defence. *The Guardian.* [Online]. 11th September. Available from: http://www.theguardian.com/environment/2008/sep/11/activists.kingsnorthclimatecamp [Accessed: 17th April 2011].

VIDAL, J. (2011) Hinkley C – Somerset's nuclear money pit? The Guardian. [Online]. 1st August. Available from: http://www.theguardian.com/environment/blog/2011/aug/01/hinkley-c-reactor-plans [Accessed: 4th August 2011].

VIDAL, J. (2013) How the ground shifted for nuclear power. The Guardian. [Online]. 21st October. Available from: http://www.theguardian.com/environment/2013/oct/21/ground-shifted-nuclear-power [Accessed: 10th February 2014].

WALKER, W. (1999) *Nuclear entrapment: THORP and the politics of commitment.* London: Institute for Public Policy Research.

WALL, D. (1999) *Earth First! and the Anti-roads Movement: Radical Environmentalism and Comparative Social Movements.* London: Routledge.

WALTERS, R.W. (1983) The United States and the South African-Namibian Uranium Option. *Africa Today.* 30(1/2): 51-59.

WALZER, M. (1983) *Spheres of Justice: A Defence of Pluralism and Equality.* Oxford: Blackwell.

WARREN, K. (2000) *Ecofeminist philosophy : a western perspective on what it is and why it matters.* Lanham, Md.: Rowman & Littlefield.

WEART, S. R. (1988) *Nuclear Fear: A History of Images,* Cambridge, Mass.: Harvard University Press.

WELSH, I. (2001) Anti-Nuclear Movements: Failed Projects or Heralds of a Direct Action Milieu? *Sociological Research Online*, 6(3). [ONLINE] Available from: http://www.socresonline.org.uk/6/3/welsh2.html [Accessed 22nd March 2014].

WELSH, I. (2007) 'In Defence of Civilisation: Terrorism and Environmental Politics in the 21st Century'. Environmental Politics, 16 (2): 356–375.

WESTERN DAILY PRESS (2012) Hinkley Point: Community demands share of nuclear power station profits. *Western Daily Press.* [Online]. 31st January. Available from: http://www.westerndailypress.co.uk/Hinkley-Point-Community-demands-share-nuclear/story-15087409-detail/story.html [Accessed 1st February 2012].

WESTON, A. (1992) *Toward better problems new perspectives on abortion, animal rights, the environment, and justice.* Philadelphia: Temple University Press.

WHITE, D. R. (1998) *Postmodern Ecology: Communication, Evolution and Play*. New York: State University of New York Press.

WINTOUR, P. (2012) Drone and nuclear deals to dominate Cameron-Sarkozy summit. The Guardian. [Online]. 17th February. Available from: http://www.theguardian.com/politics/2012/feb/17/cameron-sarkozy-summit-drones-nuclear [Accessed: 22nd March 2014].

WISSENBURG, M. L. J. (1999) An Extension of the Rawlsian Savings Principle to Liberal Theories of Justice in General. In: Dobson, A. (ed.). *Fairness and Futurity Essays on Environmental Sustainability and Social Justice*. Oxford: Oxford University Press.

WISSENBURG, M. L. J. (2006) Global and Ecological Justice: Prioritising Conflicting Demands. *Environmental Values*. 15(4):425-439.

WNA (2014) Fukushima Accident. [Online] 20th March. Available from: http://www.world-nuclear.org/info/Safety-and-Security/Safety-of-Plants/Fukushima-Accident/ [Accessed: 24th March 2014].

WOODY, T. (2009) Stewart Brand's Strange Trip: Whole Earth to Nuclear Power. *Interview*. [Online]. 22 December. Available from: http://e360.yale.edu/feature/stewart_brands_strange_trip_whole_earth_to_nuclear_power/2227/ [Accessed: 21st March 2014].

WRIXON, A. D. (2008) New ICRP recommendations. *Journal of Radiological Protection.* 28: 161–168.

WU, J., GARNETT, S.T. & BARNES, T. (2008) Beyond an energy deal: Impacts of the Sino-Australia uranium agreement. *Energy Policy*. 36(1): 413-422.

WYNICK, A. (2011) Disruptive audience members ejected from University debate. The National Student. [Online]. 24th October. Available from: http://www.thenationalstudent.com/News/2011-10-24/Disruptive_audience_members_ejected_from_University_debate.html [Accessed 22 January, 2014].

WYNNE, B. (2011) *Rationality and Ritual : Participation and Exclusion in Nuclear Decision-Making*, London: Earthscan.

YABLOKOV, A.V., NESTERENKO, V.B. & NESTERENKO, A.V. (2009) Chernobyl: Consequences of the Catastrophe for People and the Environment. *Annals of the New York Academy of Sciences.* 1181: 1–327.

YOUNG, I. M. (1990) *Justice and the politics of difference*. Princeton: Princeton University Press.

YOUNG, I. M. (2000). *Inclusion and democracy*. Oxford: Oxford University Press.

YOUNG, I.M. (2001) Activist Challenges to Deliberative Democracy. *Political Theory*. 29: 670–690.

ZALASIEWICZ, J. et al. (2010) The New World of the Anthropocene. *Environmental Science & Technology*. 44(7): 2228–31.