

LEARNING FROM LOMBORG: Or Where Do Anti-environmentalists Come From?

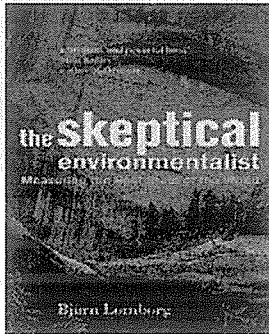
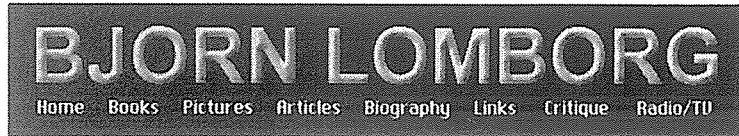
ANDREW JAMISON

■ **SCIENCE GOES TO MARKET**

Whether we think of it as a new mode of knowledge production or as a more general condition of 'epistemic drift', there has been a rather significant change in the social relations of science over the past 20 years. As a neo-liberal ideology has spread around the world, infusing public policy and the public sphere itself with a kind of overarching commercial mentality, a large part of the scientific enterprise has gone to market. In almost all countries of the world, scientists are now routinely expected to sell themselves and their expertise to the highest bidder, while governments, as well as inter-governmental bodies such as the European Commission, spend much of the time and energy devoted to science policy deliberations to devising ways to bring university researchers into more intimate relations with private companies.

For Michael Gibbons and his co-authors (1994), traditional forms of discipline-based knowledge production (what they term 'mode 1') have been more or less replaced by new forms that transcend disciplinary boundaries and are directly oriented toward 'contexts of application'. A new mode of knowledge production—so-called 'mode 2'—has emerged which challenges the values or norms that had previously governed the scientific enterprise. Already in the 1980s, Aant Elzinga (1985) had come to view the emerging commercialization with alarm, as he noted that established epistemic criteria, that is, the ways in which scientific truth claims are justified, were being put out of operation, as scientists increasingly found themselves in a condition of what he termed 'epistemic drift'. More recently, the notion of a 'triple helix' of government, industry and

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The Skeptical Environmentalist

Buy it through [Amazon UK](#), [Amazon US](#), [Amazon Germany](#) or [Amazon Canada](#)

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In *The Skeptical Environmentalist* Bjørn Lomborg challenges widely held beliefs that the global environment is progressively getting worse. Using statistical information from internationally recognized research institutes, Lomborg systematically examines a range of major environmental issues and documents that the global environment has actually improved. He supports his argument with over 2900 footnotes, allowing discerning readers to check his sources.

Lomborg criticizes the way many environmental organizations make selective and misleading use of scientific data to influence decisions about the allocation of limited resources. *The Skeptical Environmentalist* is a useful corrective to the more alarmist accounts favored by green activists and the media.

"... probably the most important book on the environment ever written."

review in *The Daily Telegraph*, UK, 27-8-01

"This is one of the most valuable books on public policy - not merely on environmental policy - to have been written for the intelligent general reader in the past ten years. ... The Skeptical Environmentalist is a triumph."

review in *The Economist*, 6-9-01

"The Skeptical Environmentalist is the most significant work on the environment since the appearance of its polar opposite, Rachel Carson's Silent Spring, in 1962. It's a magnificent achievement."

review in *Washington Post Book World*, 21-10-01

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Credit: <http://www.lomborg.com/books.htm>

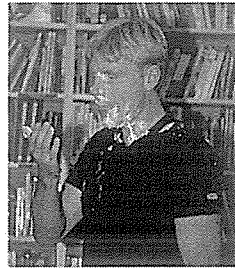
www.anti-lomborg.com

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This page contains links to websites about Bjorn Lomborg and his work, and some brief critiques

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Custard pie



Lomborg had a pie thrown in his face at Borders Bookshop in Oxford - [find out why](#).

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Who are we?

This site was started by a bunch of environmental writers, academics and activists in Oxford, England, who were mildly irritated by the publication in The Guardian newspaper of a series of 'green wash' articles written by Bjorn Lomborg.

Lomborg is author of the much criticised tome 'The Skeptical Environmentalist' (Cambridge University Press 2001) which claims that many of society's concerns about the environment are "phantom problems" created and perpetuated by the environmental movement for its own ends.

On this web site we hope to present our alternative views on the deteriorating state of our environment. We do not wish to personally attack Lomborg - but we do wish to show how some of his analyses are flawed.

Contact us

This site is maintained on a voluntary basis by a loose association of Oxford-based environmentalists.

Please [email us](#) with your (short: max 150 word) critiques of Lomborg's claims for posting on this site. Please ensure that these are not only brief but focused, clearly-written, academically rigorous and polite.

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To submit a new link for this page, please click [HERE](#)

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1. Latest Additions

Latest additions to this site:

- [Danish Ministry of Science, investigation of DCSD decision](#), in which it overturns the original decision of the DCSD committee.
- [stichting HAN](#) is a detailed examination of the charges made against Lomborg.
- Hundreds of concrete errors and flaws in The Skeptical Environmentalist, and precise indications of where Lomborg is deliberately misleading, are being gathered on [the Lomborg-errors web site](#).

Credit: <http://www.mylinkspage.com/lomborg.html>

universities acting in symbiosis to restructure the scientific enterprise so that it can better contribute to the so-called global market economy has gained adherents both among analysts and policy-makers alike (Etzkowitz and Leydesdorff, 2001).

For all their differences in terminology and political disposition, these analyses share a common perception, namely that there has been a rather fundamental transformation in the social relations of science over the last two decades. Not only have the borders between science and business become increasingly blurred, and the meanings and practices of science increasingly commercialized, but at the same time, the procedures of public accountability and the criteria of scientific legitimacy have changed character. Many is the scientist who goes directly to a company (or commercial media outlet) to sell his or her ideas, avoiding the traditional forms of peer review that have been a characteristic feature of the way in which the scientific enterprise has traditionally ensured 'quality control'.

Perhaps nowhere have these changes become more evident than in the state of Denmark, where, since 2001, life in mode 2 has become particularly distressing for those of us who care about the environment. In ways that are reminiscent of the rise of Trofim Lysenko in the Soviet Union, a charlatan has come to exercise major influence over science policy, and it has proved extremely difficult to do much about it. This article is an attempt to explain how this sad state of affairs could come about, as well as to suggest some lessons from the Danish experience that might be of value elsewhere.

■ RISE OF A CHARLATAN

In November 2001, Anders Fogh Rasmussen led his Liberal (*Venstre*) party to a resounding victory in the Danish parliamentary elections. At the same time, the then ruling Social-Democratic party suffered its worst defeat in over 50 years. Together with the strong showing of the anti-foreigner Danish People's party, the election victory of the Liberal party changed dramatically the composition of the Danish parliament, making it possible for the government to achieve a majority without the support of the Social-Democrats or any of the other 'left-of-liberal' parties. The political ground rules that had long been in operation, by which decisions were based on negotiation and compromise across the left/right ideological divide,

and which had led to a characteristically pragmatic, or 'consensual' way of doing politics in Denmark, were altered. The new situation has provided the basis for a regime shift in public policy, both in terms of overall priorities, as well as in regard to procedures of public accountability in decision-making.

While the drastic changes in immigration policy have captured most of the international attention, another central element in Fogh Rasmussen's agenda has been to help his fellow Danes forget the traumatic experience of facing, and trying to deal intelligently with, environmental problems. For the current Danish government, the improvement of health care and the quality of life for the elderly are the often stated main political objectives, and like earnest accountants trying to balance the books, Fogh Rasmussen and his ministers have reversed many of the policies of the previous Social-Democratic led government.

The general idea is that there is only so much money to go around—as with neo-liberals everywhere, the government does not believe in new taxes—and so if health care and the elderly, and for that matter, the American war in Iraq, need resources, then the funding for foreign aid and environmental protection has to be reduced significantly. The government has cancelled state support to several large wind-energy projects and closed down a number of programmes in environmental research and public policy—the so-called green jobs fund, for example, and the green guides programme within public organizations—that had been supported by the previous government's ministry of the environment, and which have generally received positive evaluations, as well as a good deal of international interest.

In pursuing his objectives, Fogh Rasmussen has been highly influenced by the teachings of Bjørn Lomborg, who sprung onto the international stage in the summer of 2001 to great fanfare when his book, *The Skeptical Environmentalist*, was published by Cambridge University Press. Lomborg's book was praised in such places as the *Economist* and the *Wall Street Journal*, and he was interviewed in several foreign television programmes. Lomborg claimed that he had gathered evidence disproving what he called the 'environmentalist litany'. In his book, he contended that 'mankind's lot has actually improved in terms of every measurable indicator' (Lomborg, 2001, p. 4). He wrote that he had gone through the available evidence in

an objective way, and emphasized throughout the book the fact that his expertise was in the area of statistics rather than in environmental science. He was challenging the litany with the facts, and, as he put it, 'the most important thing is that there is no doubt about the credibility of my sources' (Lomborg, 2001, p. 31).

As should be well known by now for readers of this journal, there was, however, a great deal of doubt about the credibility of his sources and of the quality of his book in general. It was subjected to uncharacteristically vociferous critique by environmental scientists in such journals as *Nature*, *American Scientist* and *Scientific American*, where, in an unprecedented display of disapproval, four leading scientists were asked to comment on Lomborg's assertions in relation to their own special areas of expertise in the January 2002 issue.

Under the general heading, 'Misleading Math About the Earth', the scientists subjected Lomborg's book to detailed scrutiny. Not only were his findings disputed by the scientists in unusually strong language, but, perhaps more significantly, his methods of analysis and argumentation were seriously questioned. Lomborg, his critics contended, had quite obviously misinterpreted the facts that he had accumulated and systematically taken account only of the findings that supported his assertions. In critiquing his chapter on energy, John Holdren wrote that 'Lomborg is giving scepticism—and statisticians—a bad name'. In a later response (in April 2002) to Lomborg's 'rebuttal' of the scientists' criticisms, Holdren wrote:

Notwithstanding that the author is said to have been trained in statistics, the book shows no sign of the use of appropriate statistical conventions and methods—or any other systematic approach—to distinguish what is right and rational from what is not.

Several reviewers, in *Scientific American* as well as in other scientific journals, criticized Cambridge University Press for publishing the book and thereby giving it a kind of academic stamp of approval. But, like any commercial operation, CUP was pleased about the attention that the book received and its representatives have defended the process by which the book had been evaluated. In the heat of the debate, Lomborg even got a pie thrown in his face by an angry environmentalist—which resulted in even more media attention. And while Bjørn Lomborg is certainly exciting as a cultural

phenomenon, he and his friends in the Danish government are not particularly exciting when it comes to protecting the environment.

As a professor in Denmark, I have followed Lomborg's rise to notoriety, since he first published four articles in 1998 in *Politiken*, one of the main Danish daily newspapers, in which he challenged what he already then referred to as the 'litany' of environmental bad news with his good news of things getting better. Like many other middle-aged friends of the environment who have been around for awhile, I felt that here was simply one more in a long line of anti-environmentalists, who have periodically come along to attack environmental concerns in the name of business as usual. Already in the 1960s, Rachel Carson's *Silent Spring* had been subjected to a veritable backlash of pro-industry 'expertise' and Lomborg's message didn't really strike me as all that different. After all, the guy was a game theorist and apparently had never done any work in environmental research.

But what started to be apparent, as Lomborg continued to covet and receive media attention, was that his ambition knew no bounds. And nothing seemed to be able to stop him, certainly not reasoned debate and argument, with which he was immediately confronted. Environmental scientists, activists and many other critics filled the Danish newspapers with a steady stream of refutations of Lomborg's assertions, but it was soon clear that that was exactly what he wanted. For every attack gave him more space in the media in which he could spread his gospel of the environmental situation getting better. What became obvious was that Lomborg was not interested in academic niceties; like a missionary out to save the heathen, Lomborg was out to save the world—or at least Denmark—from the dangerous grip of environmentalists with their costly and oh so depressing ideas. His approach was beautifully simple: gather a number of expert reports on various issues, point out how the different experts disagree on the numbers, choose the most positive versions in all cases, and, presto, things can look much brighter. More specifically, if you take all the statistics out of their relevant context, and disregard the contingencies behind the different reports and commissions, climate change can disappear, as can resource and energy constraints of all kinds, not to mention population problems and even the dangerous side effects of chemical fertilizers. With some statistical hanky-panky, you can even be proclaimed one

of Europe's future young leaders, and the business elite will love you.

It didn't really matter whether the figures were based on careful consideration of scientific findings or any other boring academic trivia. If you've seen the light, as Lomborg had done, that kind of effort is simply a waste of time, and, not least, a waste of money. The important thing is to reduce everything to money, however arbitrarily that has to be done, so that you can quickly decide what is the cheapest measure to be taken in relation to any particular environmental issue. 'More environment for the money' is the phrase that he has used from the outset to bring his message home. As a media ploy, it was and is rather interesting; as environmental politics it is plain disgusting.

As he started to gain political friends, such as Fogh Rasmussen, then the new leader for the Liberal party out on a mission of his own to 'minimize' the state, Lomborg's ambition grew out of all proportion. He published a book in Danish in 1998, called the *Real State of the World*, and the book was filled with even more questionable figures than he had managed to include in his articles. For anyone who has read his book, it is apparent that it is far removed from what is usually thought of as science. It is a clever piece of polemic dressed in a kind of pseudo-scientific clothing, with hundreds of footnotes and dozens of scientific-looking charts giving a veneer of academic respectability to what is a rather simple-minded anti-environmental diatribe. Lomborg is a logical result of the commercialization of science, the epitome of a scientific salesman. It is important to realize that Lomborg's book is a work of ideology rather than science; it is written with the assumption that if you believe that the environmental situation is improving, then you go out and find the figures to support that belief.

And so it perhaps is not too surprising that the current Danish government, eager to correct what it interprets as the costly and over-ambitious environmental policies of the previous government and its experts, is acting on that belief. An Institute of Environmental Assessment was established in 2002—with guess who as the director—at the same time as many of the previous government's environmental research and development programmes were cut. As a result, the pioneering role that Denmark had played in relation to international environmental negotiations, wind energy development, ur-

ban ecological experimentation, and so many other areas, is fast becoming a thing of the past.

Of course, this is not all Lomborg's doing, but his media show did certainly help fuel the reaction to the policies of the previous Danish government. And, of course, those policies were certainly not perfect; like all policies in our increasingly risky societies, they were based on their own chosen expertise, and as Lomborg has so gleefully pointed out, the experts do not always agree. To recognize that disagreement is one thing; however, to twist that recognition into a misleading series of arguments for complacency, as Lomborg does in his book, is downright dangerous, especially when the arguments get used by people in power with a clearly anti-environmental agenda.

It has also proved all but impossible to stop him. A highly publicized critique in 2003 of his book not being up to academic standards by a high-level Danish committee of 'scientific dishonesty' led merely to a new media show, with many leading social scientists publicly expressing their support for Lomborg's 'freedom of expression' (the head of the state social science research council among them) and many leading natural scientists agreeing with the committee. There is now underway an investigation of the committee on scientific dishonesty itself, and in December 2003, the Ministry of Science criticized the report of the committee in a pronouncement from the ministry's legal office. Similarly, the reports that have emerged from Lomborg's institute have been subjected to numerous critiques for their inaccuracies and general sloppiness. But Lomborg remains unfazed, and support for him continues unabated within the government.

■ TALE OF TWO CULTURES

How could all this have come to pass? How could what seemed to have been a sensible people, often praised for their openness and enlightenment, allow a charlatan to take on such an influential role in environmental policy? In what follows, I want to try to provide some historical and cultural keys to understanding the rise of Lomborg, both as an outgrowth of the particular Danish political culture, but also as a reaction to the 'greening' policies of the previous government.

At the outset, it is important to point out that Denmark, in almost all respects, is a country of two political cultures, one that is based in the cities (and, in particular, in the capital of Copenhagen) and one that is based in the countryside. There is a fundamental division in the population with long historical roots, but, somewhat uniquely among the modern industrial nations, that cleavage has a highly influential contemporary resonance. The conflicts between the country and the city, the agricultural and industrial cultures have never really been resolved in Denmark; they live on into the present. Or to put it another way, while the life-worlds of public administration and industrial activity have provided the basis for a cosmopolitan public sphere to become consolidated in Copenhagen in the course of the nineteenth and twentieth centuries, the economically important life-worlds of agriculture and food-processing have provided the basis for a very different kind of public sphere and collective identity to develop in the countryside. In the 1970s, for a brief time, those life-worlds met and enriched each other; since then they have tended to split apart.

Two rather distinct sets of institutional frameworks and ideological mindsets have come to coexist in contemporary Denmark, both in the political realm, but also more specifically in regard to science and technology. And unlike many other countries, where the urban, industrial political culture has tended to take on a hegemonic status in the course of modernization and 'post-modernization', Denmark has continued to be divided in two, not least because of the economic significance of agriculture (it is said that there are four pigs for every one person in Denmark).

On the one hand, in Copenhagen and somewhat later in the industrializing cities of Århus and Aalborg, the Social-Democratic party has come to represent large segments of the public within the political system. As in the other Scandinavian countries, a system of 'corporatism' developed in the making of a so-called welfare state, with employers and employees sharing responsibility for governmental decision-making, especially in relation to industrial policy. On the other hand, the Liberal party, along with the left-liberal *Radikale venstre* party, which split from the mother party in the late nineteenth century, have represented large segments of the rural population, who have continued to be dependent on agriculture, animal husbandry, and food-processing for their livelihoods. The one

political culture has tended to favour centralizing policies, while the other has stood for more decentralized approaches.

Agricultural policy and related scientific-technological development have been left primarily to the farmers and their political representatives, which is the basis for the backlash against 'greening' but also, intriguingly, for resistance to genetically engineered foods. It can be suggested that because neither of the two political cultures has been able to achieve dominance over the other, forms of consensual deliberation and negotiated compromise have become characteristic features of Danish governance and policy-making (see Baark, 1997). But it is those characteristic features, and with them the governing ground rules of Danish society, that Lomborg and Fogh Rasmussen are challenging for being too costly.

With its own parliamentary majority (based on support from the Conservative party and the Danish People's party), the current government has been able to replace the consensual regime, which, for many observers and participants both inside and outside of Denmark, had come to be taken for granted as typically Danish, by an explicitly partisan, neo-liberal regime. Among other things, the government has sought to do away with the 'rule by experts' that, according to Fogh Rasmussen, had characterized the previous Social-Democratic government's ways of making, and accounting for, its decisions, not least in the environmental field. By eliminating many of the previous government's advisory councils and committees, the government claims that it is both able to save money, as well as eliminate the power and influence of the 'experts'. Those opposed to the government's policies have thereby lost much of their influence, and fiscal cost-accounting, i.e. Lomborgology when it comes to the environment, has become the dominant form of expertise—or should we say anti-expertise—in decision-making.

■ MAKING OF A CONSENSUAL REGIME

The rise of Lomborg can be seen as part of a deep-seated backlash not merely against the Social-Democratic government but against what might be termed consensual policy making in general. In the course of the twentieth century, pragmatic compromise tended to become a central aspect of political life in Denmark, for both external and internal reasons. As a small country that was occupied

by Germany in the Second World War, there was a widely felt need after the war for a broad based government and a broad national consensus and agreement across partisan lines, particularly in matters of foreign affairs and international relations. Because of the dualistic nature of the country, however, there was an underlying tension that has been brought out into the open on several occasions during the past 30 years—especially in relation to the European Union (where opposition remains strong in Denmark) and, most recently, immigration. It is that tension that, with Lomborg's help, has spilled over into the environmental area.

There were also more pragmatic, internal reasons behind the making of what might be termed a consensual regime of public accountability. Since no particular group in the society could rule without support from other groups, there was a need to compromise, to reach a consensus or at least a representative majority about most social issues. There were also strong traditions of interaction between what in other countries are the more separate spheres of state and civil society. The boundaries between parties and movements and government agencies are much less pronounced in such a small country, where people like to say that, in most specific policy areas, everyone knows everyone else on a first name basis. As in the other Nordic countries, corporatism had been a key feature in the development of policies in relation to environmental protection and technological development (see Christiansen, 1996).

When public debates about environmental and energy issues started to intensify in the 1970s, particularly around nuclear energy but also around the use of chemicals in agriculture and industry, they took on a special character, and struck especially deep chords in the Danish society. Because they were so concerned with central economic issues, they were unusually wide-ranging, but also, from the beginning, unusually constructive. With few resources of its own, Denmark really needed to respond actively. When it came to energy, there were no new rivers to dam, as in Norway and Sweden, and there was no virgin forest to exploit. It was more a matter of getting more out of what was already there. Almost at the same time that a movement emerged against nuclear energy, for instance, 'grass-roots' groups were experimenting with wind energy and other renewables, and wind power has since grown into an important export industry (Jamison *et al.*, 1990). Similarly, ecological agriculture was practiced

early and actively, compared to other countries, and the 'organic farmers' today are an important actor network in the debates about biotechnology and food production more generally. But they also challenge important vested interests in the agro-industrial 'block', or so-called national system of innovation (see Lundvall, 1992).

Another element in the making of a consensual policy regime is what might be termed the quality of the public sphere. The conditions of Danish public life in the 1970s were congenial, we might say, to getting a good debate going. The breadth of the counter culture and the 'new left' were impressive—from communes to Christiania, from academic Marxism and leftist parties to active feminist and environmental movements (the fact that the Socialist People's Party had been created in the 1950s and became a significant parliamentary force is also important). There were also the new universities of Roskilde and Aalborg, founded in 1972 and 1974, respectively, which prided themselves on their innovative approaches to education. Roskilde University Centre, in particular, has continued into the 1990s to be a base for both radical, leftist politics and for pedagogical innovation (almost all undergraduate education takes the form of group project work, and most of it is interdisciplinary, as well).

There was also in the 1970s a lively alternative media, with the daily newspaper *Information* (created in the Resistance movement of the Second World War) and the weekly *Politisk Revy*, covering all sides of the 'new social movements', both the cultural and political. *Information* was especially important in covering the nuclear energy debate, as it unfolded in the 1970s, which had an extra advantage in comparison with several other European countries due to the fact that Denmark had not yet established nuclear energy. There was thus a lot more need and opportunity for constructive alternative thinking.

The environmental and energy debates were quite diverse and multifaceted both in substance and form, and they were widely covered in the more established media—both radio, television and newspapers—as well as the alternative press. There also emerged a special 'radical science' journal in Denmark, *Naturkampen* (*Nature Struggle*), which, in comparison to radical science journals in other countries, was unusually professional and influential. It covered the many activities of leftward leaning scientists and engineers in Aal-

borg and Roskilde, often in relation to labour groups around occupational health issues. Like radical science journals in other countries, it covered the issues of sociobiology, nuclear energy, militarism and labour deskilling; but most importantly perhaps, it provided a vehicle for the kind of radical popular science writing that would continue in book form in the years to come. Shaped by a kind of short-lived hybridization of the two political cultures, combining cosmopolitan cultural modernism with a rural-based populism, *Naturkampen* could play a more significant role in the public sphere than its radical science counterparts in other countries ever managed to achieve.

The environmental 'movement' that developed in Denmark in the 1970s was also a more significant public presence than it was in many other countries. It was, for one thing, much more characterized by local experiments, and a booming wind energy industry is one of the most visible results. In Denmark, environmental issues became more directly associated with the alternative political ideologies that grew out of the youth rebellion and the student movement of the late 1960s. The most important organization in this connection was NOAH, started in 1969 by biology and architecture students in Copenhagen, which soon developed into a national organization of environmental activism. NOAH utilized scientific information and cooperated with scientists who served as 'counter-experts' particularly in relation to the media. In this way, the first efforts at creating public awareness of environmental problems in Denmark were carried out by an alliance between students and the media.

The activist approach of NOAH drew on the Danish tradition of participatory democracy associated with the People's High Schools, and, more generally, on the populist political tradition of the nineteenth century. The new social movements like NOAH that emerged in the 1970s contributed to a new kind of public sphere that could, for a brief time, combine rural populism with urban cosmopolitanism. In contrast to other countries, the 'grass roots' dimension remained important, at the level of personal identity, even as environmentalists tried to influence energy policy and develop alternative means of energy supply. The opposition to nuclear energy was coordinated by an independent Organization for Information about Nuclear Power (OOA), which so effectively mobilized public resist-

ance and pressure that the Danish government abandoned its nuclear plans in the late 1970s. In addition, the popular debate on alternative energy sources and various public awareness and information campaigns encouraged movement organizations to foster local practical initiatives which gradually became an accepted part of environmental policy in Denmark.

■ CHANGING CONTEXTUAL CONDITIONS

In a variety of ways, the contextual conditions were substantially changed in the course of the 1980s, as the broad-based and voluntary movements that had been so important in the 1970s became ever more differentiated and professionalized—and incorporated into the urban political culture. In relation to nuclear energy, the movement succeeded in its political task, and, if the environmental consciousness was to grow, there was a need to branch out and expand the interest in ‘technology assessment’ to other areas. As is so often the case with influential social movements, there was a kind of institutionalization process that set in, as some activists set up consulting firms and wind-energy companies, others established themselves in the state bureaucracy or as academic experts, and still others moved into party politics. These developments can be seen to have weakened the participatory aspects of the environmental movement, separating the green experts from what, in the 1970s, was a broad popular base of support and active involvement. As in other countries, the experts tended to take over what I have elsewhere termed the making of green knowledge (Jamison, 2001).

The political situation also changed in the early 1980s, as the winds of neo-liberalism started to blow across Scandinavia from Britain and North America, and the conservative-led coalition government, which came into office in 1982, tried to meet the enthusiasms of the 1970s with the new ideological approaches of the 1980s. The interest in the environment, however, and support for renewable energy seemed to cross ideological lines, and throughout the 1980s, there was a so-called ‘green majority’ in the parliament that took a number of initiatives to establish what we might call a consensual policy regime, even though it never really managed to convince the hard core neo-liberals and right wing populists who came to represent the anti-green minority.

One central element of the consensual policy regime was the propagation of an innovative approach to technology policy. In the early 1980s, a small unit for technology assessment was created within the state technology support agency. In the wake of the energy debate of the 1970s, which had been conducted, not just within the environmental movement, but also under the auspices of a state-supported Energy Information Campaign, a parliamentary commission was given the task of proposing a form for accountability for large technological projects: what has since come to be called 'technology assessment'. The unit at the Technology Council was one result, as was the creation of a Technology and Society programme initiative at the Social Science Research Council. Support from both units was instrumental in the emergence of science and technology studies at Danish universities, particularly at the Danish Technical University, but also at the new universities in Roskilde and Aalborg (Munch, 1995).

A further step in the institutionalization process was the establishment in 1986 of the Board of Technology, which was created by the parliament to provide a focal point for technology assessment activity (Jamison and Baark, 1990). The Board sponsored meetings of public deliberation, which came to be known as consensus conferences, and published a magazine and popular reports, while facilitating a number of projects and 'social experiments' particularly in relation to the social diffusion of information technology and biotechnology. Much of the activity that the Board was involved in was connected to the large technology development programmes initiated by the Danish government in the second half of the 1980s, and which formed the cornerstones of a new active period of state innovation policy. Both in relation to the Information Technology Programme, the Biotechnology Programme, and the Cleaner Technology Programme, substantial funding was made available for technology assessment and information activities, which supplemented the support given to 'technology and society' research by the Social Science Research Council. The result of these activities was thus both cadres of new experts at the 'left-wing' universities, as well as new opportunity structures for the radical debaters of the 1970s. But it is also important to see these developments as part of a strategic shift in science and technology policy, which also included, in Denmark,

increased funding for sectorial research institutes outside of the universities.

Another important factor in the contextual changes of the 1980s was the expansion of the European Union, which has, of course, continued into the present. For one thing, much of the actual substance of the debate in relation to many environmental issues moved to a larger, more transnational realm, where it was harder for local and amateurish 'grass roots' voices to be heard; and for another many of the new experts found themselves involved in European projects, networks and other activities—even more opportunities for 'counter-experts' to become established experts. For example, one of the founding members of *Naturkampen*, Per Sørup, got a job in Brussels in the 1980s where he was instrumental in establishing the social science research initiatives in the Environment and Climate Programme, and later helped create the Institute for Prospective Technology Studies in Seville, where he is now based.

Finally, and perhaps of most importance to understanding the making of anti-environmentalism in Denmark, was the normalization of many of the issues that had given rise to such intensive debate in the 1970s and the emergence of a new kind of environmental institutional framework. All the key problem areas—from nuclear energy to industrial pollution, from occupational health and safety to traffic congestion and urban sprawl—were largely taken over by newly established official bodies, engineering consulting firms, and transnational non-governmental organizations, like Greenpeace and the World Wildlife Fund. There came into being in Denmark, as was the case in most other European countries, a range of more professional—and commercial—forms of environmental and energy expertise. As elsewhere, the 1980s were a period when the environmental movement of the 1970s was largely transformed into a range of new professional activities, and it was, among other things, those activities that the 'people' eventually reacted against, with the guidance of Lomborg and Fogh Rasmussen.

■ GREENING OF PUBLIC POLICY

When a Social-Democratic led government was elected to office in 1992, its environmental policy continued in the same avowedly

consensual way as its predecessor in stressing the bipartisan character of environmental issues and the need for negotiation and compromise in policy making across party lines. Eventually, however, the consensus that had been achieved in the 1980s started to break down.

The new Social-Democratic minister of the environment, Svend Auken, who had lost a fight for the party leadership, was particularly ambitious in his efforts to 'green' the Danish society, which obviously meant that other policy areas, with less ambitious ministers, would be given somewhat lower priority. Auken tried to stake out a leading role for Denmark, both in relation to the European Union (the European Environmental Agency came to be located in Copenhagen at Danish urging, while Ritt Bjerregaard, another leading social-democratic politician, and former minister, who had also lost out in terms of national political prestige to Poul Nyrup Rasmussen, the prime minister from 1992, became EU environmental commissioner) and the rest of the world. In any case, Denmark was to be one of the more active countries in seeking to infuse cleaner production processes and environmental management systems into industry in the course of the 1990s, and a number of 'green taxes' were instituted (Andersen, 1994).

In Denmark there was a much more active policy than in many other countries to replace so-called end-of-pipe solutions to environmental problems with new approaches stressing a change in production technology, or what was beginning to be called at the time, 'ecological modernization' (Hajer, 1995). Given the limitations of energy sources—reinforced by the decision to abandon nuclear power as a result of the intense public debate of the 1970s—the Danish government had emphasized the transition to renewable energy. This led, on the one hand, to the establishment and rapid growth of the Danish wind turbine industry and, on the other hand, to a diversified regulatory framework in the energy sector encouraging energy-efficient technologies. The relative effectiveness of economic incentives in improving the technological and organizational capacity for saving energy inspired similar initiatives elsewhere: a move from end-of-pipe solutions to so-called preventive solutions including the development and diffusion of cleaner technology. Beginning in 1986, the Danish government launched a series of major support programmes in cleaner technology. Compared to

most other European countries, the Danish efforts have been substantial, and they have attempted to spread the various preventive technical approaches to environmental problems throughout the Danish industry (Remmen, 2001).

In the first phase, from 1986 to 1989, the effort was concentrated primarily on investigating the potential for cleaner technologies in different branches of the economy, and in conducting demonstration projects in particular firms. The general approach followed similar 'national programmes' in technology development that had taken place in the 1980s, in relation to information technology and biotechnology, and were based on the long-standing Danish emphasis in technology policy on demonstration projects. The second phase of the cleaner technology programme, from 1990 to 1992, involved a more active broadening of focus, as well as increased competence-building and information dissemination. Courses were held at engineering colleges and associations, handbooks were written, and special branch consulting schemes in cleaner technology were established in four particular branches: furniture-making, meat processing, fish production, and metalworking. At the same time, environmental management systems were instituted in a number of small and medium-sized companies with governmental support, and major efforts were taken to document the experiences with cleaner technology, through a number of technology assessment projects at the technological universities. From 1993, the efforts expanded further, as the environmental administration adopted a more flexible, interactive approach, seeking to pass responsibility and policy initiative from the public to the private sector.

From the outset, the Danish shade of greening emphasized commercialization and the use of market forces in environmental policy and regulation. In the political atmosphere that prevailed in Denmark during the 1980s, when the government was usually based on a combination of parties from the centre to the right of the political spectrum under the leadership of the Conservative Party, there was a strong leaning towards liberal economic policies and indirect instruments of regulation, i.e. small government. Even in areas where the government was unable to secure a majority of votes in the Parliament for its policies—as was the case for much of the environmental legislation which was dominated by the so-called

'green majority'—the subsequent implementation of policies tended to be framed in the manner of indirect regulation.

In the 1990s, Denmark thus became one of the most active countries in Europe in pursuing the new ideas of pollution prevention, cleaner production, and ecological modernization. Indeed, the environmental minister Svend Auken proposed, on a number of occasions, that Denmark should seek to provide an exemplary model for other countries to follow. By the second half of the 1990s, the ambitious environmental minister had created a wide range of programmes and policies: a Green Fund and Green Guides, a group of Ecological Wise Men advising the minister, with an Ecological Council to carry out policy research, and a large number of initiatives meant to stimulate organic agriculture and other 'green products'. Greening had taken on a kind of ideological function. As might have been expected, it wasn't long before there came an equally ideological reaction.

■ CONCLUSIONS

The greening of public policy, and the emergence of green experts in and around the ministry of the environment, was not to everyone's liking. By the mid-1990s, there began to emerge an explicit resistance to further environmental measures on the part of certain politicians (both in the Liberal party and Danish People's party), as well as from representatives of the agro-industrial complex. Even more significantly, the population, as in other parts of Europe, came to be affected by a growing populist reaction, fuelled by the continually strong Danish opposition to the European Union. For many constituencies, but especially perhaps for the rural population, other issues, like immigration and health care, became more important than environmental protection and renewable energy development, especially when the programmes of greening, or sustainable development, came to be so closely identified with the Social-Democratic party and its minister of the environment: with Auken's little green empire. These anti-environmental sentiments were given a highly visible public face in 1998, when Lomborg published his articles in the newspaper *Politiken*, in which he claimed to disclose the 'real state of the world' in direct opposition to what environmental experts in and around the Danish government were claiming to be the case.

The new policy regime that has been put in place in Denmark since the elections of 2001 differs from the old in at least three main ways. On the one hand, because the parliamentary map was so fundamentally redrawn by the election results, the new government has been able to behave in an explicitly partisan manner. Certain public constituencies, and their interests and concerns, are simply no longer taken into account. The government has replaced the broad-based form of consensual decision-making that had been the standard through most of the past 50 years by a much more ideological approach.

On the other hand, the government's substantive priorities are different from those of the previous government. Already in January 2002, when the minister of finance, Thor Pedersen, presented the government's first national budget, the drastic nature of the transformation that was afoot had become clear. Pedersen eliminated the 'green taxes' that had bothered much of the Liberal party's electoral constituency, and soon thereafter major cutbacks were announced for the environmental ministry and its environmental agency. This government showed early on that it had a very different underlying concern with the environment than the previous government had had, and it only made sense that a few months later Lomborg would be appointed director of a newly started institute for environmental assessment.

Finally, the government's overall conception of public policy and public accountability differs from that of the previous government. The main focus of policy making has been changed—from fostering improved social and environmental performance through an active state intervention, to a reduction of all state activity to responsible fiscal, or financial performance. Cost-effectiveness and privatization, rather than social and environmental responsibility, are the main priorities of the current Danish government. Public accountability is to be achieved by real monetary accounting rather than some kind of 'green' or social accounting.

For friends of the environment everywhere, it is important to learn from the Danish experience where anti-environmentalism or a kind of anti-green backlash comes from. In countries like Denmark, where the state is the main financier of scientific research and policy expertise, it is crucially important that that role not be misused. The strong tendency in the previous government to turn the pursuit of

sustainable development into an overly ideological greening of society contributed to the making of an aggressive counter-reaction. More generally, it can be suggested that when science and scientific experts become too much incorporated into government policy making, and subjected to one particular kind of interpretation of reality, it can only be expected that those who do not share that interpretation will react. When those who react can tap into deep-seated cultural traditions, then the reaction, as in Denmark, can lead to the making of a rather strong anti-environmentalist backlash. And when those who react are as skilled in the use of the media, and as ambitious in their pursuit of power as Lomborg and Fogh Rasmussen have shown themselves to be, then we're all in trouble.

The Danish experience also indicates that life in mode 2 requires the development of appropriate forms of public accountability not just in the environmental field but throughout the world of science and expertise. When the established procedures of quality control and peer review are systematically rejected on behalf of some overriding political objective, there is a need for creating new forms of communication between 'experts' and the general public, and for that matter, new forms of research and research policy. In Denmark, where technology assessment, for example, has become a kind of institutionalized business, and consensus conferences a kind of export industry of their own, the connections to the 'grass roots' and to the general public that first spawned such initiatives have been seriously weakened. If we are indeed to transcend the older, more discipline-based forms of knowledge production that characterized the scientific enterprise in the past, then we also need to devise ways to keep science in this new mode 2 publicly accountable.

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