

## CHAPTER ONE

# INTRODUCTION

This thesis locates the role of knowledge at the centre of its analysis of the politics of social change and reality-maintenance. It argues that knowledge is an essential tool for the exercise of power, both in the exercise of domination as well as the practice of resistance. Where it is combined with a world-view which has attained the status of 'truth', knowledge functions as a buffering device against those who seek change. Only cosmetic or superficial reforms may be introduced. This means that the only really viable strategy for those who wish to instigate change is to embrace and advocate a different truth regime that is founded in a different type of knowledge.

This thesis was written with the green movement in mind. Here, we find that environmental organisations such as *Greenpeace*, since their emergence in the 1970s, have moved towards embracing the scientific discourse, its practices and expertise.<sup>1</sup> This standpoint contrasts sharply with the ecofeminist position which considers science itself to be a source of violence against, and a tool in the twin domination of, Nature and women. Its emphasis lies with traditional, practical, grass

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<sup>1</sup> Stephen Yearly, 'Green Ambivalence about Science: Legal-rational Authority and the Scientific Legitimation of a Social Movement', in *The British Journal of Sociology*, Vol. 43, No. 4 (December 1992), p.515. Stephen Yearly, 'Pressure Points: Blinded by Science', in *The Guardian*, 10 April 1996, p.25. Philip Sutton, 'Genetics and the Future of Nature Politics', in *Sociological Research Online*, Vol. 4, No. 3, [www.socresonline.org.uk/socresonline/4/3/sutton.html](http://www.socresonline.org.uk/socresonline/4/3/sutton.html). para. 2.9.

roots, women's and people-based knowledges.<sup>2</sup> Within the green movement, therefore, there exist at least two knowledge perspectives and a clearer understanding of their role in green movement activism could prove crucial for improving the quality of all life on Earth.<sup>3</sup>

I begin in chapter two by identifying knowledge as the key mechanism in determining the conduct and outcome of social relations. I will examine how knowledge functions as a facilitator in the interaction between certain actors over certain issues while it also serves to obstruct others. In developing a perspective that allows for knowledge to be identified as a key factor in the politics of social change and reality-maintenance I have drawn on the works of Georges Gurvitch, Steve Fuller, Imre Lakatos and Michel Foucault. Their contributions will be outlined in chapter two, together with the key concepts that form the pillar to this approach. As a result, a clearer understanding of the role of knowledge in stabilising a particular world-view will emerge as well as in the strategies to be pursued and the outcome to be expected by those who wish to bring about social change.

In chapter three, I review the academic literature that has emerged alongside the green movement over the past three decades to examine whether the knowledge provided by social movement theories did in fact serve or hinder social change-oriented actors. Here, I will apply the principles developed in chapter two to the conventional literature on social movements in order to explore how regimes of truth permeate academic enquiry and operate to make some entities, agents or topics valid

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<sup>2</sup> Karen J. Warren, 'Introduction', in Karen J. Warren (ed.), *Ecological Feminism* (London and New York: Routledge, 1994), pp.1-7. Maria Mies and Vandana Shiva, *Ecofeminism* (London and New Jersey: Zed Books, 1993).

<sup>3</sup> See for example, Tariq Banuri and Frédérique Apffel Marglin, *Who Will Save the Forest? Knowledge, Power and Environmental Destruction* (London: Zed Books, 1993).

whilst others are excluded as peripheral or eccentric. Conventional social movement theories, it will emerge, are as knowledge producers deeply implicated in reality-maintenance. I conclude chapter three by suggesting a new way of looking at social movement activism that will allow both for the political actors ignored or marginalised by conventional approaches as well as the power relations they are exposed to, to be rendered visible.

In chapters four to six I will then use the case of food production in the UK to see what insights can be gained from this new approach into the dynamics and processes that lead to reform or 'real' change. I will concentrate on the power struggle that takes place between the proponents of a modern industrial and an alternative ecological agriculture paradigm. In chapter four, I look at the emergence and development of the dominant modern industrial agriculture paradigm and identify the processes and key players that have contributed to and facilitated scientific agriculture in attaining the status of 'truth'. I will examine what type of practices this knowledge system justifies, what kind of practices it discards, and what the wider socio-economic and environmental implications of adopting this particular agricultural model are.

In chapter five I outline the knowledge system and the correlating practices of ecological agriculture. Ecological agriculture, it will emerge, is built upon a unique set of assumptions and values; it is founded in a unique knowledge system and grants legitimacy to practices of food production that differ fundamentally to those of modern industrial agriculture. The practitioners of ecological agriculture will thus be identified as the key agents for instigating social change. They resist the dominant agricultural truth regime and practise the alternative social reality they seek to bring

about. By rendering the political nature of their activities visible, this chapter broadens our understanding of social movement activism.

In chapter six I assess the outcome of the power relationship that exists between the proponents of a modern industrial and an ecological agriculture system by examining three issues related to food production. These are biotechnology, the introduction of agri-environmental schemes, and the emergence of new meanings in the form of organic and sustainable agriculture. The developments in these three areas raise a number of questions that are of particular interest to this thesis. Why, for example, have these issues been promoted or accepted at these particular points in time and who has benefited most from their introduction? In answering these types of questions I seek to reveal the power dimension that is part of reform and that serves to neutralise the 'real' agents of change.

The practice of food production as an area of investigation has been chosen because, first of all, agriculture is most intimately connected with Nature and it brings us into closest contact with her. What we know and how we implement our knowledge into agricultural practices gives an indication of how we relate to Nature. Furthermore, food is one of the basic human needs, and food production and consumption are essential activities to guarantee our survival. As such, the practice of food production will be bound up with the general social structure and knowledge system of a society, with its technology, organisation, and economy. Since each societal type has a unique approach to food production, the identification of competing meanings, knowledges and practices in this field will be facilitated. In fact, it has been argued that the way we produce food reflects the type of society we live in:

In particular, I happen to believe that agriculture is important as one of the foundation stones of a stable and sustainable cultural life. A

society will in some ways model itself on the way it grows its food ... [I]f there is a symbiotic relationship, as much about co-operation as dominance, gratitude as self-congratulation, as much about giving back as taking out, then that, I believe, will be a powerful shaping force in the lives we lead.<sup>4</sup>

Practitioners of an alternative agriculture can thus be identified as representatives of an alternative societal model.

I focus upon the UK agriculture because it has always been at the forefront of the development and the advancement of the new modern agricultural paradigm. The UK was a seat for the agricultural revolution in the 18<sup>th</sup> century<sup>5</sup> as well as the core area for scientific ‘advances’ during the 1840-1900 era of Victorian Britain when the Rothamstead experimental station was established and the Royal Agricultural Society of England founded.<sup>6</sup> In the post-1945 period, first encouraged by comprehensive Government incentives and later by the Common Agriculture Policy (CAP), the drive towards a modern efficient and technologically advanced agriculture industry was particularly sweeping. I therefore expect a study of the UK agriculture to provide important insights into the role of scientific knowledge in the displacement of traditional and ecological rural knowledges and practices.

Besides its ‘success’ in implementing political guidelines – the UK agriculture industry is among the most product-efficient agriculture sectors in the world<sup>7</sup> – post-1945 agricultural intensification has also been blamed for the

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<sup>4</sup> Prince Charles, *The 50<sup>th</sup> Anniversary of The Soil Association*, speech delivered at The 1996 Lady Eve Balfour Memorial Lecture, London, September 19th 1996. [http://193.68.132/speeches/agriculture\\_19091996.html](http://193.68.132/speeches/agriculture_19091996.html)

<sup>5</sup> G.E. Mingay, *The Agricultural Revolution: Changes in Agriculture 1650-1880* (London: Adam & Charles Black, 1977). J.D. Chambers and G.E. Mingay, *The Agricultural Revolution 1750-1880* (London and Sydney: B. T. Batsford, 1966).

<sup>6</sup> E. John Russell, *A History of Agricultural Science in Great Britain, 1620-1954* (London: George Allen & Unwin Ltd., 1966), chapter 4.

<sup>7</sup> CPRE and WWF, *Growing Greener: Sustainable Agriculture in the UK*, Report for Council for the Protection of Rural England and World Wide Fund for Nature (June 1996), p.42.

destruction of the countryside.<sup>8</sup> More recently, and in the light of food scares such as pesticides and dioxins in food, BSE, the Foot & Mouth disease, and genetically modified organisms, agriculture has again moved on both the public and the political agenda. Direct forms of action such as the destruction of GM crop trials and consumer boycotts of beef, the setting up of box schemes and farmers markets, and the emergence of the local food movement all have emerged as an expression of public concern over the way food was produced in the UK. The fact that policy-makers have responded to these concerns - the Ministry of Agriculture, Fisheries and Food (MAFF), for example, was recently replaced by the Department for Environment, Food, and Rural Affairs (DEFRA) to signal a more holistic approach in policy-making in these areas - suggests that a study of the UK agriculture should provide useful insights into to processes and dynamics that lead to reform and real change.

The information for this study was collected from various sources. I covered secondary sources on environmental and agricultural issues, including the agricultural situation in the UK, its history and policies. I consulted official publications by the UK Government and European institutions, as well as information provided in printed and electronic form by organisations and institutions traditionally associated with agriculture and countryside matters, such as the Countryside Commission and the National Farmers' Union (NFU). I complemented the material on ecologism gained from the general literature on green theory and practice by collecting material from green journals and the Internet. Here, I have focused my attention on four green projects. Since eco-projects are rarely considered in the conventional literature on agricultural affairs, I will use this space to introduce these

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<sup>8</sup> Marion Shoard, *The Theft of the Countryside* (London: Temple Smith, 1980).

projects in more detail. Three of these eco-projects fall under the category of eco-communities. These are the Findhorn Community, Brithdir Mawr and the Hockerton Housing Project.

The Findhorn Community was established in 1962 by its three founding members Peter and Eileen Caddy and Dorothy McClean in a caravan in the North of Scotland. Today, it has around 500 members and, as a major centre for adult education, more than 4,000 residential visitors annually. Since 1981 the Findhorn Foundation has been involved in the development of the Eco-Village Project. It includes

- ecological buildings and straw bale constructions,
- renewable energy such as solar, wind and wood,
- biological sewage treatment system,
- community supported agriculture scheme called EarthShare, based on organic and biodynamic farming methods. The scheme currently provides more than 50 per cent of the community's fresh food requirements and supplies 312 individual households,
- two local LETS (Local Exchange Trading Systems) scheme,
- social and family support, including community participation and inclusive decision-making processes.<sup>9</sup>

Brithdir Mawr near Newport in Pembrokeshire is an intentional community and was founded in 1993, "dedicated to demonstrating the principles of sustainable living in practice".<sup>10</sup> Its 20 members, including children, live in a restored farmhouse, various temporary and seasonal dwellings such as tipi or yurt, as well as low-impact eco-dwellings on 165 acres of farmland. The community is self-sufficient with regard to fuel, energy, water and most food. Renewable energy from wind, solar and water is generated on site, and water is provided by a mountain spring. Fuel is gained from coppice woodland. Organic and permaculture principles are applied to food

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<sup>9</sup> [www.findhorn.org/](http://www.findhorn.org/)

production. Decision-making occurs by consent and one day a week is dedicated to working the land, the gardens and general maintenance of the site. Prominent at Brithdir Mawr is Tony Wrench and Jane Faith's low-impact, turf-rooted Roundhouse (Fig. 1). This house is self-built, it required approximately 600 person/hours of labour over 4 months, made use of locally sourced and recycled materials, and cost approximately £2,500. This house has completely self-contained services, including water, energy, and sewage system. The appeal for planning permission has however been lost and Pembrokeshire council demands that the house must be dismantled.



FIG. 1: Roundhouse at Brithdir Mawr<sup>11</sup>

The Hockerton Housing Project (HHP) in Nottinghamshire is the first earth-sheltered self-sufficient housing development in Britain (Fig. 2). Work on the project began in 1996. The five houses have no secondary heating requirements and are designed by

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<sup>10</sup> Brithdir Mawr Factsheet, [www.brithdirmawr.freeserve.co.uk/main/facts.htm](http://www.brithdirmawr.freeserve.co.uk/main/facts.htm)

<sup>11</sup> Picture by Tony Wrench, in *Permaculture Magazine*, No.27 (2001), p.43.

Robert and Brenda Vale, authors of *The Autonomous House*.<sup>12</sup> The houses were built mainly by the occupants on a 25-acre rural site. The project aims towards self-sufficiency in food, water and energy. The land is worked co-operatively and food is produced according to organic principles. Water is collected on site and sewage is treated via a reed bed system in a recreational lake. A wind turbine will generate renewable energy in future. HHP's mission statement is "By practical example, act as a catalyst for change towards ecologically sound and sustainable ways of living." The project members have also formed a non-profit trade co-operative in an attempt to generate employment on site. Its key activities are the provision of site tours, consultancy services, and delivering talks and media articles. The approximate costs per household for setting up the project were £90,000.<sup>13</sup>



**FIG. 2:** Hockerton Housing Project<sup>14</sup>

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<sup>12</sup> Brenda Vale and Robert Vale, *The Autonomous House: Design and Planning for Self-sufficiency* (London: Thames and Hudson, 1975).

<sup>13</sup> [www.hockerton.demon.co.uk/](http://www.hockerton.demon.co.uk/)

<sup>14</sup> Picture and Copyright by HHP, in *Permaculture Magazine*, No.27 (2001), p.3.

The fourth project, the Wholesome Food Association (WFA), is a local symbol certification scheme. It seeks to encourage local, natural and chemical-free food production and consumption in an attempt to rebuild and renew local economies and communities. It was founded by amateur gardeners in Hartland, Devon, who wanted to sell local, chemical-free excess produce from their gardens but who could not afford to pay the fees to participate in the official organic certification scheme. The WFA has currently about 50 members.<sup>15</sup>



FIG. 3: WFA Logo

To supplement the information provided by written sources, journals, fact sheets, newsletters and brochures, a number of informal, unstructured interviews were conducted with local traders, smallholders, representatives of organic producer groups, and members of eco-projects. I had the opportunity to spend two nights at the hostel at Brithdir Mawr between 12<sup>th</sup> and 14<sup>th</sup> June 2000 and I attended a project tour at HHP on 15<sup>th</sup> August 2000. Finally, I attended the *Resurgence Summer Camp* held at

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<sup>15</sup> [www.wfa.org.uk](http://www.wfa.org.uk). Since February 2001, the WFA has become a company limited to protect its name and logo. Logo used with kind permission.

*Green & Away*<sup>16</sup> on an organic farm in Gloucestershire between 17<sup>th</sup> and 20<sup>th</sup> August 2000 where I had the opportunity to interview a representative of the WFA.

The material collected was subsequently categorised according to its compliance with two green ideologies<sup>17</sup> which allowed me to identify the two green *ideal types*<sup>18</sup> that participate, influence and compete in the construction of social attitudes towards Nature in contemporary Britain, a network of eco-projects on the one hand, and the official position on environmentalism as embraced by the UK Government on the other. For the purpose of this study I will present these two positions as separate entities and ignore those incidents where there is in fact an overlap between the two models at certain times and places. Brithdir Mawr, for example, participates in the governmental Environmentally Sensitive Areas scheme and individual members of the HHP continue to work in the mainstream economy to repay their mortgage. The term ideal type, therefore, refers to a specific set of core principles to which members of alternative societal models subscribe, a point I will further elaborate upon in chapter two. For now I will briefly describe their key identifying features.

### ***ECOLOGISM***

To the ecological world-view, Nature is not just the external world; it is also the We. According to the representative of the WFA, “Nature is not out there somewhere! We

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<sup>16</sup> Green & Away is an educational group that seeks “to show people sustainable living and working in practice”. See [www.greenandaway.freeserve.co.uk](http://www.greenandaway.freeserve.co.uk).

<sup>17</sup> See for example Andrew Dobson, *Green Political Thought* (London and New York: Routledge, 1990).

<sup>18</sup> Max Weber, *The Methodology of the Social Sciences*, translated and edited by Edward A. Shils and Henry A. Finch (New York: The Free Press, 1949), p.90.

are nature”. This idea of *ecocentric identification* is in fact one of the most distinct aspects of ecologism:

Humans are one of myriad self-realizing beings, and human maturity and self-realization come from broader and wider self-identification. Out of identification with forests, rivers, deserts, or mountains comes a kind of solidarity: “I am the rainforest” or “I am speaking for this mountain because it is a part of me.”<sup>19</sup>

Ecologism extends the notion of community to all Nature, other species, trees, rivers, mountains and stones. This notion is deeply inspired by American Indian traditions that recognise no ontological separation between human beings and Nature, mind and matter. To quote J. Baird Callicott in length:

The implicit overall metaphysic of American Indian cultures locates human beings in a larger *social*, as well as physical, environment. People belong not only to a human community, but to a community of all nature as well. Existence in this larger society, just as existence in a family and tribal context, place people in an environment in which reciprocal responsibilities and mutual obligations are taken for granted and assumed without question or reflection. Moreover, a person’s basic cosmological representations in moments of meditation or cosmic reflection place him or her in a world all parts of which are united through ties of kinship. All creatures, be they elemental, green, finned, winged, or legged, are children of one father [Heaven] and one mother [Earth]. One blood flows through all; one spirit has divided itself and enlivened all things with a consciousness that is essentially the same. The world around, though immense and overwhelmingly diversified and complex, is bound together through bonds of kinship, mutuality, and reciprocity.<sup>20</sup>

As a result, ecologism advocates communion and co-operation with Nature. A representative of the WFA argued that “We must stop isolating ourselves from natural surroundings and experience. Further alienation will lead to further acts of violence to

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<sup>19</sup> Bill Devall, ‘Deep Ecology and Radical Environmentalism’, in *Society and Nature Resources*, Vol. 4, No. 3 (July-September 1991), p.248.

<sup>20</sup> J. Baird Callicott, ‘Traditional American Indian and Western European Attitudes Towards Nature: An Overview’, in *Environmental Ethics*, Vol. 4 (1982), p.306. Emphasis in the original.

ourselves.” The term biocentrism or ecocentrism refers to the belief that humans are part of the *web of life*, not at the top of creation but equal with the many other species.<sup>21</sup> Members of Brithdir Mawr believe that humans should accept “that we are one species among many” and relate to Nature “as among equals.” In practice, at Brithdir Mawr, this means to “work to the rhythms of Nature” and to take only what one needs and to “give back where possible.” Because by damaging Nature, human beings damage their own livelihood. “[A]ny abuse of nature is at the same time *an abuse of ourselves*.”<sup>22</sup> Also, Nature and other species have an intrinsic value, independent of their usefulness to humans. As Bill Devall and George Sessions put it:

The intuition of biocentric equality is that all things in the biosphere have an equal right to live and blossom and to reach their own individual forms of unfolding and self-realization within the larger Self-realization. This basic intuition is that all organisms and entities in the ecosphere, as parts of the interrelated whole, are equal in intrinsic worth.<sup>23</sup>

Adherents of this world-view seek ways of living that are best for all living beings.<sup>24</sup> A member of the HHP expressed the belief that humans should acknowledge that Nature “is integral to our existence” and should therefore “be respected and treated with care.” Because of these beliefs, ecologists try to conduct their daily lives without causing any harm to Nature. In order to do so, they seek knowledge of the local environment, Nature’s laws, her rhythms, seasons and cycles, and of the land they live on. Kirkpatrick Sale, for example, advocates that

We must somehow live as close to it [the land] as possible, be in touch with its particular soils, its waters, its winds; we must learn its

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<sup>21</sup> Devall, ‘Deep Ecology’, 1991, op. cit., note 19, p.248.

<sup>22</sup> Alwyn Jones, ‘From Fragmentation to Wholeness: A Green Approach to Science and Society (Part I), in *The Ecologist*, Vol. 17, No. 6 (November/December 1987), p.239.

<sup>23</sup> Bill Devall and George Sessions, *Deep Ecology* (Salt Lake City: Gibbs M. Smith, 1985), p.67.

<sup>24</sup> Devall, ‘Deep Ecology’, 1991, op. cit., note 19, p.249.

ways, its capacities, its limits; we must make its rhythms our patterns, its laws our guide, its fruits our bounty.<sup>25</sup>

The search for this knowledge does not require expensive equipment or laboratory facilities but individuals visiting and experiencing Nature unspoiled by human interference.

Eco-communities as a source of knowledge also give rise to a specific *technical knowledge*. Eco-villages possess “knowledge of low energy building materials and techniques, and of sustainable land management.”<sup>26</sup> The technology developed is geared explicitly towards low impact living. Traditional ecological building techniques are often relearned, such as straw-bale constructions, or new techniques are developed, such as wool insulation techniques. The Centre for Alternative Technology in Machynlleth, for example, is a key institution in the development and promotion of these techniques. Low impact technology aims towards generating renewable energy, it is material and energy conservative, durable, and causes minimal disruption to the environment and minimal pollution. As Jeremy Rifkin wrote, “What a civilization discovers depends upon the conceptual framework it chooses to live by.”<sup>27</sup> Instead of pursuing knowledge and a type of technology to control and to dominate, ecogism uses knowledge to become a partner of Nature. In the case of ecogism, “to ‘know’ is to know how to participate with our surroundings rather than how to control them.”<sup>28</sup> This knowledge does not seek “to gain power and control” but “to experience empathy and participation.” It would not be used “to increase our rule” but instead “to become a partner with the rest of the earthly

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<sup>25</sup> Kirkpatrick Sale, ‘Mother of All: An Introduction to Bioregionalism’, in Satish Kumar (ed.), *The Schumacher Lectures* (London: Abacus, 1986), p.224.

<sup>26</sup> Steven W. Jones, ‘Planning for Sustainability’, in *Living Lightly*, Issue 8 (Summer 1999), p.12.

<sup>27</sup> Jeremy Rifkin, *Declaration of a Heretic* (London: Routledge & Kegan Paul, 1985), p.79.

creation.”<sup>29</sup> Or as Vandana Shiva put it, the aim is to create a knowledge “that nurtures, rather than violates, nature’s sustainable systems.”<sup>30</sup>

Furthermore, technical knowledge is taught to others, rather than patented or owned. As Matt Dunwell writes regarding the training offered on the permaculture farm: “Modern-day living has built in the need for experts, and has convinced us that we can’t do things ourselves. What we try to do is to say that it is possible, with advice, to do things we’ve never done before.”<sup>31</sup> Ecologism does not consider knowledge as a property or a means to acquire personal prosperity but an asset to be shared with the human community in the attempt to bring about a more sustainable future. The Global Eco-village Network (GEN), for example, is set up to provide a network between dispersed experiments of sustainable living across the world “so that information can be shared and the concept spread”.<sup>32</sup> In fact, such sustainable communities are the “testing grounds” for new techniques and technologies.<sup>33</sup>

A further type of knowledge that plays an important role in eco-communities is *intuitive knowledge*. According to Fritjof Capra, intuitive knowledge “is based on a direct, nonintellectual experience of reality arising in an expanded state of awareness.”<sup>34</sup> It is a fusion between this intuitive knowledge and scientific knowledge that Prince Charles advocated in his controversial Reith lecture:

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<sup>28</sup> Ibid., p.84.

<sup>29</sup> Ibid., pp.93/94.

<sup>30</sup> Vandana Shiva, ‘Reductionism and Regeneration: A Crisis in Science’, in Mies and Shiva *Ecofeminism*, 1988, op. cit., note 2, p.34.

<sup>31</sup> Quoted in Sophie Poklweski Koziell, ‘Learning form the Land’, in *Resurgence*, No. 202 (September/October 2000), p.29.

<sup>32</sup> Hamish Stewart, ‘Global Eco-villages Network (GEN)’, in *Living Lightly*, Issue 2 (Autumn 1997), p.15. See also [www.gaia.org](http://www.gaia.org).

<sup>33</sup> *Living Lightly*, Issue 2 (Autumn 1997), p.15.

<sup>34</sup> Fritjof Capra, *The Turning Point: Science, Society, and the Rising Culture* (London: Flamingo, 1982), p.21.

I believe that we need to restore the balance between the heartfelt reason of instinctive wisdom and the rational insights of scientific analysis. Neither, I believe, is much use on its own. So it is only by employing both the intuitive and the rational halves of our own nature – our hearts and our minds – that we will live up to the sacred trust that has been placed in us by our Creator...

... we need to look towards the creation of greater balance in the way we educate people so that the practical and intuitive wisdom of the past can be blended with the appropriate technology and knowledge of the present to produce the type of practitioner who is acutely aware of both the visible and invisible worlds that inform the entire cosmos.<sup>35</sup>

However, it should be emphasised that the scientific knowledge of ecologism is based on a different set of assumptions than a reductionist, mechanistic scientific knowledge. At the conceptual level, the Gaia theory considers the Earth to be a living being, a superorganism that has an ability for self-regulation. James Lovelock defined Gaia as “a complex entity involving the Earth’s biosphere, atmosphere, oceans, and soil; the totality constituting a ... system which seeks an optimal physical and chemical environment for life on this planet.”<sup>36</sup> Lovelock takes a top-down approach which views the Earth as a complex system, as something more than the sum of its parts with complex interconnections among human and other species.

This ecological world-view contrasts sharply with that of the environmental position as adopted by the UK Government in terms of knowledge and attitudes towards Nature.

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<sup>35</sup> Prince Charles, *Respect for the Earth, Reith 2000*,  
[www.news.bbc.co.uk/hi/english/static/events/reith\\_2000/lecture6.stm](http://www.news.bbc.co.uk/hi/english/static/events/reith_2000/lecture6.stm).

<sup>36</sup> James Lovelock, *Gaia: A New Look at Life on Earth* (Oxford: Oxford University Press, 1995), p.10.

*ENVIRONMENTALISM*

The first characteristic feature of the 'modern' version of Britain as presented by the UK Government is the priority that is given to scientific knowledge. Science is considered to be essential to the very functioning of a 'modern' society, a notion that is confirmed by the latest Government White Paper on Science:

Our lives would be unimaginable without science ... Much of everyday experiences – even the jobs we do – is the product of scientific advances in the past .... Science played a significant role in shaping the 20<sup>th</sup> century. It will have an even bigger impact on our lives in this century.<sup>37</sup>

According to the 'modern' world-view, science is also essential to solving the very problems that might threaten or undermine the very advances sciences has brought to modern societies in the past. Without science, it is argued, humankind would be unable to respond appropriately to global issues such as poverty, disease and environmental degradation.<sup>38</sup> It is therefore not surprising that the UK relies on experts and science when dealing with environmental problems, as following quotations confirm:

- Scientific understanding is, and must remain, the essential basis for environmental standards.<sup>39</sup>
- [W]e must base our policies on fact not fantasy .... We must act on facts, and on the most accurate interpretation of them, using the best scientific and economic information.<sup>40</sup>
- We have emphasised the need for rigorous and dispassionate investigation of any presumed environmental hazard. Our consideration of such

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<sup>37</sup> Cm 4814, *Excellence and Opportunity - A Science and Innovation Policy for the 21st Century* (London: HMSO, 2000), para.2. p.2/para.35, p.57.

<sup>38</sup> Cm 2250, *Realising Our Potential: A Strategy for Science, Engineering and Technology* (London: HMSO, 1993), p.29.

<sup>39</sup> Cm 4053, Royal Commission on Environmental Pollution, Twenty-first Report, *Setting Environmental Standards*, chairman Sir John Houghton (London: 1998), p.11.

<sup>40</sup> Cm 1200, *This Common Inheritance: Britain's Environmental Strategy* (London: HMSO, 1990), para.1.15/1.17, pp.10/11.

investigations starts with the scientific evidence because ... the first stage must normally be a scientific assessment.<sup>41</sup>

As a result, the UK government has identified the need for further scientific research to understand the complex causes of environmental degradation:

The ways in which human activities affect the environment and our health are complex, with long chains of chemical, physical and biological effects. To identify, monitor and analyse them all in detail is an enormous task. There needs to be a major and growing scientific effort to understand them fully and to identify the most effective and appropriate ways of intervening to protect the environment. Much more research is needed, particularly on global issues such as the effects of human activities on the oceans and the atmosphere.<sup>42</sup>

In contrast to ecologism and its emphasis on local knowledge, environmentalism promotes an expert-led scientific knowledge system. In contrast to ecologism where everyday lives are the testing ground for environmentally benign practices, environmentalism requires laboratories, abstract models and statistics.

Scientific knowledge also identifies a specific range of environmental problems. Without science, issues such as the depletion of the ozone layer or climate change would not have been recognised. Predominantly, environmental science seems to identify and deal with global problems. And global problems require global actors, and thus the Government to play its role in international negotiations:

The government was pleased to host and chair the successful international conference in London in June 1990 on the Montreal Protocol, which secured agreement on tackling the problem of ozone depletion. The process leading to that agreement provides a model for future diplomacy on biodiversity and climate damage.<sup>43</sup>

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<sup>41</sup> Cm 4053, *Setting Environmental Standards*, 1998, op. cit., note 39, para.2.1, p.11.

<sup>42</sup> Cm 1200, *This Common Inheritance*, 1990, op. cit., note 40, para.1.17, p.11.

<sup>43</sup> *Ibid.*, para.1.22, p.12.

Since global problems require global action, unilateral solutions are considered to be inadequate and are thus discouraged:

Action by one country alone to tackle global problems would be ineffective, and might simply damage its own economic position relative to others without doing anything significant to help the world's problems. Action to protect the stratospheric ozone layer is a good example. There is wide recognition that unilateral action is not enough, and that concerted international action is needed to phase out the chemicals that cause the damage.<sup>44</sup>

Individuals, on the other hand, are encouraged to participate in the environmental protection scheme by practising green consumerism as a way of making the economy more environmentally friendly. This involves the purchase of environmental products or lead-free petrol, for example. As the Government White Paper recognises, "One of the most powerful ways in which individuals can influence environmental matters is through the products they buy. Consumers can put substantial pressure on manufacturers to make environmentally less damaging products and on retailers to stock them."<sup>45</sup> In order to increase consumer awareness the Government considered following action:

- produce at regular intervals a statistical report on the British environment;
- press the EC to agree to a Europe-wide environmental labelling scheme, and establish a unilateral British scheme if necessary;
- consider legislating to make clear that environmental claims for products or services must be capable of substantiation.<sup>46</sup>

In contrast to ecologism and its emphasis on grass-root practices, individual engagement, low impact lifestyles and simplicity, environmentalism appeals to consumers to purchase environmentally friendly products and to producers to apply

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<sup>44</sup> Ibid., para.1.22, p.12.

<sup>45</sup> Cm 2426, *Sustainable Development: The UK Strategy* (London: HMSO, January 1994), para.33.32, p.212.

improved resource management techniques to achieve waste reduction and energy efficiency.<sup>47</sup> To accomplish these aims, the Labour Party commits itself to the Climate Change Levy, the introduction of Emission trading, and the requirement for energy companies to produce 10 per cent of electricity from renewable sources by 2010.<sup>48</sup>

In contrast to the holistic science of ecologism, it appears that the modern *scientific knowledge* as advocated by the UK government is mechanical and reductionist in nature and has its origin in the work of seventeenth century philosophers. As Capra argues

The birth of modern science was preceded and accompanied by a development of philosophical thought which led to an extreme formulation of the spirit/matter dualism. This formulation appeared in the seventeenth century in the philosophy of Rene Descartes who based his view of nature on a fundamental division into two separate and independent realms; that of mind (*res cogitans*), and that of matter (*res extensa*). The 'Cartesian' division allowed scientists to treat matter as dead and completely separate from themselves, and to see the material world as a multitude of different objects assembled into a huge machine.<sup>49</sup>

This separation of humans from Nature at the ontological level and the reconceptualisation of the Earth from a living organism to a machine had profound implication for the relationship between human beings and Nature, as Carolyn Merchant argued.

The image of the earth as a living organism and nurturing mother had served as a cultural constraint restricting the actions of human beings. One does not readily slay a mother, dig into her entrails for gold or mutilate her body ... As long as the earth was considered to

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<sup>46</sup> Cm 1200, *This Common Inheritance*, 1990, op. cit., note 40, para.57, p.27.

<sup>47</sup> Cm 3814, *Building Partnerships for Prosperity: Sustainable Growth, Competitiveness and Employment in the English Regions* (London: HMSO, December 1997), p.41.

<sup>48</sup> [www.labour.org.uk/](http://www.labour.org.uk/)

<sup>49</sup> Capra, *The Turning Point*, 1982, op. cit., note 34, pp.68/69.

be alive and sensitive, it could be considered a breach of human ethical behavior to carry out destructive acts against it.<sup>50</sup>

This perception of Nature as dead and inert, without spirit or purpose, subsequently sanctioned the domination, manipulation and exploitation of Nature.<sup>51</sup> Human attitudes towards Nature become “one of analysis and dissection, asking of it not only how it works but also how such mechanisms may be controlled for human ends.”<sup>52</sup> Scientific investigation operates accordingly. It seeks to understand Nature by taking apart and analysing its basic building blocks. By observing these individual parts, generalisations can be drawn and universal laws and theories established which enable explanation and prediction, and ultimately the *control* of Nature.

Nature is perceived as the Other, as out there to be dominated and controlled. William J. Mills argued that “[s]ince that time, during what we call the ‘modern’ period, nature has been deprived of its aura of the divine and has become merely an instrument available for our use and exploitation.”<sup>53</sup> Modern Britain continues to subscribe to this perception of Nature, as the issue of the Brent Spar illustrates. The perception of the ocean as a dumping place for the disposal of waste produced by humans was confirmed in February 1995 when the UK Government announced the intention to approve deep-water disposal of the oil platform, followed by the issue of the disposal licence in May. Similarly, two marine scientists employed in academic research, when interviewed by Marc Huxham and David Summer on the deep-sea disposal of the Brent Spar, stated that

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<sup>50</sup> Carolyn Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution* (London: Wildwood House, 1982), p.3.

<sup>51</sup> *Ibid.*, pp.xvii/48. Carolyn Merchant, *Earthcare: Women and the Environment* (New York and London: Routledge, 1995), p.76.

<sup>52</sup> William J. Mills, ‘Metaphorical Vision: Changes in Western Attitudes to the Environment’, in *Annals of the Association of American Geographers*, Vol. 72, No. 2 (June 1982), pp.246-248.

- I can't think of a better place to put rubbish like that. No-one ever goes down there, it's basically of no use to anybody whatsoever, it's dark, it's cold and it's under very high pressure.<sup>54</sup>
- I don't think there were any moral or ethical issues there. I think it was quite a reasonable thing to suggest putting it into the deep water.<sup>55</sup>

According to this world-view, therefore, care for the environment emerges first and foremost out of consideration for humans, rather than for Nature itself. Nature is not protected for its intrinsic values. Instead, as stated in *Sustainable Development, The UK Strategy*, “[h]istorically, human health has been a primary consideration in environment policy and must always remain so.”<sup>56</sup> Environmentalism seeks to deal with those environmental effects that are harmful to human beings, such as air and water pollution. Nature is protected because it supplies essential resources for the human economy and the human food supply, as the following two abstracts from UK's Sustainable Development Strategy illustrate:

Mineral resources available in the UK make an essential contribution to our life and prosperity. Their use benefits the economy, but there can be conflicts between exploitation of resources and environmental aims. We will be looking at what can be done to minimise environmental impacts of extraction, how to promote high quality restoration of sites, and the potential for more efficient use of aggregates and increased use of recycled materials....

Healthy and productive seas and oceans are a litmus test of international commitment to sustainable development, not least because fish resources are important for food security.<sup>57</sup>

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<sup>53</sup> Ibid., p.248.

<sup>54</sup> Marc Huxham and David Summer, 'Emotion, Science and Rationality: The Case of the Brent Spar', in *Environmental Value*, Vol. 8, No. 3 (August 1999), p.359.

<sup>55</sup> Ibid., p.364.

<sup>56</sup> Cm 2426, *Sustainable Development*, 1994, op. cit., note 45, para.13, p.7.

<sup>57</sup> Department of the Environment, Transport and the Regions, *Sustainable Development: Opportunities for Change: Consultation Paper on a Revised UK Strategy*, para.72/81, [www.environment.detr.gov.uk/sustainable/consult/sd009.htm](http://www.environment.detr.gov.uk/sustainable/consult/sd009.htm).

This abstract reveals that in contrast to ecologists who care for Nature and other species on the basis of an ecocentric identification, environmentalists attach an instrumental value to the environment, and to certain endangered species, for example. Environmentalism seeks to protect Nature because of the attributes and benefits it brings to humans. Environmentalism places humans at the centre rather than Nature.

Finally, the environmental *technical knowledge* promoted by the UK government is geared towards reducing the damages caused by existing exploitative industrial production methods. Subsequent examples taken from the Department of Trade and Industry (DTI) *Bulletin on Case Studies of Biotechnology in Action* illustrate this point. Genetic modification of lignin, the structural element of trees, will allow to make its removal from cellulose easier, thereby shortening the papermaking process and reducing energy consumption and chlorine use to bleach the lignin. “Through biotechnology, the papermaking process can be made more environmentally friendly by significantly reducing the caustic chemicals and energy used during production.”<sup>58</sup> The second example comes from the oil industry where, it is claimed, oil extraction is highly inefficient, leaving as much as two thirds of available reserves behind. Biotechnology will enhance oil recovery techniques by helping to extract higher proportions of the available oil.<sup>59</sup> Finally, there are currently 100,000 contaminated sites across the UK.<sup>60</sup> Bioremediation, the use of bacteria, can be employed to degrade harmful pollutants and concentrate toxic metals to rehabilitate

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<sup>58</sup> Simon Best, CEO and managing director of Zeneca Plant Science, quoted in DTI, BMB (Biotechnology Means Business) Initiative, *Case Studies of Biotechnology in Action*, Bulletin Issue 2 (Winter 1996), p.16.

<sup>59</sup> DTI, *ibid.*, p.9.

land contaminated by long term industrial pollution. Oil digesting microbes can be used to deal with oil spills. One of the advantages of bioremediation over traditional clean-up techniques is that “it avoids disrupting work at a site”.<sup>61</sup> In other words, environmental technology assists in ameliorating the negative side-effect caused by existing practices, rather than in bringing these polluting and destructive practices to a halt.

#### *ALTERNATIVE SYSTEMS*

In contemporary Britain, therefore, there exist at least two models, both in theory and practice, of how to organise human society in an era of environmental degradation.<sup>62</sup>

At present, the environmental model dominates and sets the framework for the content and conduct of “the politics of nature”.<sup>63</sup> It is the task of this thesis to elucidate the role of knowledge in bringing about and stabilising the environmental, rather than the ecological, model and to re-evaluate green movement activism in the light of these findings.

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<sup>60</sup> DTI, *Biotechnology in Industry*, Status Report 1998 (London: DTI, Chemicals and Biotechnology Directorate), p.22.

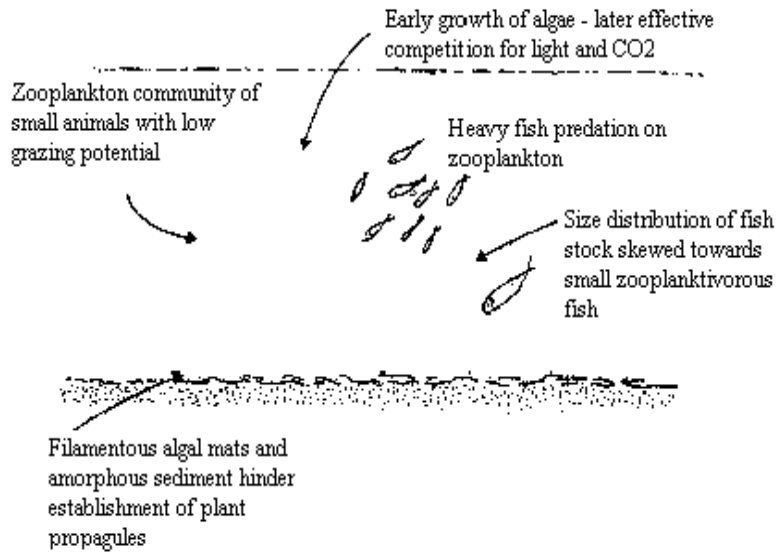
<sup>61</sup> DTI, BMB Initiative, *Case Studies of Biotechnology in Action*, Bulletin Issue 1 (Spring 1996), pp.16/17. DTI, BMB Initiative, *Case Studies of Biotechnology in Action*, Bulletin Issue 4 (Summer 1996), pp.10/11.

<sup>62</sup> Similarly, Tovey identified two types of environmental movements in Ireland, each carrying competing visions about the organisation and nature of Irish society. The ‘official’ environmental movement is an urban based movement whose claim to authority is based on the expert status of its educated elite. Its approach to dealing with environmental degradation is top-down, emphasising centralised regulation, planning and control. The environment is preserved as a space for urban recreation. The ‘populist’ environmental movement, on the other hand, is based within rural communities. Here, the emphasis is on defending local democracy, autonomy and the health of its members against the central state and its drive to economic growth which sanctions the exploitation of natural resources. See Hilary Tovey, ‘Environmentalism in Ireland: Two Versions of Development and Modernity’, in *International Sociology*, Vol. 8, No. 4 (December 1993), pp.413-430.

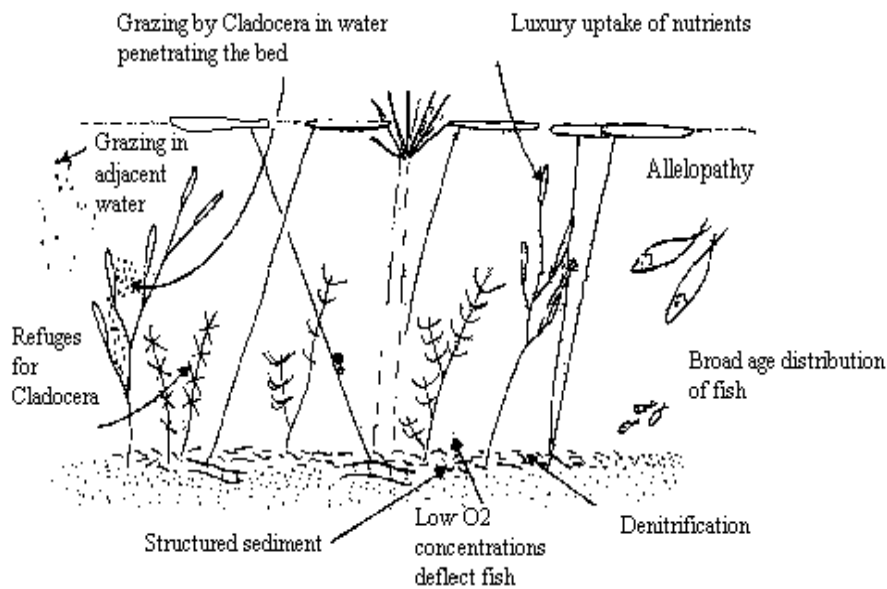
<sup>63</sup> Andrew Dobson and Paul Lucardie (eds.), *The Politics of Nature: Explorations in Green Political Theory* (London and New York: Routledge, 1993).

The principle of alternative states has previously been recognised in natural ecosystems. Brian Moss argued that several alternative ecological systems “can exist equally stably under the same set of imposed external conditions”, and that they “can be switched from one to another.”<sup>64</sup> (Fig. 4)

PHYTOPLANKTON DOMINANCE



PLANT DOMINANCE



<sup>64</sup> Brian Moss, ‘The Emperor’s Clothes of Knowledge and the Seamless Cloth of Wisdom,’ in Tom Wakeford and Martin Walters (eds.) *Science for the Earth: Can Science Make the World a Better Place?* (Chichester: John Wiley, 1995), p.303.

**FIG. 4:** Mechanisms likely to contribute to the buffering of submerged plant communities against the effects of increasing nutrient loading and to the buffering of phytoplankton communities against decreasing nutrient loading.<sup>65</sup>

Moss's study on ecosystems aimed at developing an understanding of the problems caused by eutrophication in the Norfolk Broadland.<sup>66</sup> With increased nutrient levels such as phosphate in the lakes, a deterioration in water clarity became noticeable, together with a loss of plants, a decline in fish stock and diversity, as well as a sharp increase in the phytoplankton population. The aim was to reverse the nature of the system from algae back to plant dominance by means of reducing the phosphorus supply. However, this process failed to set in. The phytoplankton dominance remained despite the decrease in nutrient loadings. Subsequent pond experiments revealed that there are in fact alternative states for the aquatic ecosystem. "Once established, either can persist, stabilized by various buffering mechanisms over a range of nutrient loadings or concentrations."<sup>67</sup>

In the first state, phytoplankton dominance remained, despite *low* nutrient levels. The plankton is buffered by the presence of large fish and by the lack of plants. Plants usually provide cover to small water animals, such as water fleas, which in turn would graze the plankton. In the absence of plant cover, however, these small animals were exposed to fish predation. In the second state, on the other hand, plant dominance continued, despite *high* nutrient levels. In this case, the aquatic plant communities buffered the phosphorus concentrations and phytoplankton build-up by harbouring and providing cover to the small animals that would graze the plankton.

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<sup>65</sup> Figure and text by Moss, 1989, *ibid.*, p.415.

<sup>66</sup> Brian Moss, 'Water Pollution and the Management of Ecosystems: A Case Study of Science and Scientist', in Peter J. Grubb and John B. Whittaker (eds.) *Toward a More Exact Ecology*, (Oxford: Blackwell Scientific Publications, 1989), pp.401-422.

By grazing the plankton, the water fleas reduced the plant's main competitor for light and thus guaranteed their survival.

Moss, in other words, revealed the existence of two competing models, two competing realities, for organising plant and animal life in shallow waters, one ecologically sophisticated, the other lacking in diversity and water clarity. He also revealed that once established, either state can persist, assisted by various buffering mechanisms, irrespective of the external conditions they exist under. This thesis uses Moss's pond model as an analogy to show that knowledge plays a key role in establishing the environmental model contemporary Britain and other modern industrial societies have opted for. The knowledge system, or truth regime, these societies subscribe to buffer their social structure by restricting what issue is to be placed on the agenda of Nature politics, how this issue is dealt with, and by whom. Irrespective of the state of their external environment, the truth regime of modern industrial societies allows for an environmental response only. This means that the only really viable strategy available to those who seek to bring about an ecological societal model is to embrace and advocate an ecological knowledge system. This strategy, it will emerge, requires the pursuit of Gandhian forms of political activism, such as non co-operation, self-reliance, and the use of local skills and knowledges.

In the subsequent chapter I will now bring together the works of Gurvitch, Fuller, Lakatos and Foucault to illustrate how knowledge determines the conduct and outcome of the politics of Nature.

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<sup>67</sup> Ibid., p.414.