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Revisiting social and deep ecology in the light of global warming

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ABSTRACT

The purpose of this article is largely theoretical. It asks what type of perspective is needed in order for left libertarians and anarchists to develop a deeper understanding of global warming. This way of framing the question builds on a set of premises which I will spell out. First, global warming is real. Second, the reality of global warming exists independently of our discourse about it. Third, global warming will have real and dangerous consequences for humans and human society. Fourth, we do not have full knowledge about global warming and climate change, and we must reach a deeper understanding. Fifth, the urgency of global warming demands that we act before we know everything we want to know about it. Sixth, human societies have an inherently creative capacity to find solutions to the challenges posed by global warming. Ethical thinking about global warming cannot, therefore, be reduced to the realm of human consciousness, language and discourse; global warming forces us to rethink our relationship with nature and our possible paths to understanding nature and reality in a theoretically serious manner (in the Hegelian sense of the word 'serious') – that is, in terms of the unity between theory and praxis.

Keywords: *Ecology, global warming, anarchist praxis*

INTRODUCTION

Because of its relative 'newness', global warming is different from most other phenomena that we normally relate to 'globalisation'. For instance, in reading the 'classics' of left libertarianism and social ecology, the near absence of analyses of global warming and climate change is striking. The work of Murray Bookchin

is an exception: he began to deal with the topic in the 1960s (Bookchin, 1987,1990,1991a, 1991b, 1991c; Marshall, 1994). Nonetheless, anarchist perspectives on nature have had a considerable influence on the development of the environmental movements over the last decades and they are still felt in environmental movements today. It is therefore pertinent to reconsider the historical background and particular experiences that produced those influences. This is particularly important in the light of the conflict between deep and social ecology in the late 1980s and early 1990s. At one point this conflict was seen by many as threatening to 'split the whole environmental movement' (Carter, 1995, p. 328).

Thinking about the challenge posed by global warming has the potential to be a very fruitful exercise. It forces us to re-examine critically the ways in which we think about the big questions on a global scale while, at the same time, making us focus on the deep and narrow, on how we hermeneutically and collectively make sense of, and understand, the nature of which we are a part. It also presents a challenge to left libertarians and anarchists to rethink and develop theoretical perspectives in the light of new information about, and knowledge of, phenomena. It is not enough for anarchists and left libertarians to limit themselves merely to subsuming global warming and climate change within existing theoretical perspectives.

I will not attempt here to capture the full meaning of phenomena as multifaceted as 'anarchist' or 'left libertarian' (Evren, 2011; Franks, 2011). However, if terms such as 'anarchism' or 'left libertarianism' are to be useful tools for analysis, a minimal understanding of what characterises them in relation to, and in contrast to, other terms or 'isms', is necessary. In that spirit I briefly outline below some of the key elements necessary (but not sufficient) for 'offering a vision of a potential new society' (McKay, Elkin, Neal, and Boraas, 2010).

1. *Decentralised forms of organisation.* This has a number of components. Murray Bookchin, for example, builds on E. E. Schumacher to make an argument about scale. However, smallness should not be seen as a sufficient condition for non-violence and non-repression (Laferrière and Stoett, 1999, p. 59). According to Malatesta, 'the new society should be organised with the direct participation of all concerned, from the periphery to the centre ...' (Malatesta quoted in McKay, et al., 2010). Decentralised forms of organisation go hand in hand with an emphasis on, and valuing of, *spontaneity* and *creativity* (Bookchin, 1975; McKay, et al., 2010).

2. *Praxis* and *experience over theory*. 'Experience through freedom is the only means to arrive at the truth and the best solutions; and there is no freedom if there is not the freedom to be wrong' (Malatesta quoted in McKay, et al., 2010). However, prioritising praxis and experience over theory has sometimes led left libertarians to disregard theoretical reflection on *structure* at different levels in theoretical

analysis (Pritchard, 2010). From a critical realist perspective, structures 'may consist of internally related objects so that their generative mechanisms or powers emerge from this combination and cannot be reduced to its individual components' (Sayer, 2000, p. 14). Deepening our understanding of natural and social structures matters to those concerned with human emancipation.

In this paper I will argue that Murray Bookchin and social ecology offers the best starting point to think about global warming from a non-anthropocentric left libertarian perspective. Brian Morris accurately explains Bookchin's underlying philosophy: '... Murray Bookchin sensed that the social and the natural must be grasped in a new unity and that the time had come to integrate an ecological, natural philosophy (social ecology) with social philosophy based on freedom and mutual aid (anarchism or libertarian socialism)' (Morris, 2009). To avoid ecological disaster we must, *inter alia*, reach a 'new sensibility toward the biosphere'. I will, however, argue that the polemic with deep ecology in the late 1980s was a missed opportunity for left libertarian ecology to deepen the understanding of the natural environment, and I therefore propose to proceed by revisiting the debate between Arne Næss and Bookchin.

BOOKCHIN'S CRITIQUE OF DEEP ECOLOGY

In a keynote speech at the National Green gathering at Amherst, Massachusetts in 1987, Murray Bookchin challenged the political perspective of deep ecology as 'guilty of a deeply flawed and potentially dangerous ecological perspective' (Chase, 1991, p. 8). This rather harsh criticism led to a long and often nasty debate between proponents of deep and social ecology. The term 'deep ecology' was first coined by the Norwegian philosopher Arne Næss (A. Næss, 1973) to describe a 'deeper' form of environmental engagement suitable for a new type of environmental movement. Re-reading the deep ecology manifesto today, one notes that the many similarities with social ecology overshadow the differences by far. By the 1980s, however, the term 'deep ecology' had, in the US, increasingly come to be identified with an eclectic body of ideas, including ideas from militant wilderness activists such as Ed Abbey, Christopher Manes and Dave Foreman. It was presumably against some of these American militant wilderness activists that Bookchin intended to direct his fiercest criticism. According to Bookchin, deep ecology was now potentially and explicitly anti-social and anti-human (Chase, 1991, p. 10). He characterised some of the deep ecologists as 'barely disguised racists, survivalists, macho Daniel Boones, and outright social reactionaries' (Chase, 1991, p. 11). Dave Foreman was 'guilty of' a form of 'crude eco-brutalism' which made Bookchin compare the deep ecology movement to Hitler and the third Reich (Bookchin, 1987).

According to Bookchin, we need instead 'a resolute attempt to fully anchor ecological dislocations in social dislocations; to challenge the vested corporate and political interests we should properly call capitalism; to analyse, explore, and attack hierarchy as a reality ...' (Bookchin, 1991a, p. 61). For Bookchin, social hierarchies should be seen as the root cause of environmental degradation.

In the debate Bookchin provoked in the environmental movement in Norway, I sided with Bookchin. There were several reasons. The first was because he directed a necessary critique against reactionary policy proposals made by a few North American ecologists often associated with the deep ecology movement. Dave Foreman, for instance, claimed at the height of the 1983-85 famine, that 'the worst thing we could do in Ethiopia is to give aid – the best thing would be to just let nature seek its own balance, to let the people there just starve' (cited in Bookchin, 1991c, p. 124). Others welcomed the AIDS epidemic as 'a necessary solution' to population control (cited in Bookchin, 1991b, p. 123). Ed Abbey described the United States as a product of Northern European civilisation and warned against allowing 'our' country to be 'Latinised' (cited in Bookchin, 1991b, p. 123). My second reason was that I felt that the resolution of many of the mainly local issues of the 1980s and 1990s depended on the adoption of a social ecologist perspective on social hierarchies, domination and capitalist exploitation. I did not see how 'deep' ecology could help find 'deeper' or better answers to those problems. I now believe, in fact, that at the time deep ecology in the US had already degenerated into a fragmented and often reactionary body of thinking, far removed from the vision presented by Næss and others only a few years earlier.

The Zapatista uprising in Chiapas further convinced me of the necessity of searching for social roots to environmental degradation (Krøvel, 2006, 2009, 2010, 2011a, 2011b, 2011c, 2011d). In Chiapas, the establishment of a nature reserve in Montes Azules by the Mexican government, based on a romantic and false vision of a special relationship between one indigenous group, 'the Lacandon', and the rainforest, excluding other indigenous groups deemed 'less worthy', provoked a war which rendered it virtually impossible to find sustainable solutions to the environmental degradation (de Vos, 2002, 2003). Without social justice, there was no hope of resolving very real and serious ecological problems of the Lacandon. There were strong similarities between the Zapatista message and social ecology: non-hierarchical forms of organisation, anti-capitalism, participation, dialogue and consensus must be key in the struggle for human emancipation and environmental justice.

Yet Næss also raised some concerns about Bookchin's critique and, in particular, the issue of mono-causality: is there *one* cause of the problem? Bookchin did not believe that environmental degradation had only one cause, of course, but he repeat-

edly singled out social hierarchies as the root cause. As Næss argued, in the real world, in open systems, there will always be many generative mechanisms causing the phenomena we are trying to observe and understand (Bhaskar, 2008; Ugarriza, et al., 2009). It was difficult, moreover, to *know* that something is a root cause. How can we know that environmental degradation will end if we remove social hierarchies? Understanding Næss's concerns and the approach to knowledge that informs them, offers a different perspective on Bookchin's critique and opens up a space for a synthesis of social and deep ecology.

NÆSS AND DEEP ECOLOGY

Murray Bookchin was not alone in worrying about the supposed spiritual 'Eco-la-la' of deep ecology (Bookchin, 1997, p. 47). Other critics raised a number of similar concerns. It is, however, necessary to distinguish clearly between Næss and much of what has come to be known as 'deep ecology' in North America, as for instance Joel Kovel does in *The Enemy of Nature* (Kovel, 2007). Here, Kovel quotes Næss's view that 'it is still clear that some of the most valuable workers for ecological goals come from the socialist camp' (Kovel, 2007, p. 190). Very few people influenced by deep ecology in North America, Kovel adds, 'bother to reed Næss' (Kovel, 2007). Most critical analysts of deep ecology spend little time researching in detail the historical development of the deep ecology promoted by Næss and how it might differ from the versions rightfully criticised by Bookchin, Foster and others. In what follows I will therefore briefly discuss some of the key concerns raised by critics of deep ecology.

Some of Næss's earliest work of could create suspicions of anti-rationalism if read only casually. The influence of Henry Bergson was, for instance, visible in Næss's master's thesis (Norsk biografisk leksikon, 2011; A. Næss, 1933). Bergson had argued that immediate experience and intuition are more significant than rationalism and science for understanding reality. Næss's doctoral thesis, however, was primarily influenced by the logical positivism of Ludwig Wittgenstein, Bertrand Russell and the philosophers of the Vienna Circle who, in the 1920s and 1930s, combined empiricism with a version of rationalism (see, for example, Næss's PhD thesis: A Næss, 1936). Later work, such as *Interpretation and Preciseness* (A. D. E. Næss, 1953) and *Logikk og metodelære: En innføring* [Introduction to logics and methodology] (A. Næss, 1966) further militate against anti-rationalist readings of Næss's work.

Another criticism of deep ecology is related to the employment of the term 'holism'. According to Foster, Clark and York, the ecological holism often found

in deep ecology can be traced back to the South African, Jan Christian Smuts (Foster, Clark, and York, 2010). They rightfully expose Smuts's ideas on nature and society as among the philosophical underpinnings of the South African racist apartheid regime, and demonstrate the 'enormous' influence of his ecological holism throughout academia (Foster, et al., p. 323). Alfred Adler, for instance, promoted Smuts's ecological holism and psychological connections in Vienna at the time that Næss studied in the city (early 1930s). 'Deep ecology carried forward many of the essentialistic, vitalistic, and organismic traditions of the idealist side of the ecological debate', say Foster et al. (Foster, et al., 2010, p. 338). Næss and deep ecology is thus implicitly linked to essentialistic idealism and racist apartheid politics.

The critique of Smuts and his legacy in the ecological movement is important and valuable. The brief treatment of Næss and deep ecology in this context, however, leaves out important aspects of the history. It is indeed possible that Næss, then in his early 20s, was exposed to ecological holism in Vienna, but of course not all those who attended lectures by Adler or others belonging to the Vienna circle became essentialistic idealists or racists. This was certainly not the case with Næss. Reducing the understanding of holism, and in particular the influence of holism on the deep ecology promoted by Næss, to Smuts and a handful of South African ecologists, would be unfair. Indeed, Scott Randall, Nina Witoszek and others have traced the roots of Norwegian ecophilosophy to Niels Treschow (1751-1833), the first Norwegian academic philosopher, and to a range of nineteenth-century Norwegian writers and poets (Randall, 2007; Witoszek, 1998). According to Randall, Treschow 'developed original ideas of holism incorporated with individualism while reflecting upon the natural environment and striving for a type of self-realisation' (Randall, 2007, p. 25). While one of Smuts's followers, the grassland ecologist John Phillips, argued, for instance, that indigenous peoples 'should not be granted any autonomy or freedom because it would violate the relations of races within the community' (quoted in Foster, et al., 2010, p. 323), Næss was already resolute about the need for local autonomy and decentralisation in 1972, when he made his original call for a 'deep ecology' (A. Næss, 1999b). He pointed out that the existence of 'exploitation and suppression' was a reality and that it called for 'extreme caution toward any overall plans for the future, except those consistent with wide and widening classless diversity' (A. Næss, 1999b, p. 4).

A similar problem arises with Foster et al's treatment of scepticism in the ecological movement, which they link mainly to idealism and extreme constructivism. This might be the case for some deep ecologists internationally, but it would certainly be a misleading description of the Nordic tradition (Bhaskar, Høyer, and Næss, 2012). Of course Næss, in contrast, was not driven by extreme

constructionism or postmodernism, but he was nevertheless deeply sceptical about strong knowledge-claims and the ability of humans to administer nature in its full complexity. Instead, he favoured more sensitivity towards 'our state of ignorance' (A. Næss, 1999b, pp. 4, 5).

Another discussion arose from within Nordic deep ecology itself, between Næss and younger activists and scholars influenced by Marxism. Sigmund Kvaløy, a former student of Næss, for example, highlights the need to focus on human society before nature: '... although it is important to have strong feelings about nature, we have to concentrate on the human society and the human being, otherwise everything we cherish will be destroyed. We have so little time' (Reed and Rothenberg, 1993, p. 148). The disagreement should not be seen as a conflict between opposites but, rather, the slightly different ordering of priorities. In contrast to what is sometimes believed about Næss's neglect of human society, he was, on numerous occasions, engaged in cooperation and dialogue with local communities – for instance in order to develop sustainable solutions to the tension between the demands of sheep farming and protection of a diminishing population of wolves. Some also argue that Næss adopted a different view about the role of environmental action to some of the younger generation of deep ecologists, including Kvaløy. For Kvaløy ecophilosophy is total engagement. Action is the teacher, not a university seminar (Orton, 2005). Kvaløy, nevertheless, echoes Næss's activist approach to social change and he reinforced the view that the activist does not need a 'picture of the future society because there are a range of possibilities' (Orton, 2005). Moreover, Næss was no stranger to activism. In the 1960s he played a leading role in enacting an absurd and funny essay by Jens Bjørneboe, Norway's leading left libertarian nineteenth-century novelist ('How Arne Næss and I conquered NATO', Bjørneboe, 1996). In 1970 he quit his post as professor at Oslo University to become an activist, engaging himself in environmental actions and civil disobedience in, for instance, Mardøla and Alta. In particular, the environmental actions in Alta resulted in a stronger focus on the exploitation and suppression of the Sami (indigenous people).

Activism notwithstanding, Næss and many other ecophilosophers continued to advocate 'non-violence' and to emphasise social harmony. Kvaløy, in contrast, argued that the conflict model of social change should guide environmentalist activism: 'I'm all for polarisation. That's the only way we get deeper discussions' (quoted in Orton, 2005). Næss did not agree and maintained that maximising contact with your opponent is a central norm of the Gandhian approach. Kvaløy presented a rather different interpretation. According to Kvaløy, Gandhi teaches that '[m]an's most important source of insight and wisdom is located in social conflict where central human values are at stake' (Orton, 2005). Again, the gap

between them is, perhaps, not as wide as it looks. Underlining 'social harmony' did not mean avoiding conflict and change and should, rather, also be understood in the light of Kropotkin's critique of vulgar social Darwinism. In interviews and lectures Næss repeatedly referred to Kropotkin and the concept of mutual aid (see for example Eidslott, 1999). In *Mutual Aid* (Kropotkin, 1987) Kropotkin argued that organic and social life were not 'characterised by laissez-faire competition, conflict, and survival of the fittest, but rather by mutuality and symbiosis' (Morris, 2005). It is true that in *Communication and Argument* Næss recommended showing respect for the opponent to make discussions as fruitful and pleasant as possible, and argued for a set of rules, including avoiding tendentious irrelevance, quoting, ambiguity, use of straw men, statements of fact and tone of presentation (A. Næss, 1981). However, being able to represent the opponent's view fairly is not only an ideal reached out of consideration and respect; it requires willingness and the ability to understand the opposing arguments. It will thus potentially help to deepen your own understanding of the issue and to develop your own argument further. As Orton puts it, his concern to respect the opponent sometimes created the impression that there were no enemies, only opponents: from a left wing perspective this approach appeared 'simple-minded' (Orton, 2005).

Brian Morris's thought-provoking left libertarian critique, developed in *Ecology and Anarchism: Essays and Reviews on Contemporary Thought* (Morris, 1996), criticised Næss's *Ecology, Community and Lifestyle* for not directly addressing social issues, poverty, economic exploitation and state oppression (A. Næss and Rothenberg, 1989). According to Morris, Næss's only answer to the ecological crisis was the advocacy of an 'ecological consciousness' and the development of '*fairly* strong central political institutions' (A. Næss and Rothenberg, 1989, p. 157). This led Morris to categorise Næss and deep ecology under the heading 'reactionary deep ecology' (Morris, 1996, p. 135). Yet in *Ecology, Community and Lifestyle* Næss disapproves of 'socialist slogans' (for instance 'maximise production', 'centralisation' and 'high consumption') and dedicates a chapter to the censure of 'bureaucracy' (A. Næss and Rothenberg, 1989, pp.157, 159). 'Roughly speaking' he argues, 'supporters of the deep ecology movement seem to move more in the direction of nonviolent anarchism than towards communism' (A. Næss and Rothenberg, 1989, p. 156). Næss elsewhere explained that he and others in his circle in the 1960s were 'heavily influenced by Kropotkin's *Mutual Aid: A Factor of Evolution*' (quoted in Clark, 2010, p. 26). He had become more critical of anarchism after observing that many traditional communities that approximated to Kropotkin's communitarian ideal 'no longer took good care of their environments' (Clark, 2010, p. 26).

While the term 'reactionary' does not accurately describes Næss, Morris was

right to point out that the main problem with the deep ecology promoted by him is the reluctance to engage seriously with a critique of capitalism. Næss's resistance to the growing Marxist influence within Nordic deep ecology in the 1970s and the critique of capitalism it encouraged must, of course, be understood in its particular historical context. Marxism in Norway at the time was dominated by two strands: one loyally followed Moscow, the other – and at the time intellectually more influential – looked to China, Cambodia and Albania for inspiration. Both were united in seemingly limitless admiration for authoritarianism and indifference to freedom and even life: neither had much to offer in terms of respect for nature. Still, the failure to engage systematically and vigorously with capitalism as the dominating mechanisms behind poverty, exploitation and environmental degradation limited, and continues to reduce, the potential of deep ecology to explain and guide attempts to find solutions to environmental problems.

For all its limitations, Næss's approach continues to offer some important insights for understanding global warming. First is that the ethics of deep ecology are not based on the presumption that we know and understand the impact of human activity on nature, but on the insight that we do not. It calls for caution because we have no way of knowing all the long-term consequences of the complex processes we set in motion by our actions. Complexity in nature must be protected because complexity is necessary for nature to preserve itself, reproduce and develop. Nature's ability to repair damage depends on natural diversity and complexity. To demand caution based on the insight that we do not know the long-term consequences of human activity is a better starting point for developing ethics suited to dealing with global warming than certainty about the possible consequences of human activity.

Further, as the ecofeminist Karen Warren argues, Næss's concern was not with the correct 'total' view, but with the personal and political 'importance of *having*, and negotiating from, ecologically acceptable ... total views' (Warren, 1999, p. 264). Warren notes that the critical goal of deep ecology is not *sameness*, but the 'solidarity achieved by agreement to the values and beliefs expressed through the ... platform' (Warren, 1999, p. 264). This argument should be read in the light of the critiques advanced by women of colour and women from the global South about the universalising tendencies of the women's movement. Ecosophical pluralism makes sense both ethically and epistemologically.

The inclusive and respectful scepticism promoted by Næss in the later stage of his career can strengthen and supplement materialist environmentalisms. His focus on diversity might also make it easier for some Marxist environmentalists to understand minority perspectives, for instance indigenous people's perspectives that are sometimes at variance with 'leftist' Latin American presidents. Foster et al. hold up

leftist Latin-American presidents Hugo Chavez, Rafael Correa and Evo Morales as exemplars for a 'rational, scientific regulation of the human metabolism with nature' (Foster, et al., 2010, p. 396). While some of the actions undertaken by these presidents are worthy enough, they also provide a useful reminder about the limitations to an approach based on 'rational scientific planning' and competition for political power within the state. Some of these problems have become increasingly clear since the publication of *The Ecological Rift*. These left-leaning presidents have been employing authoritarianism with increasing frequency as they struggle to maintain power confronted by various types of organised opposition. Most worrying, perhaps, are the armed and deadly confrontations with indigenous groups struggling for control over local territories faced with the threat of expanding exploitation of natural resources by national or multinational companies.

Næss's insistence on pluralism in the face of 'our state of ignorance', and caution towards overall plans, provide an important perspective for a libertarian environmentalist movement which seeks to understand and fully allow for the integration of minority and indigenous peoples' perspectives. This should not be taken to mean that Næss was some kind of anarchist, as that would be stretching the argument too far – he pragmatically saw the social democratic state as a necessary safeguard against exploitation by multinational corporations. He also called for stronger international institutions, something most left libertarians would resist (Morris, 1997).

I will return to the issue of diversity and the ethical implications of uncertainty later, but first I need to clarify why a theory of the nature of global warming is a necessary prerequisite for a dialogue on 'climate change justice'.

WHAT POSSIBLE ACCESS DO WE HAVE TO THE ONTOLOGY OF GLOBAL WARMING AND CLIMATE CHANGE?

Global warming is different from most other issues related to 'globalisation' which can to some extent be observed locally as they develop globally. We see people migrating, we observe capital being moved, information being produced and being used in a global market. (To get at the forces driving globalisation, however, we must engage in some critical reflection. They are not out there waiting to be observed.) Global warming and climate change, however, are different. They are (still) based on theoretical insights that should force us to act long *before* they can be fully experienced in such a way that we can no longer doubt their existence. Global collective action cannot wait for local experience to take place.

The urgency of global warming, then, presents us with a new type of challenge, one which can only be solved by global collective action borne out of the construc-

tion of a global consciousness about the reality of global warming. But as the theoretical insights about global warming gradually grew in the 1990s in such a way in that it could no longer be ignored, a parallel process unfortunately took place. The term 'global warming' was gradually substituted by the term 'climate change', after significant lobbying from business interests and right-wing groups, and to the delight of the Bush administration, as Lakoff and others have demonstrated (Lakoff, 2010). Substituting 'global warming' with 'climate change' was a dangerous setback. I will try to explain why briefly, as the explanation is relevant and necessary for the analysis of the merits of social ecology, and I will use Bhaskar and critical realism as an 'underlabourer' of science.[1] This choice of critical realism is not coincidental. I will argue that deep ecology has made significant progress over the last two decades, *inter alia* as a result of the cooperation with critical realists. For an understanding of how science can be a valuable social activity in order to comprehend and act on the challenge of global warming, a distinction between the realms of real, actual and empirical is necessary.

It is a common misunderstanding that our knowledge of 'global climate change' is the result of the accumulation of local experiences and locally produced knowledge of local 'climate change'; that we move from having insights into local experiences of climate change to gradually processing those insights into knowledge on a global scale. Unfortunately, we cannot gain insight into the realm of 'the actual' through observation and experience alone. To believe that would be naïve empiricism (Bhaskar, 2008).[2]

Instead, it is useful to employ the three domains of the world outlined by Bhaskar: the real, the actual, and the empirical. The real is the realm of generative mechanisms that create the flux of events that make up the actual. In order to understand this perspective, it is useful to think of Tycho Brahe, Johannes Kepler and Isaac Newton and the emerging understanding of the solar system and eventual development of a theory of gravitation. To use the emerging understanding of gravitation as an example will make it possible to connect with Arne Næss and his search for a deeper non-foundational understanding of natural phenomena. He studied Einstein's theory of relativity in order to grasp the new (at the time) and potentially revolutionary ideas emerging from the field of studying the very large things in the universe (as, for instance, Einstein) and quantum mechanics (as, for instance, Niels Bohr). More recent deep ecologists have increasingly combined Næss's ontology of nature with a critical realist understanding of how science can be a valuable social activity. This example, therefore, also serves to illustrate key aspects of current versions of deep ecology (or 'ecophilosophy', as some now prefer to call it).

Tycho Brahe, the Danish astrologist and astronomer, observed planets and

stars, carefully describing their trajectories and possible connections with other stars that seemed to form patterns. He used his experience and imagination to interpret relationships between observed movements and patterns, and his own life world. Nonetheless, he could not move from the realm of the empirical to the realm of the actual. His experience seemed to tell him that the earth was the centre of the system, and that the sun was orbiting around it. His one-time assistant, Johannes Kepler, however, understood that this model was wrong and used Brahe's observations to produce a new model, now with the earth orbiting the sun. A new model did not in itself move science to the realm of the actual. Isaac Newton helped to produce a deeper understanding when he predicted that an invisible force, gravity, must be introduced to explain the observed movements. Still, from a critical realist perspective, everything we say about reality is fallible (but not equally fallible). Albert Einstein later demonstrated that Newton's theory was far from a complete explanation and continued to search for the unifying theory that might explain both the very big (that which the theory of relativity deals with), and the very small (the field of quantum mechanics). We still do not understand what gravity is. According to Næss, that we do not know should lead us to accept the possibility that our assumptions and theories about the world are wrong.

The point here, of course, is that not even a very large number of observations and other forms of accumulated experience will by itself guarantee a deeper insight into the generative mechanisms which can guide us towards the realm of the actual. To achieve that, theoretical reflection on the many possible causes of observed and experienced phenomena is needed. Our best option, in my opinion, is again critical realism. According to Bhaskar, explanations (theories) are accomplished by a model of explanation comprising a four-phase process: 'resolution of a complex event into its components (causal analysis)'; 'redescription of component causes'; 'retrodiction to possible (antecedent) causes of components via independently validated normic statements'; and 'elimination of alternative possible causes of components' (Bhaskar, 2009, p. 72).

Applying the critical realist model of theoretical reflection to the phenomenon of 'global warming', we realise that it is a very complex issue, of course, but also that we have at our disposal a number of theories on the most prominent generative mechanisms at play. Understanding the basics of 'global warming' certainly requires a substantial number of (fallible) 'natural laws' or 'causal laws' predicting a number of causes for global warming and climate change, for instance, but not limited to, those related to the inflow of energy from the sun, reflection from clouds, ice, sea and vegetation, the greenhouse effect, and so on. Understanding 'climate change', however, is immensely more complicated. Any local observation, in order

to be interpreted correctly, must be understood in relation both to possible changes in climate at all neighbouring localities and globally. A theory of global warming is therefore a prerequisite for any critical reflection on locally observed climate change. We are much more likely to produce a robust understanding of generative mechanisms behind 'global warming' than of the much more complex web of causal mechanisms behind locally observed 'climate change'.

The theory of 'global warming' predicts a phenomenon caused by a number of generative mechanisms, and which empirical evidence has later generally found to be reasonably robust. 'Climate change', in contrast, describes nothing meaningful except for the commonsensical notion that the climate is changing. The climate might be warming at one locality, cooling at another and staying more or less unchanged at a third. The generative mechanisms behind such a complex state of affairs are not likely to be fully understood *before* meaningful collective action must be taken to avoid the most drastic consequences of global warming. We have moved from relatively robust knowledge of one phenomenon ('global warming'), which could serve as the basis for collective action, to an abyss of uncertainty about the meaning of another ('climate change'). No wonder the Bush administration was pleased.

This detour has served to bring me closer to the goal of explaining why global warming poses some serious challenges for social ecology. Let me sum up some of the arguments so far. First, because of its novelty (a historical perspective) we have little previous experience to draw on in order to understand and respond to global warming caused by human activity. Second, because the climate is global by nature, any meaningful response would have to be global in scope whereas, as I have already argued, left libertarians have so far engaged mainly with decentralised, local or regional political organisation. Third, because of the long delay (predicted by theory) between activities now and corresponding future effects on global warming, we cannot rely (solely) on individual or collective experience to formulate responses to the challenges posed by global warming. Fourth, because of the anthropocentrism of much recent anarchist and left libertarian thinking, existing perspectives are not well suited to the analysis of a nature that also exists beyond – and independently of – our endeavours to describe and understand it. The only path to a deeper understanding of the reality of global warming involves theoretical reflection on the generative mechanisms behind it.

THE LIMITATIONS OF 'EXPERIENCE'

I do not mean to reduce the term 'experience' to mean only what we experience individually in our daily lives (Goulet, 1998; Griffiths and Whitford, 1988) or that

only theories that can be falsified by our individual experiences will be accepted. We must interpret 'experience' widely enough to encompass collective experiences with, for instance, science which functions to convince us of the usefulness – or even 'truth' – of proposed theories. Theories can be accepted in such a way that they function as foundations for collective action which, after all, is what is needed to mitigate the consequences of global warming, even though we do not individually understand or are able to test those consequences.

To understand what I mean, think of Einstein and the (second) theory of relativity. Einstein was in his twenties and worked at a patent office, conducting purely theoretical experiments on his own, when he published his first papers on relativity in 1905. Later papers elaborated on the first theory of relativity, and predicted that light had mass and would be bent as it travelled past an object asserting a gravitational force on it. Needless to say, many were sceptical, and Einstein only rose to general fame after his theory was tested and the effect he predicted was observed in May 1919 (Kumar, 2009, pp. 126, 127). Only a very few scientists actually observed and studied light bending, of course, but as the results were made public the evidence was acknowledged, and the theory became generally accepted 'knowledge' in much the same way as did Newton's predicted force (gravity). We do not necessarily need to understand the details of theories, causal explanations or natural laws in order to accept them, or to experience them ourselves, to accept them as 'true'.[3] However, it is important for me to underline that I do not consider the capacity to produce insights that transcend existing knowledge and commonsensical interpretation of experience the exclusive realm of experts and scientists. On the contrary, I believe in the universal inherent human potential to develop the capacity for reflexivity and transformative action of this kind.

However, in comparison to the theory of relativity, theories on global warming and climate change face additional challenges before they can be generally accepted as 'true' based on experience. First, because of the complexity involved in understanding climate change, any observation at one locality may be linked to a number of possible generative mechanisms – in contrast to the bending of light caused by gravity. Second, while the theory that predicted light bending could be tested within a few years of its formulation, global warming or global climate change is different. Some of the proposed natural laws predict that it will take fifty to one hundred years from the observation of pollution for the consequences for climate to (possibly) be observed. Existing theories forecast a long time lag and that we will not be able to observe the predicted results until long after collective action should have been taken in order to mitigate the consequences of global warming.

REVISITING BOOKCHIN'S CRITIQUE OF DEEP ECOLOGY

The mutual interest in understanding and taking nature seriously should have formed a basis for fruitful dialogue between Næss and social ecology. The style of Bookchin's critique, however, angered many environmentalists and helps explain why the subsequent 'debate' looked more like a shouting match than a dialogue. More seriously, the substantive content of Bookchin's critique failed to confront his opponents' strongest arguments. Bookchin unfortunately ignored Næss's published writings (Clark, 2010, p. 37).This lack of engagement with the deep ecology proposed by Næss and others continues to impede a mutually beneficial learning experience.

In fact, as we have seen, Næss was far from insensitive to social aspects of environmental issues and social justice. In an exchange of letters with Paul Feyerabend, he claimed to be 'more of an anarchist' than Feyerabend, although he himself preferred the term 'possibilism' to 'anarchism' (A. Næss, 1999a, p. 71).[4] There is nothing in Næss's original vision of deep ecology which proscribes serious engagement with the real and important social issues raised by Bookchin, as later developments in deep ecology have demonstrated. A more pertinent criticism of Næss's original deep ecology would have focused on the limited critique of capitalism as a 'ecological cancer: a form of barbarism' (Bookchin, 2007, p. 56) which would have brought Bookchin in line with some of Næss's former students (Setreng, 1973; Skønberg and Setereng, 1985). Additionally, Bookchin's vision of a universe developing 'whose most dynamic and creative attribute is its ceaseless capacity for self-organisation into increasingly complex forms' echoes positions already advanced by Næss and Kvaløy (Bookchin, 1994, p. 66). There was ample room for a rich and mutually beneficial dialogue between deep and social ecology, an opportunity that Bookchin's critique missed. While there was a later détente between North American deep and social ecologists (for instance in the form of a public debate between Foreman and Bookchin, and subsequently a co-authored book), Bookchin avoided engaging with the more important and more difficult questions raised by Næss's reply to Bookchin's critique. Taking these questions and issues more seriously could have opened social ecology up to some of the perspectives later developed by deep ecologists. By failing to read Næss properly, and reducing him to a leader of a band of 'fuzzy-headed' followers, Bookchin help cement a view that continues to plague much leftist engagement with deep ecology and the environmental movement.

A number of crucial issues were left unanswered by Bookchin after Næss's reply. First, is it not anthropocentric to claim that social structures can be taken as the

root cause of environmental destruction? Laferrière and Stoett argue otherwise and classify Bookchin as a non-anthropocentric thinker (Laferrière and Stoett, 1999). Bookchin himself was 'shocked' to read the 'unfounded assertion that I believe in anthropocentrism' (Bookchin, 1991c, p. 122). Nonetheless, according to Adams it is justifiable to use the term anthropocentric to describe Bookchin's thinking (Adams, 2011, p. 122). I agree with Adams, but my argument is rather different to his and turns on the questions that Bookchin leaves unanswered: how do we know that humans started harming the environment only after societies became stratified with social hierarchies? What type of sources and knowledge do we have in order to draw such a conclusion? Bookchin cited 'considerable anthropological evidence' for his understanding (Bookchin, 1990; 1991a, p. 57; 1991b). But what we know from archaeology, and from anthropological studies of a few non-hierarchical indigenous groups, is hardly sufficient to draw absolute conclusions about root causes. Even more importantly, as Næss pointed out, there are no strong grounds for believing that environmental destruction will disappear if and when we abolish social hierarchies. The question he asked was about how to develop a new sensibility toward the biosphere. If capitalism, social hierarchies and other social mechanisms have resulted in a damaged or a broken sensibility that leads us to understand nature exclusively in relation to its potential utility for humans, this process must be undone. The undoing of the destruction caused by capitalism to our sensitivity must be envisaged as an organic process in which real experience with nature plays a key part. According to Morris, Bookchin also advocated spiritual renewal to develop humanity's potential for rationality, foresight and creativity, and the fostering of an ecological sensibility. This is in fact also a fairly accurate summary of the proposal put forward by Næss and is far from the 'naïve form of biological reductionism' expressed by deep ecologists, according to Bookchin (Bookchin, 2007, p. 28). Indeed, most of the proposals advocated by Næss were compatible with the organic and processual way of thinking that Bookchin had proposed.

Many deep ecologists have continued the probe for more knowledge and a better understanding of the multiplicity of causes related to human society and natural degradation. The Nordic version of deep ecology, through the work of Sigmund Kvaløy, Petter Næss, Arne Johan Vetlesen, Karl Georg Høyer and others, continued to develop deep ecology in various directions, cooperating with, and seeking inspiration from, critical realists such as Roy Bhaskar, Andrew Sayer and Margaret Archer (Bhaskar, 2010, Bhaskar, Næss and Høyer, 2011; Reed and Rothenberg, 1993). More recent versions of deep ecology, now more often called 'ecophilosophy', have advanced to improve the analysis of causal effects related to emerging structures. Others have deepened the critique of capitalism. Combining

these advances with a continued emphasis on the inherent value of diversity, ecophilosophy has evolved into a promising perspective for left libertarian non-anthropocentric thinking on global warming, and brings this tradition closer to the long left libertarian tradition of metaphysics of nature implicit in the writings of many early anarchists beginning with Bakunin, Reclus, and Kropotkin among others. In particular, ecophilosophy proposes an ontology of nature and human society which refuses to reduce statements about the world to statements about our knowledge of the world (epistemological fallacy) – a valuable antidote to extreme forms of hermeneutics.

The version of Nordic deep ecology presented here is a simplification. There are, of course, also other forms of ecology, sometimes inspired by Næss and Kvaløy. From the late 1960s and 1970s onwards, the counterculture produced forms of ecology inspired by anthroposophy and theosophy. Many in this tradition would, interestingly enough, trace this tradition back to some of the nineteenth century Norwegian anarchists such as Ivar Mortensson (Langen, 1951). This, though, lies outside the scope of this article.

SOCIAL ECOLOGY AND GLOBAL WARMING

Others have already called for a new synthesis of deep and social ecology (Marshall, 1994). According to Marshall, this should be a 'libertarian ecology' (Marshall, 1994). Nevertheless, 'global warming' and 'climate change' are not central issues in the analyses of either Bookchin or Marshall. 'Global warming' is not listed in the index of *Nature's Web, An Exploration of Ecological Thinking,* published as recently as 1994 (Marshall, 1994). Similarly, 'global warming' and 'climate change' are not major issues in *Social Ecology after Bookchin* (Light, 1998). Marshall is more nuanced and thoughtful in his analysis of deep ecology than is Bookchin, proposing a 'libertarian ecology' built on deep and social ecology (Marshall, 1994). In line with both Bookchin and Næss, Marshall sees human destruction as a social phenomenon, but he avoids defining social hierarchies as the root cause of environmental degradation.

So how are social ecologists today employing and developing social ecology as a philosophy, to respond to global warming and climate change? As I understand it, the Institute for Social Ecology ground their argument on global warming in science, particularly the UN's Intergovernmental Panel on Climate Change (IPCC) which, as we know, is based on theories predicting generative mechanisms and models constructed to help us understand the dynamics between them (Tokar, 2008). The Institute for Social Ecology, however, seems to gravitate towards understanding and explaining global warming based on local experience: 'What gets lost in all these

long-term projections, however, are the ways that chaotic global warming is already affecting people around the world today' (Tokar, 2008). Tokar rightly notes that the consequences of global warming will probably hurt the poor the most. There is certainly an aspect of social justice to global warming issues: 'Most of the world's poor people live in the tropics and subtropics. They are already living in a world of increasingly uncertain rainfall, persistent droughts, coastal flooding, loss of wetlands and fisheries, and increasingly scarce fresh water supplies' (Tokar, 2008). This might turn out to be a very insightful hypothesis for the future consequences of global warming but it is not a precise encapsulation of current knowledge on global warming and climate change, and such claims of climate change already observable in certain localities have met powerful resistance from many scientists, including Mike Hulme (Hulme, 2007, 2008, 2009, 2011a, 2011b). I disagree with Hulme when he tries to explain 'why we disagree about climate change' by referring to a set of Biblical myths defining the ways we see and understand it. He is right, however, to note that scare headlines and unfounded dramatic claims tend to be counter-productive. Claims like 'already living in', 'uncertain rainfall', 'droughts', 'flooding', 'scarce fresh water supplies' and so on will not produce the desired response unless they are supported by strong empirical and theoretical evidence.

This might seem like a minor disagreement in relation to the seriousness of the problem at stake, but it is worth considering further. The theory of global warming does not predict a uniformly warmer world. It will probably get warmer in some places and cooler in others. In addition, the climate will also fluctuate over time at each individual locality. Variation is the norm. Even though the long-term tendency at one locality might be warming, it will also probably experience periods of cooling. To increase the complexity, several other generative mechanisms will also be influencing the climate at any given locality which means that claims linking periods of warming at one locality to human activity can always be met with counter-arguments relating the same phenomenon to other generative mechanisms. Furthermore, if we ground our argument on global warming in observed periods of warming we must always expect a backlash. Periods of warming will be followed by naturally occurring fluctuations, including periods of cooling. These periods of naturally occurring cooling will provide arguments for climate deniers to counter attack. In fact, if the theory on global warming is right, variations will be naturally occurring, and the number of observed instances of warming will only be slightly higher than the number of observed instances of cooling. Only carefully planned measurements at a large number of localities over an extended period of time will be able to detect, beyond reasonable doubt, that global warming has been observed and experienced. This line of argument could be repeated for other phenomena

related to global warming – drought, flooding, hurricanes and so on. By grounding the argument in supposedly already observable instances of local changes to the climate, the Institute for Social Ecology risks falling into the carefully constructed trap of the Bush administration. I believe that this is one of the most important reasons why it has proved so difficult to organise effective global action against anthropogenic global warming.

Another problem for social as well as deep ecology is related to the global nature of global warming. Meaningful action must be local but still global in scope. However, social and deep ecology have both engaged largely with local, communal or regional levels of organisation and most other left libertarian or anarchist thinkers have engaged with decentralised forms of decision making where all those supposedly affected by an issue would have equal right to participate in the decision-making process. In small communes, for instance, the members would normally also engage in numerous face-to-face forms of interaction. Those potentially affected by the consequences of global warming, however, encompass all humankind. The experience of organising and engaging in face-to-face forms of interaction on a daily basis forms identities, helps construct imagined communities, and facilitates collective action based on creativity and spontaneity. The way we organise social life contributes to producing experiences that will affect how we value nature and human life. The challenge of global warming demands that this creative spontaneity is translated into global organised action.

CONCLUSION

I will now leave behind the conflict between deep and social ecology to indicate possible ways to develop a synthesis between the two. I will not pretend to have ready-made answers to the challenge posed by global warming, and will only point towards a possible path for future development. First, I agree with Marshall that a synthesis of deep and social ecology is needed (Marshall, 1996). It has become increasingly urgent since the publication of Marshall's *Nature's Web*, especially in the light of the emerging knowledge we now have on the challenge posed by global warming. Such a synthesis could combine the need for theorising structures, including social hierarchies, and generative mechanisms with ecophilosophical reflexivity on nature and human potential for developing a new sensitivity towards nature, building on recent developments in deep ecology and critical realism (Bhaskar, et al., 2011). A starting point could be Vetlesen's reflection on ethics, and how a new sensitivity towards nature needs to be developed and nurtured through real experiences with nature – and also how the potential to be fully sensitive to

nature is being circumscribed in modern capitalist societies (Bhaskar, et al., 2011; Vetlesen, 2008, 2009, 2010).

According to Hulme, we should ask what 'climate change' can do for us (Hulme, 2009, p. 326). First, global warming forces us to think globally; all living things are connected and depend on each other. Humans and human society cannot be considered in isolation from the global environment of which we are a part. Second, our limited insight into global warming and climate change is emerging, albeit slowly. What we know or believe to know from *experience* is not likely to be enough to prescribe effective policy proposals. We need to know more, to maintain ontological curiosity and to resist subsuming analysis of new phenomena within the framework of existing theories or ideologies.

I further propose Wright's definition of realism as a potentially fruitful perspective for our engagement with nature and reality: 'A way of describing the process of "knowing" that acknowledges the reality of the thing known, as something other than the knower (hence "realism"), while also acknowledging that the only access we have to this reality lies along the spiralling path of appropriate dialogue or conversation between the knower and the thing known (hence "critical")' (Wright quoted in Lynch, 2007, p. 6). Ecophilosophy proposes an alternative ontology of nature and reality which can help us along this spiralling path of dialogue and thus help us think systematically from a global perspective. A key element in this alternative ontology is the intrinsic value of all things and the value of biological diversity. It is crucial for nature to be able to respond to the uncertain but likely rapid and dramatic future changes to the climate caused by global warming. It provides a bridge from deep ecology for anti-authoritarians and left libertarians who resist capitalist domination because of, *inter alia*, its inherent tendency to destroy other forms of social organisation and to create social equivalents to biological monocultures notoriously vulnerable to rapid changes.

Returning to my argument in the introduction, then, I still believe that any lasting solution to anthropogenic global warming must build on decentralised forms of organisation which stimulate spontaneity and creativity, and facilitate active participation in order to build a society that is the 'expression of the creative potentiality of humanity' (Bookchin, 2002). However, *praxis* and *experience* are not enough to reach a useful understanding of the challenge posed by global warming. Theoretical insight is the only possible path to an understanding of, and response to, global warming in time to organise global collective action to mitigate the problem. Therefore, left libertarians must resist the temptation to reduce the framing of the problem to 'already' experienced changes to the local climate. Ecophilosophy of the critical realism variety, combined with anti-authoritarian left libertarianism, presents us with a non-founda-

tionalist understanding of science, one which will make it possible for science to be a valuable contributor in the production of knowledge on global warming.

Much of what I have said about global warming resembles the definition of 'post-normal science' (Schneider and Mastrandrea, 2010, p. 17). According to Schneider and Mastrandrea, 'climate change' can be seen as a 'post-normal science' because some groups want or need to know 'the answer well before normal science has resolved the deep inherent uncertainties surrounding the problem at hand' and 'there will be no clear consensus', but also a 'clear need to consider policy decisions before this uncertainty is resolved' (Schneider and Mastrandrea, 2010, p. 17). From an ecophilosophical point of view this line of argument cannot be accepted because it implicitly suggests a 'normal science' that can be expected to resolve uncertainty about the future before policy decisions need to be considered. The ecophilosophical tradition has always been sceptical about the belief that science and experts can produce all the necessary information needed in order to make decisions without uncertainty, arguing instead that generalists are normally better suited to the making of sound judgements in real world situations. The complete individual is not a specialist; s/he is a generalist and an amateur, according to (Næss, 2005). From this perspective, global warming is not 'post-normal' but, rather, normal. Most generalists and amateurs would recognise situations of interaction with nature where decisions must be made without certainty about the future: the fisherman would like to know what the weather will look like the next morning before setting sail; peasants have always tried to interpret signs in nature before making decisions about when to sow. Instead of mystifying science by employing expressions like 'post-normal', global warming instead asks us to reconsider the role of science. Science cannot be expected to produce certainty, but it can help to guide us to make more or less sound ethical judgements based on the uncertain predictions we have at the time when we need to make 'policy decisions'. This understanding of the role of science would accept that we have no guarantee that the future will resemble the past, while also accepting that some statements on global warming are less fallible than others.

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NOTES

1. I'm not convinced that critical realism should be seen as an 'underlabourer' of science, meaning that following critical realism will ensure better or correct results. However, for the purpose of this essay, I will not discuss this further, as I accept Bhaskar's distinction between the realms of the empirical, actual and real, as minimal requirements.
2. Empiricism conceives the world as a series of atomistic events, and causal laws a constant conjunction of events, but from a critical realist perspective, causal laws are not constant conjunctions of events.
3. I use 'experience' here (even though I am aware of the problems of such a use) to capture a particular element of the process whereby proposed theories get accepted as 'true', not because we (the vast majority of us) understand or accept the natural or social laws proposed to explain the generative mechanisms and how they work on the phenomena observed, but because we feel or believe that they have proved themselves to 'work' in daily life. Newton's prediction of a gravitational force demonstrates the problems with such a definition of 'experience'. Many would say that the predicted force (gravity) must be there since they experience it every day. Still, it was the same type of experience-based argument that ensured that the Ptolemaic worldview persisted from ancient Greece until the time of Copernicus, Kepler and Galileo.
4. 'Possibilism' for Næss is 'the assumption that the future is in principle completely open, offering unimaginable surprises' (A. Næss and Haukeland, 2002, p. 4). This assumption is closely related to Pyrrhonic scepticism that holds that no certain knowledge is possible.

REFERENCES

Adams, J. (2011). *The Constellation of Opposition*. London, New York, NY: Pluto.

Bhaskar, R. (2008). *A realist theory of science*. London: Routledge.

Bhaskar, R. (2009). *Scientific realism and human emancipation*. London: Routledge.

Bhaskar, R. (2010). *Interdisciplinarity and climate change: transforming knowledge and practice for our global future*. London: Routledge.

Bhaskar, R., Høyer, K. G., and Næss, P. (2012). *Ecophilosophy in a world of crisis : critical realism and the Nordic contributions*. London: Routledge.

Bhaskar, R., Naess, P., and Høyer, K. (Eds). (2011). *Ecophilosophy in a World of Crisis. Critical realism and the Nordic Contributions*. Oxford: Routledge.

Bjørneboe, J. (1996). Da professor Arne Næss og jeg erobret NATO på Kolsås *Samlede Essays: Politikk* (pp. 32-37). Oslo: Pax.

Bookchin, M. (1975). *On spontaneity and organisation*. London: Solidarity.

Bookchin, M. (1987). Social Ecology versus Deep Ecology: A Challenge for the Ecology Movement. *Green Perspectives: Newsletter of the Green Program Project* (pp. 4-5).

Bookchin, M. (1990). *The philosophy of social ecology : essays on dialectical naturalism*. Montréal New York: Black Rose Books.

Bookchin, M. (1991a). Ecology and the Left. In M. Bookchin, D. Foreman and S. Chase (Eds), *Defending the earth : a dialogue between Murray Bookchin and Dave Foreman* (pp. 147). Boston, Mass.: South End Press.

Bookchin, M. (1991b). *The ecology of freedom : the emergence and dissolution of hierarchy* (Rev. ed.). Montreal ; New York: Black Rose Books.

Bookchin, M. (1991c). Where I stand now. In M. Bookchin, D. Foreman and S. Chase (Eds), *Defending the earth : a dialogue between Murray Bookchin and Dave Foreman* (pp. 121-133). Boston, Mass.: South End Press.

Bookchin, M. (1994). *Which way for the ecology movement?* Edinburgh u.a.: AK Press.

Bookchin, M. (1997). Deep Ecology, Anarchosyndicalism and the Future of Anarchist Thought. In M. Bookchin, G. Purchase, B. Morris, R. Aitchtey, R. Hart and C. Wilb (Eds), *Deep Ecology and Anarchism*. London Freedom Press.

Bookchin, M. (2002). The Communalist Project. *Harbinger*, 3 (1).

Bookchin, M. (2007). *Social Ecology and Communalism*. Edinburgh: AK Press.

Carter, A. (1995). DEEP ECOLOGY OR SOCIAL ECOLOGY? *The Heythrop Journal*, 36 (3), 328-350.

Chase, S. (1991). Introduction. In M. Bookchin, D. Foreman and S. Chase (Eds), *Defending the earth : a dialogue between Murray Bookchin and Dave Foreman* (pp. 147). Boston, Mass.: South End Press.

Clark, J. P. (2010). A Dialogue with Arne Naess on Social Ecology and Deep Ecology (1988-1997). *The Trumpeter*, 26 (2), 20-39.

de Vos, J. (2002). *Una tierra para sembrar sue¤os. Historia reciente de la Selva Lacandona, 1950-2000*. Mexico.

de Vos, J. (2003). *Viajes Al Desierto de La Soledad: Un Retrato Hablado de La Selva Lacandona*. Mexico.

Eidslott, E. (1999). - 95 prosent 90-åring og fem prosent 19-åring. Retrieved 30 July 2012, from Dagbladet: http://www.kjendis.no/2009/01/13/kjendis/arne_ness/dodsfall/4357965/.

Evren, S. (2011). *Introduction*. London New York, NY: Pluto.

Foster, J. B., Clark, B., and York, R. (2010). *The ecological rift : capitalism's war on the earth*. New York: Monthly Review Press.

Franks, B. (2011). Saul Newman, The Politics of Postanarchism. *Anarchist Studies*, 19 (1).

Goulet, J.G. (1998). Ways of knowing experience, knowledge, and power among the Dene Tha. from http://site.ebrary.com/id/10139092

Griffiths, M., and Whitford, M. (1988). *Feminist perspectives in philosophy*. Bloomington: Indiana University Press.

Hulme, M. (2007). Newspaper scare headlines can be counter-productive. *Nature*, 445 (7130), 818-818.

Hulme, M. (2008). The conquering of climate: discourses of fear and their dissolution. *Geographical Journal*, 174 (1), 5-16

Hulme, M. (2009). *Why we disagree about climate change : understanding controversy, inaction and opportunity*. Cambridge: Cambridge University Press.

Hulme, M. (2011a). You've been framed: six new ways to understand climate change. 5 July. Retrieved 15 July 2011, from http://theconversation.edu.au/youve-been-framed-six-new-ways-to-understand-climate-change-2119

Hulme, M. (2011b). Meet the humanities. *Nature Climate Change*, 1, 177-179.

Kovel, J. (2007). *The enemy of nature : the end of capitalism or the end of the world?* London; New York: Zed Books.

Kropotkin, P. A. (1987). *Mutual aid : a factor of evolution*. London: Freedom.

Krøvel, R. (2006). *Fra gerilja til globale solidaritetsnettverk i Chiapas, Mexico.* Norges teknisk-naturvitenskapelige universitet, Det historisk-filosofiske fakultet, Institutt for historie og klassiske fag, Trondheim.

Krøvel, R. (2009). Solidarity and Intercultural Communication in Chiapas, Mexico. *Intercultural Communication Studies*, XVIII (1), 21-37.

Krøvel, R. (2010). Anarchism, The Zapatistas and The Global Solidarity Movement. *Global Discourse: A Developmental Journal of Critical Research in Politics and International Relations*(II).

Krøvel, R. (2011a). Fighting Superior Military Power in Chiapas, Mexico: Celebrity Activism and its Limitations. In L. Tsaliki, C. A. Frangonikolopoulos and A. Huliaras (Eds), *Transnational Celebrity Activism in Global Politics. Changing the World?* Bristol: Intellect

Krøvel, R. (2011b). From indios to indígenas: Guerrilla perspectives on indigenous peoples and repression in Mexico, Guatemala and Nicaragua. *Interface: a journal for and about social movements*, 3 (1: Repression and social movements).

Krøvel, R. (2011c). A Symbiotic Relationship: Norwegian Diplomacy and Norwegian Journalism on War and Peace in Guatemala. *conflict and communication online*, 10 (1).

Krøvel, R. (2011d). The War in Chiapas: The Fall and Rise of Independent Journalism. In A. Charles and G. Stewart (Eds), *The end of journalism: news in the twenty-first century*. Oxford ; New York: Peter Lang.

Kumar, M. (2009). *Quantum : Einstein, Bohr, and the great debate about the nature of reality* (1st American ed.). New York ; London: W.W. Norton.

Laferrière, E., and Stoett, P. J. (1999). *International relations theory and ecological thought : towards a synthesis*. London ; New York: Routledge.

Lakoff, G. (2010). Why it Matters How We Frame the Environment. *Environmental Communication: A Journal of Nature and Culture*, 4 (1), 70-81.

Langen, K. (1951). *Ivar Mortensson-Egnund : anarkist og mystikar.* Oslo.
Light, A. (1998). *Social ecology after Bookchin*. New York: Guilford Press.
Lynch, J. (2007). Peace journalism and its discontents. *conflict and communication online*, 6 (2), 1-13.
Marshall, P. H. (1994). *Nature's web : rethinking our place on earth* (1st U.S. ed.). New York: Paragon House.
Marshall, P. H. (1996). *Nature's web : rethinking our place on earth* (1st paperback ed.). Armonk: M.E. Sharpe.
McKay, I., Elkin, G., Neal, D., and Boraas, E. (2010, 22 January 2010). An Anarchist FAQ. Retrieved 18 August 2011, from http://infoshop.org/page/AnAnarchistFAQ.
Morris, B. (1996). *Ecology and anarchism : essays and reviews on contemporary thought*. Malvern Wells, Worcestershire: Images.
Morris, B. (1997). Reflections on Deep Ecology. In M. Bookchin, G. Purchase, B. Morris and R. Aitchtey (Eds), *Deep Ecology and Anarchism. A polemic.* London: Freedom Press.
Morris, B. (2005). *Anthropology and Anarchy: their elective affinity*. London: Goldsmiths, University of London.
Morris, B. (2009). The political legacy of Murray Bookchin. *Anarchist Studies*, 17 (1), 95-105.
Naess, A. (2005). *The Selected Works of Arne Naess*. New York: Springer.
Norsk biografisk leksikon. (Ed.) (2011) Store norske leksikon. Oslo.
Næss, A. (1933). *Studier over dommers sannhetskvalitet etter adferdsfilosofiske principper.* Oslo University, Oslo.
Næss, A. (1936). *Erkenntnis und Wissenschaftliches Verhalten*. Oslo.
Næss, A. (1966). *Logikk og metodelære : en innføring* (Vol. 14). Oslo: Universitetsforlaget.
Næss, A. (1973). The Shallow and the Deep, Long-Range Ecology Movement. *Inquiry* (16).
Næss, A. (1981). *Communication and argument : elements of applied semantics*. Oslo: Universitetsforlaget.
Næss, A. (1999a). Paul Feyerabend: A Green hero? In A. Brennan and N. Witoszek (Eds), *Philosophical dialogues: Arne Næss and the progress of ecophilosophy* (pp. XIX, 492 s.). Lanham, Md.: Rowman and Littlefield.
Næss, A. (1999b). The shallow and the deep, long-range ecology movements : a summary. In A. Brennan, N. Witoszek and A. Næss (Eds), *Philosophical dialogues : Arne Næss and the progress of ecophilosophy* (pp. XIX, 492 s.). Lanham, Md.: Rowman and Littlefield.
Næss, A., and Haukeland, P. I. (2002). *Life's philosophy : reason and feeling in a deeper world*. Athens: Univ. of Georgia Press.
Næss, A., and Rothenberg, D. (1989). *Ecology, community and lifestyle : outline of an ecosophy*. Cambridge: Cambridge University Press.

Næss, A. D. E. (1953). *Interpretation and Preciseness. A contribution to the theory of communication*. Oslo: DNVA

Orton, D. (2005). *Conflict and Marxism in Deep Ecology*. Retrieved 11 November 2011.

Prichard, A. (2010). Deepening Anarchism: International Relations and the Anarchist Idea. *Anarchist Studies*, 18 (2), 29-57.

Randall, S. (2007). *Towards a Synthesis of Norwegian Ecophilosophy.* Unpublished Master University of Oslo, Oslo.

Reed, P., and Rothenberg, D. (Eds). (1993). *Wisdom In the Open Air: The Norwegian Roots Of Deep Ecology*. Minneapolis: University of Minnesota Press.

Sayer, A. (2000). *Realism and social science*. Thousand Oaks, London: Sage.

Schneider, S. H., and Mastrandrea, M. D. (2010). The Politics of Climate Science. In M. T. Boykoff (Ed.), *The politics of climate change : a survey*. London: Routledge.

Setreng, S. K. (1973). *Økokrise, natur og menneske : En innføring i økofilosofi og økopolitikk. <Økofilosofisk fragment. 4.>*. [Oslo.

Skønberg, S. E., and Setereng, S. K. (1985). *Grønn pepper i turbinene : 16 bidrag om miljøkrisen og veiene ut av den : til ære for Sigmund Kvaløy Setereng*. Oslo: Universitetsforlaget.

Tokar, B. (2008). Toward a Movement for Peace and Climate Justice. Retrieved 6 September 2011, from http://www.social-ecology.org/2008/06/toward-a-movement-for-peace-and-climate-justice-2/

Ugarriza, L. G., Saber, E., Vantaram, S. R., Amuso, V., Shaw, M., and Bhaskar, R. (2009). Automatic Image Segmentation by Dynamic Region Growth and Multiresolution Merging. *Ieee Transactions on Image Processing*, 18 (10), 2275-2288.

Vetlesen, A. J. (2008). *Nytt klima : miljøkrisen i samfunnskritisk lys*. Oslo: Gyldendal.

Vetlesen, A. J. (2009). *Frihetens forvandling : essays og artikler 2002-2008*. Oslo: Universitetsforl.

Vetlesen, A. J. (2010). *A philosophy of pain*. London: Reaktion Books.

Warren, K. (1999). Ecofeminist philosophy and deep ecology. In A. Brennan, N. Witoszek and A. Næss (Eds), *Philosophical dialogues : Arne Næss and the progress of ecophilosophy* (pp. XIX, 492 s.). Lanham, MD: Rowman and Littlefield.

Witoszek, N. (1998). *Norske naturmytologier : fra Edda til økofilosofi*. Oslo: Pax.