

4 Science, climate politics and cultural bias

If we are going to talk about how culture (using our cultural theory tools) affects low carbon politics, it would seem appropriate to discuss how culture influences debates about climate science and climate politics itself. If we do this we can hopefully better understand the positions taken on climate change and the priorities accorded to different strategies. We may even be able to better understand the linkages between cultural bias, attitudes to debates about climate science, and technology issues. Hence this is the purpose of this chapter.

A conditioning hypothesis for this chapter is that positions in the climate science debate and preferred technological policy options are associated to cultural biases. Thus, attempts to rise above such bias are at least difficult, if not impossible. The ascriptions of cultural bias conferred in this chapter refer to the field of scientific debate and institutions.

I want to begin by setting out some historical background concerning shifts in the context in which climate change was discussed, and linking this to cultural bias. Not only have cultural biases affected judgements about interpretations concerning climate science, but there is also a good argument that changes in the dominance of cultural bias in the environmental sphere have also affected the way that climate science is interpreted. Then I want to move on to discuss the position of one prominent contemporary science policy theorist, Roger Pielke. I choose him because he seems to promote a vision whereby scientists can escape the allure and problems associated with issue advocacy. I will explore whether this is possible, and I shall use cultural theory to explain that in coming to a conclusion that this is difficult to achieve in practice. I want to start off with arguments about climate policy and look at linkages with positions on the debate about low carbon energy sources themselves. I shall then discuss, using cultural theory, how such arguments are linked to positions about energy technologies themselves.

Natural science has held the ring in governmental hierarchies, in the sense that state education and religion are kept separate and state education is reserved for the teaching of evolution as described by natural science rather than creationism or intelligent design. Similarly, one could say the

same about climate science once it became integrated in governmental assessment in countries such as the USA and the UK by the 1990s. Although controversies have waxed and waned with different US Presidents about the emphasis given to climate change (and the policies associated with energy), the US government agencies such as the Environmental Protection Agency are staffed by scientific experts rather than theologians. As Demeritt (2001) observes, global climate modelling has become part of the 'management' processes not just for climate modelling and projections, but also of weather predictions, in particular for example 'El Niño' events.

Natural scientists, especially those whose disciplines involve the study of climate science itself, will have respect for scientific hierarchies such as the Intergovernmental Panel on Climate Change (IPCC), but their attitude to low carbon technologies will be influenced by their support or antagonism towards egalitarianism. Hierarchs who look to science for judgements about climate change may sometimes have an individualistic approach to risk perceptions. They may be unsympathetic to egalitarian policy preferences, for instance, against nuclear power.

However, equally, while some hierarchs may be influenced by individualistic biases, other hierarchs may in fact be more sympathetic to egalitarian interpretations. Indeed, arguably, the late twentieth century has seen such a trend.

What I want to do here is to discuss the way that the hierarchy of science is itself not immune to cultural bias. Scientific predictions on environmental matters are suffused with uncertainty, not merely involving the models and data and the predictions that are made, but on the impact on humans and ecosystems. Things become even more difficult to reduce to certain, positivistic assessments of what needs to be done to achieve maximum benefit, when people also debate the means to adopt to minimise the impacts of environmental changes. In the end science has to interpret and to make value judgements, both in what to study and also to see as something that may be positive or negative in its potential impact on society and nature – or indeed whether it is worth making such judgements at all.

There is a good argument that the hierarchy of science has itself shifted from being more imbued with a 'nature is robust' notion associated with individualist approaches to cultural bias to one which tilts towards an egalitarian one of 'nature is fragile'. In doing so the balance of hierarchical bias has shifted away from individualism and towards egalitarianism in the sense now that it is accepted by state hierarchies around the world that nature is only robust within certain limits. As Thomson *et al.* (1990, 29) describe, a difference between individualists and hierarchs in that for hierarchs 'experts' are needed 'to determine where those limits lie'.

I would project this argument by examining the way that early research into global warming was interpreted by the scientists that are credited with being early movers on this, in particular Arrhenius and Callendar, and then how the direction of interpretations changed in more recent years. In doing

so I do not attempt a historiography of climate science. This type of work has been covered by such accounts as Hart and Victor (1993), Weart (2011), Grundmann and Stehr (2012). Rather I pick out some strategic points of direction and change in discourses about climate change which I relate to cultural theory.

Cultural shifts in the history of climate science

Arrhenius, a Nobel winning chemist, is first credited with making detailed calculations of the effects of carbon dioxide on warming the atmosphere, and indeed his projections seem to fit in even with contemporary ones, saying that, in a paper published in 1896: 'A simple calculation shows that the temperature in the Arctic would rise by 8 or 9 degrees if the carbonic acid increased to 2.5 to 3 times its present level' (Arrhenius 1896, 268).

Despite this, Arrhenius was optimistic about the impacts of increasing levels of carbon dioxide in the atmosphere, saying:

Is it probable that we shall in the coming geological ages be visited by a new ice period ...? There does not appear to be much ground for such an apprehension. The enormous combustion of coal by our industrial establishments suffices to increase the percentage of carbon dioxide in the air to a perceptible degree.... By the influence of the increasing percentage of carbonic acid in the atmosphere, we may hope to enjoy ages with more equable and better climates, especially as regards the colder regions of the earth, ages when the earth will bring forth much more abundant crops than at present, for the benefit of rapidly propagating mankind.

Arrhenius 1908, 61–63

In the 1930s, Callendar, a British engineer, associated measurements of carbon dioxide in the atmosphere and temperature increases. At that time, these measurements and the assumptions upon which he based his calculations indicated small increases in temperature. He observed that

In conclusion it may be that the combustion of fossil fuel is likely to prove beneficial to mankind in several ways besides the provision of heat and power. For instance the ... small increases in temperature would be important at the northern margin of cultivation, and the growth rate of favourably situated plants is proportional to the carbon dioxide pressure. In any case the return of the deadly glaciers should be delayed indefinitely.

Callendar 1938, 236

It is striking that there is optimism about the consequences of global warming in these pre-WW2 accounts by these two analysts who are now

seen as the leaders in early global warming science. This has changed in the post WW2 era.

The post WW2 era was marked by the growing environmental concern, with nuclear radiation being a prime emblem of the notion that human impact on the environment was no longer necessarily benign, and that nature could be fragile – the egalitarian view of nature. Indeed:

The two crucial scientific disciplines, carbon cycle research and atmospheric modelling, arose as concerns after nuclear testing suggested that there were changed weather patterns that needed study. Scientists did not find that weather was influenced by radioactive fallout; US federal agencies ... however simulated interest in carbon cycle and global atmospheric circulation.

Grundmann and Stehr 2012, 121

This development of governmental (in cultural terms ‘hierarchical’) concern was paralleled by a rise in activity and profile of environmentalism in general.

As Weart (2011, 69) puts it:

In the early 1970s, the rise of environmentalism accompanied public doubts about the benefits of human activity for the planet. Smoke in city air and pesticides on farms were no longer tokens of ‘progress’ but threatened regional or even global harm. A feeling spread that modern technology brought not only practical but moral problems, polluting and mistreating the natural order.

Hence, there seemed to be a shift, during the post-WW2 period not just in the degree of activity and support for egalitarian environmental causes but also in hierarchical bias to lean more towards egalitarian sensitivities than was the case before. Of course, the concern of hierarchy was management so that business as usual could otherwise be conducted. Such management incorporated not only environmental discourses (to the extent that they could be reconciled with economic development) but also many environmental institutions.

Hajer (1995) analysed this process of environmental incorporation as part of the new paradigm of ecological modernisation (EM). As discussed in Chapters 1 and 3, EM is about how government and business and environmental NGOs together manage the incorporation of environmental objectives into economic development. However, such hierarchical management involves a tension between the two biases – individualism and egalitarianism – that the hierarchy tries to balance. If they become out of balance then one or other of these biases may mobilise ‘fatalists’ out of their torpor to join protest, for example in protest at having to pay more (an individualist concern) or to suffer environmental problems (egalitarian).

Of course, in the post-war world the ‘contagion’ has been pressure from egalitarian bias. Hence while there may be a hierarchical scientific consensus on some basic elements of climate change (at least) we can observe contending individualist and egalitarian interpretations of what this science means.

It can be argued that the infrastructure of ‘expert’ scientific advice that began to be assembled at the end of the 1980s to deal with climate change represented a new hierarchy, but one that leant, albeit modestly, to incorporate egalitarian biases. The Intergovernmental Panel on Climate Change (IPCC) was established at the behest of the World Meteorological Organisation and the United Nations Environment Programme in 1990. This arrangement formed part of the type of hierarchical expert-led management of international affairs that was analysed by Adler and Hass (1992) and called an ‘epistemic community’; these advise governments and therefore act as a legitimator for governance.

The mere fact that such a body was being established in itself signalled an absorption of the green-egalitarian notion that the world was under some form of risk from anthropogenically induced climate change. Certainly it is difficult to imagine that if global warming was regarded as benign as had been indicated by Arrhenius and Callendar, then there would be little need for such a body. There would continue to be research on climate matters as a part of normal academic research – perhaps advising national governments on adaption and response – but not something that was accorded extraordinary significance requiring global cooperation. That, at least, would have been a hierarchical response that led to individualist biases, and ones which looked more to nations as hierarchies and implied an individualist bias as far as risk was concerned.

The IPCC was established at a time when global institutions instigated a paradigmatic shift towards accepting egalitarian objectives. Hierarchy absorbed egalitarian green objectives on a global basis through the agency of the Rio Conference on Environment and Development in 1992. This approved the discourse of sustainable development as enunciated by the Brundtland Report (World Commission on Environment and Development 1987). In what may be regarded as a stereotypical example of hierarchical management of expectations of individualist and egalitarian demands, the document attempts to balance the objectives of development. As Brundtland argued, the imperative was partly a ‘moral’ one, implying adherence to an egalitarian appeal to protect the rights of future generations. ‘The case for conservation of nature should not rest only with development goals. It is part of our moral obligation to other living beings and future generations’ (WCED 1987, 57). This discourse was transmitted and accepted by most national governments.

This egalitarian turn, while undoubtedly being a new hierarchy, has not been without its critics who have themselves argued from a technocentric, expert driven basis. This included Wilfred Beckerman, who accepted the

moral imperative to protect future generations, but argued that sustainable development was irrelevant to optimising human welfare (Beckerman 1994). He said that ‘too much time and effort ... is being devoted to developing the implications of the sustainable development’ (Beckerman, 1994, 206). He argued that welfare could be calculated using established economic criteria such as discounting.

The task of calculating what policy would maximise welfare was attempted by Nordhaus (1993). He compared the costs of different levels of carbon tax with the (discounted) damage to society resulting from economic damage caused by climate change. He concluded that an optimal rate of carbon tax should be set at a modest level of around \$5 per tonne of carbon in 1995 prices (rather than a much higher level of, say, \$55 per tonne). Nordhaus later criticised efforts to use low discount rates to calculate the optimal policies in response to climate change arguing that market-realistic rates should be used to fit in with the practical choices that businesses and individuals had to make about their choices (Nordhaus 2007).

My purpose in mentioning these examples is to illustrate that hierarchical approaches to climate change may contain greater or lesser concessions to the biases of egalitarianism or individualism in their deployment of expertise. An emphasis on standard economic approaches using market-place interest and discount rates implies an individualist bias in cultural terms. Those who, rather, talk of respecting quantitative ecological constraints and (at least some) absolute notions of ecological capital clearly come from a more egalitarian bias. It could also be added that those who follow an individualist bias are more likely to give nuclear power the benefit of the doubt compared to the egalitarians, who at least may regard their preferred renewable energy technologies to be given preference.

Can analysts escape from cultural politics? The case of Roger Pielke Jr

Evidence for this is found in the approach of Roger Pielke Jr who, because of his extensive and well-reasoned arguments can perhaps be analysed here as a good example of what I would characterise as deploying a hierarchical expert oriented individualist-leaning approach. Pielke, along with what I would class as fellow hierarchists – individualist scholars such as Nordhaus – accept the need to carefully monitor, analyse, research and take at least limited precautionary action over global warming and climate change. This includes levying modest carbon taxes to finance research and development of strategies to counter climate change. Arguably also, this is an approach shared, albeit often in a more combative form against egalitarians, by Bjorn Lomborg. Lomborg (2001) has argued that while global temperatures are rising because of human activities, large scale spending on other priorities such as providing clean water and fighting diseases such as malaria should take priority over climate change.

There have certainly been some controversies about some claims about climate change which seem, in my view, to have obscured what was otherwise a scientific consensus about various details of climate change. There was, for example, a controversy over statements made that glaciers in the Himalayas will soon completely disappear. The IPCC confessed that this was not the case, but added:

Widespread mass losses from glaciers and reductions in snow cover over recent decades are projected to accelerate throughout the 21st century, reducing water availability, hydropower potential, and changing seasonality of flows in regions supplied by meltwater from major mountain ranges (e.g. Hindu-Kush, Himalaya, Andes), where more than one-sixth of the world population currently lives.

IPCC Secretariat 2010

Nevertheless, casual observers could be excused from thinking that somehow climate science predictions that glaciers were receding was being debunked, when this was not the case. Another controversy, sometimes called ‘Climategate’, involved claims being made about how far current global temperature trends were different to those in the past. At the end of the 1990s Michael Mann was associated with the so-called ‘hockey-stick’ graph which showed that temperatures were higher today than they had been since the year AD 1000 (Mann *et al.* 1999). However there followed a great controversy when it emerged, following leaks of emails between academics involved in the study, that there was disagreement about how to treat the data and which data sources should be selected for different purposes and times. Suspicion emerged that data treatment was governed by what made a better climate change story. Certainly the metaphor of a ‘hockey stick’ is itself a powerful emblem, and as such was always likely to be a potential target for those who did not like the story which it promoted. Certainly the controversy, again, gives the impression that perhaps this is a distortion and that really temperatures are not higher than what was the case in the middle ages.

Yet despite all the argument about whether proper standards were followed by some of the scientists involved in the study, later research on the temperature record does not indicate that Mann *et al.* were actually wrong in their central claim about today’s climate being the hottest in the last millennium. Marcott *et al.* (2013, 1198) say: ‘Our global temperature reconstruction for the past 1,500 years is indistinguishable within uncertainty from the Mann *et al.* reconstruction’.

Pielke is critical of the extent to which he sees scientists involved in and around the IPCC have taken up what he sees as advocacy for what is analysed in my book as ‘egalitarian’ positions. For example, on the so-called ‘hockey stick’ controversy he comments:

The ‘Climategate’ emails show a consistent desire among the activist scientists to redefine processes of peer review in accordance with their own views of climate science ... by managing and coordinating reviews of individual papers, by putting pressure on journal editors, by seeking to stack editorial boards with like-minded colleagues.

Pielke 2007, 194

More generally, in regard to political perspectives, he says that

some observers of the climate debate have pointed out quite correctly that for some advocates of action the issue is not really about the specific details of the human influences on the climate system whether due to carbon dioxide or otherwise. Rather, broader notions of sustainability and how we as many billions of people live on planet Earth are the focus.... Indeed some argue that the reality of ever-increasing carbon dioxide emissions is a symptom of a deeper set of problems, not simply a technical condition to be managed.

Pielke 2010, 22–23

Pielke identifies some instances where there is evidence that advocates for urgent action on climate change have exaggerated some aspects of impacts of climate change and inveighs against what he sees as the ‘politicisation’ of the climate science debate (Pielke 2010, 161–190). He advocates a ‘no-regrets’ approach to climate change involving research into, and promotion of, solutions that will be cheaper than fossil fuels (Pielke 2010, 26). He advocates a carbon tax, but one that should be at a level to fund research and development rather than a higher one designed to change behaviour (Pielke 2007, 228), much like the Nordhaus approach. Moreover, he has berated climate campaigners for their emphasis on countering climate deniers, and indeed appears to pin some of the blame for the prominence on deniers on the exaggerations of impacts of climate change promoted by climate campaigners.

He commented in an article in the *Wall Street Journal*:

I believe climate change is real and that human emissions of greenhouse gases risk justifying action, including a carbon tax. But my research led me to a conclusion that many climate campaigners find unacceptable: There is scant evidence to indicate that hurricanes, floods, tornadoes or drought have become more frequent or intense in the U.S. or globally.

Pielke 2016

Pielke agrees with the IPCCs general analyses and he supports action to counter climate change. However, Pielke has argued that some scientists were behaving as protagonists for a particular political agenda, ‘stealth issue advocates’:

The Intergovernmental Panel on Climate Change, which was formed to provide guidance to policymakers on climate change, by design does not discuss policy options, yet the IPCC report and its representatives often serve as Stealth Issue Advocates because some policy options are discussed and others ignored.

Pielke 2007, 141

Pielke criticised some scientists involved in the IPCC deliberations for becoming advocates for a cause. He sees them as closing off policy options, picking and choosing which dimensions of climate change to address, how much to give them priority and what sort of solutions to recommend. However, he has specifically analysed and attacked some claims made by some scientists in support of the climate change agenda.

Many environmentalists and their supporters did not seem to welcome Pielke's contribution to the climate debate, perhaps seeing him as, as it were, 'kicking the ball the wrong way up the pitch'.

We can accept much of Pielke's argument, but still be left with the impression that he is complaining about green advocacy while simultaneously engaging in advocacy that is critical of the greens. I would argue that what we are seeing from Pielke is an argument for a type of individualist-leaning hierarchical cultural bias, pleading loyalty meanwhile to some ideal notion of expert behaviour that stands above advocacy (Pielke 2007). Pielke is a signatory to a programme (The Eco-Modernist Manifesto 2015) which gives strong support to nuclear power as the principle supply side technique to counter climate change (taking precedence over many forms of renewable energy). As discussed, he favours only a modest level of carbon tax and is against big rises in energy prices to curb carbon emissions. Moreover, whatever his justification may be, his contention that people should not spend a lot of time countering so-called climate deniers invites a counter charge. This is that he is just as much advocating a campaigning posture by spending a not inconsiderable amount of time researching and publishing the evidence exposing climate impact exaggerations. In other words, he acts as no less an advocate than the people he criticises.

Pielke has presented a two-dimensional analysis of scientific advice in public policy matters analysing issues according to the amount of agreement on values and certainty about outcomes among scientists (Pielke 2007, 2010). In situations where there is common agreement on values and certainty, scientists, he argues, can act as arbiters in the policy domain, that is answering 'specific factual questions posed by the decision maker' (Pielke 2010, 213), or sticking to 'facts' with 'no interaction with the decision maker' (Pielke 2010, 213).

Where there is an absence of common agreement on values and there exists substantial scientific uncertainty then he says that a scientist can act as an issue advocate who 'seeks to reduce the scope of choice available to the decision maker' (Pielke 2010, 213) or the 'Honest Broker of Policy

Options' who 'seeks to expand, or at least clarify the scope of choice available to the decision maker' (Pielke 2010, 213). He argues that in the case of climate change there is disagreement on values, which affects the balance between economic considerations and the need to prioritise actions to counter climate change.

In fact, Pielke spends a lot of time arguing about the details of claims made about climate change. In particular he was engaged in a controversy about the extent to which climate change was leading to increases in economic damage due to volatile weather events such as hurricanes. He argued that some of the claims being made were too alarmist to be supported by evidence. This has brought him into conflict with environmentalists, to the extent that there have been attempts to investigate him at a Congressional level and also efforts that have led to him being frozen out of writing for the popular website 'FiveThirtyEight'.

As Pielke argues himself, 'Our political views shape how we interpret facts' (Pielke 2013). He argues that public opinion is on the side of believing the science of climate change. He criticises the effort which is put in by climate campaigners to attack climate sceptics and deniers, which he regards as pointless. One might be forgiven for thinking, after reading his account, that the main reason why there has not been more progress in tackling climate change was not the climate deniers but the tactics of the climate campaigners themselves (Pielke 2013).

However, we can put the argument the other way around. Why does Pielke spend time attacking what he sees as the excesses of climate change advocacy if it is pointless to do the opposite, i.e. attack so-called climate change deniers? If arguments about scientific certainty are irrelevant to policy choices, then why does he engage in them? In as much as what he says is liked by opponents of the green agenda, he is himself acting (part time at any rate) as an issue advocate in this respect.

My analysis of the climate change debate and Pielke's contribution to it is congruent to psychological analyses of science-communication such as that devised by Kahan (2010, 2014). He cites research into comparisons of attitudes to the risks of climate change between egalitarians and hierarchical individualists according to their degree of being informed about the science of climate change. (Note Kahan uses the term egalitarian-communitarian, but I am assuming that this equates broadly with the notion of egalitarianism that I use). This research concerns answers to the question: '*How much risk do you believe climate change poses to human health, safety, or prosperity?*' (Kahan 2014, 10).

Egalitarian-communitarians believe that climate change poses serious risks, and this is modestly increased (from already high levels) among those who are better informed about the science. However, among hierarchical individualists there is a mirror-image result in that all of them, however informed about the science, are sceptical about risks of climate change, but even more so among those who are more scientifically informed.

Given the earlier discussion concerning Roger Pielke, this may not be a surprise. Pielke may be serving an informed hierarchical-individualist audience in arguing that some of the risks propounded by what he sees as green advocates are exaggerated. On the other hand, Pielke indicates his support for nuclear power, thus reflecting underlying support among hierarchical individualists for nuclear power, a support that is really independent of the issue of climate change.

In many ways, the hierarchical-individualists discussed here and the egalitarians simply talk past each other. Indeed, as Pielke says, the egalitarian objectives are rather wider than the climate change issue. But this matters very much to the arguments about energy choices, since egalitarians have long argued for renewable energy, energy conservation and been against nuclear power before the climate issue became widely acknowledged. Indeed, if we are to understand the egalitarian position, and differences between them and more individualist approaches, then we have to understand the arguments about renewable energy and nuclear power on a much broader basis. Such broader contexts will condition notions of what, for example, constitutes things like a 'no-regrets' approach.

What is a 'no-regrets' policy?

A 'no-regrets' policy in respect of climate change could be characterised as one involving promotion of solutions that would be advantageously adopted for reasons other than mitigation of climate change. These other objectives, that could favour adoption of renewable energy and energy efficiency include reducing pollution from fossil fuels such as nitrogen oxides, sulphur (sulfur), particulates, and toxic metals. It could also involve countering resource depletion of oil and natural gas in particular.

Egalitarian approaches will argue that (a) the costs of conventional energy sources are only cheap because their external, pollution costs are not internalised to their market costs and that (b) the costs of renewable energy will come down as they are integrated in energy systems and optimised through mass roll out.

One can argue about the appropriate level of carbon tax to be levied on fossil fuels. However, the implications of the internalisation of the costs of increased and increasing safety requirements on nuclear power seem to be that their costs rose dramatically. As we shall see in later chapters, the arguments are now that these nuclear costs have risen above those of renewable energies such as wind power and solar power, and that the costs of these renewable energy sources have declined through industrial optimisation.

This type of argument is perhaps more resonant with ecological modernisation, which has an eye on maintaining economic development rather than a darker green approach. However, it also fits in with the egalitarian green critiques of centralised energy systems and their opposition to hierarchical centralised power arrangements. Nuclear energy is seen as pre-eminently

centralised and hierarchical, and made particularly so in the cause of the need to manage the risks of the technology in a coordinated fashion.

Renewable energy, by contrast, is seen as being more decentralised. Indeed initially (and sometimes even now in Europe at least) renewable energy schemes were organised on a community basis with local people owning shares, thus making energy ownership more 'equal' among the population at large. Indeed, in the early stages of the modern wind industry ordinary people (or at least those with some engineering skills) were involved in technical development of the energy source (Toke 2011). Of course now the business has become more multinational than community. But in doing so it has become and is becoming much cheaper. Hence this may fulfil the objectives of a 'no regrets' policy.

I should here repeat the argument made in the last chapter of how cultural theory can be applied in a dynamic, as opposed to a static, sense. That is egalitarians may begin by demanding actions that individualists will decry on cost grounds. However, as technological optimisation occurs, the new technology can be accepted though means preferred by traditional market based individualist bias. In contrast nuclear power, subjected to egalitarian pressures for higher, more expensive safety requirements, becomes much more expensive to deliver.

Not only is it impossible to decouple policy activity from cultural attitudes, but there is an active, as opposed to passive, relationship between cultural attitudes and technology. By this I mean that it is not merely a question that different cultural attitudes may have differing technological preferences. Actions in pursuit of different cultural positions – which becomes issue advocacy – can actually change the nature of the technologies themselves, making them perhaps more or less expensive and easier or more difficult to fit in with institutions.

I have so far left out mention, in this chapter, of pure individualistic competition, as opposed to hierarchs who are more or less leaning to individualism. Those operating through a purely individualistic economic lens may be sceptical of risks associated with climate change but less hostile to renewable energy sources if they are seen to be cheaper than they were in the 1970s and 1980s. The individualists may also be sceptical of risks associated with nuclear power, but they will not be willing to support nuclear power if it requires large subsidies because it is very expensive.

The impact of individualism may also be felt in indirect terms, producing, as discussed in the previous chapter, unintended consequences that disadvantage technologies individualists may initially favour. There has been a shift towards greater market liberalisation in the energy sector. As will be outlined in greater empirical detail in Chapters 6 and 7 on the USA and the UK, such change produces a 'shake-out' in technologies which not only disadvantages nuclear power but may in some cases give more opportunities to new renewable energy technologies. To the extent that such a change in structure will have an impact on the choice of energy technologies used, then

there will also be an impact on technological choice and the interpretation of what counts as a ‘no-regrets’ policy. Indeed, to the pure individualist, what matters is not a ‘no-regrets’ policy for climate change, but simply, ‘what can we or other people make money out of’. In short, a ‘no-regrets’ position may well turn out to be, in the end, something akin to the direction of energy technologies preferred by green egalitarians all along.

At the end of the day what counts as a ‘no-regrets’ strategy will depend partly on cultural bias. Those who lean towards a more individualistic outlook may look to the present economics and costs of technologies to find answers. On the other hand, egalitarians will argue against present hierarchies in the energy system. They will argue for new technologies to be given incentives using the logic that they will later become optimised, that energy regimes will be altered to accommodate them and then they will be just as low cost as the technologies they seek to replace.

The Eco-Modernist Manifesto – getting caught out by cultural politics?

On the other hand, Pielke is a signatory with the ‘Eco-Modernist’ Manifesto, which itself has been favourably quoted by critics of the green movement, arguably coming from an individualistic frame. Here, I want to make a distinction between the self-styled ‘eco-modernism’ of this manifesto and the literature on ecological modernisation which, in general, has very little to do with nuclear power. Moreover, ecological modernisation charts how the marriage of environmental objectives indicated by NGOs is put into practice by business operating with government; this is somewhat distinct from the type of centralised technocracy envisioned in the manifesto which even appears to give short shrift to approaches favoured by environmental NGOs.

This manifesto gives priority to nuclear power over current renewable energy technologies such as wind power and solar pv. Hence, while Pielke promotes the notion of honest brokerage and not closing off policy options, in fact he does seem to be endorsing an agenda that seems to give preference to one type of solution rather than others. He may expand some options, but then he seems to be linked to attempts to close off other options. Pielke, presumably, was not situating himself as an ‘honest broker’ when making such advocacies. That being so, one could then ask how practical it is for individual scientists to act as ‘honest brokers’.

This manifesto features support for nuclear power as a crucial part of its programme, and it criticises the mainstream green movement for not only its lack of support for nuclear power, but also its opposition to what the manifesto subscribers say are its anti-science approaches to some technologies and its unrealistic support for some renewable energy technologies. This Manifesto could therefore be described as showing some characteristics that might be attractive to individualists (on the basis of the

surveys on cultural attitudes). This is because the manifesto appeared to show some antipathy towards key green preferences, including those of various types of renewable energy, with apparently greater empathy towards nuclear power.

The manifesto states:

Transitioning to a world powered by zero-carbon energy sources will require energy technologies that are power dense and capable of scaling to many tens of terawatts to power a growing human economy.

Most forms of renewable energy are, unfortunately, incapable of doing so. The scale of land use and other environmental impacts necessary to power the world on biofuels or many other renewables are such that we doubt they provide a sound pathway to a zero-carbon low-footprint future.

Asafu-Adjaye et al. 2015, 22–23

Some contradictions in the way the initiative was received may be better understood using cultural theory. The publicity surrounding the launch of the Eco-Modernist Manifesto stressed how the Manifesto was critical of dominant green positions which tend to be anti-nuclear (Lynas 2015). Strangely, in view of the Manifesto's stress on combating climate change, the appearance was given in media coverage surrounding the launch that the manifesto was associated with public figures who have been seen as climate sceptics. This included Owen Patterson, a former Environment Minister, noted critic of green political agendas, and avowed sceptic of giving priority to the fight against global warming. Indeed, as a Conservative politician, this collection of views may class him as an 'individualist' in terms of cultural bias. He has argued that 'the forecast effects of climate change have been consistently and widely exaggerated thus far' (Godsen 2014). He appeared to comment favourably on the Eco-Modernist Manifesto, saying,

Ecomodernism encourages good things to happen.... The best way to generate electricity is a nuclear power plant so you minimise the land you need, rather than in a vast subsidised wind farm chopping up birds and producing little energy.

Paterson 2015

The launch of the manifesto turned out, in the words of Mark Lynas, one of the organisers, to be 'a screw-up of impressive proportions.... If you count alienating most of your potential supporters on the very first day as a sign of success, I think things went rather well' (Lynas 2015).

However, the apparently strange association between the launch of a manifesto designed to focus on the need to fight climate change and its ostensible association with climate sceptics is not strange if one considers

that a key divide in policy preferences for particular technologies is what I analyse here as cultural influences. Such cultural influences may be more important than 'rational' policy linkages. According to research quoted earlier support for nuclear power is endemic among individualists. Egalitarian greens, on the other hand, may be much more enthusiastic about renewable energy. Hierarchical individualists may be sympathetic to scientific judgements, but nevertheless interpret uncertainty about environmental threats in a conservative direction, often seeing climate change as a much less risky prospect than egalitarians do. On the other hand, hierarchical individualists will tend to support nuclear power regardless of their views on the priority given to climate change as a policy topic, partly because they are sceptical about the alleged risks associated with nuclear power, but also because of a hierarchical preference for centralised solutions that are perceived to deliver 'security'.

Indeed, a cleavage between greens who support renewable energy and others supporting nuclear energy as an alternative to fossil fuels may have been around a long time, well before the climate change issue came to prominence in the late 1980s. In the 1970s, when the anti-nuclear power movement took off in many places around the world, renewable energy was widely trumpeted as their preferred form of energy supply. Given this, it is questionable here how much climate change has altered the views of different identity groups. Climate change may be said to have confirmed choices made by greens in favour of renewable energy but done nothing to doubt the views of individualists who favour nuclear power. True, there have been some changes, in that use of coal is seen as less desirable, than ever it was, by greens.

However, the Eco-Modernist signatories face a big problem that can be understood through the lens of cultural theory. Their most preferred solution (nuclear power) is favoured by individualists but is disdained to a greater or lesser extent by many (or most) egalitarians. In doing so the Manifesto appears to appeal to hierarchists as a mode of tackling climate change. Yet countering climate change is an objective which pure individualists will not regard as an overriding public priority given their scepticism about the risks involved. At the same time, it appears to be relatively dismissive of current-generation decentralised renewable energy. As a consequence, it will dismay egalitarians who gravitate towards decentralised renewable sources of energy. In other words, the Eco-Modernist Manifesto contains within it a contradictory coalition that seems as much concerned with implicitly opposing egalitarians as it does with countering climate change. As such it lacks coherence.

The appeal of supporters of nuclear energy – that it is necessary to make this technology at least a centrepiece of action to counter climate change – falls foul of what is discussed here, namely that positions on energy policies have largely arisen independently of climate change considerations. An example of this occurred at the 'People's Climate March' held in April

2017 in Washington, DC. This was held to protest the Trump Administration's scepticism about climate change and it featured an official anti-nuclear section (People's Climate March 2017). Perhaps the activity could be described as an expression of egalitarian values utilising climate change as an occasion to do so. In that context, arguments saying that nuclear power was not relevant to countering climate change were accepted as legitimate.

Often today it seems to be almost implicitly assumed that the positions about energy policy are centred around the issue of climate change. Yet, to a large part at least, rather than climate change dictating policy choices, rather to a large measure, existing, culturally based strategies are using climate change to justify their positions. As Hulme (2010) says 'arguments about climate change are invested with powerful ideological instincts and interests'.

Conclusion

I have picked out some key historical junctures where there have been changes in dominant cultural biases as far as climate science is concerned. The development of climate science mirrors the change in cultural bias in attitudes towards the environment. These shifted from an essentially individualist point of view seeing nature as robust in the face of human industrialism, dominant before WW2, to one which leaned more towards egalitarianism in the aftermath of WW2. Scientific hierarchies emerged to deal with climate change after WW2, first studying on a national basis and then coordinated on a global level following the inception of the IPCC. By its nature this hierarchy was – is – imbued with an egalitarian cultural sensitivity since nature is seen to be threatened, although the extent to which this is the case will vary according to whether individualist or more egalitarian emphases are stressed.

However, it has to be said that this change is one that is consistent with the contours of greater influence of egalitarian bias. As Pielke observes, much of the argument about how to interpret climate science is actually not so much about climate politics at all, but arguments about sustainability in general. However, by the same token, the arguments about technological solutions to climate change are perhaps as much, if not more, about pre-existing cultural biases about energy technologies. Hence positions about whether we should have more emphasis on nuclear power or renewables (both, or neither), depend on such cultural bias. Climate change is of course relevant here, but its role is more of a reason, or an arena, in which the contending biases argue for their preferred options. Pielke's message is understood by hierarchist-individualists who both support nuclear power and are simultaneously sceptical about whether climate change poses as much risk as egalitarians suggest.

Climate change has arisen as a strategically important piece of territory that has emerged which the 'armies' of the different types of cultural bias

seek to occupy for their own. But the armies would still be fighting for and against much the same solutions even if climate change did not exist. Yet regardless of what criticisms may be made of some claims concerning climate change, those that are based on scientific consensus, such as rising sea levels and more extreme temperatures, are surely sufficient in themselves to demand urgent policy priority be given to measures to cut greenhouse gases?

Similarly, whereas a 'no-regrets' policy seems wise to many, including Pielke, there may be divergent interpretations of what this may involve. Hierarchists who emphasise a degree of individualism in their judgements may use currently available industrial technology as their base. On the other hand, egalitarians may argue that this merely reflects the current (allegedly dysfunctional) technological system. Egalitarians will argue that leveraging change through suitable incentives will produce an outcome that may, in the medium to long run, be just as economical as the present system and deal with air pollution and resource depletion problems that are independent of climate change considerations.

I have argued that Pielke, while perceptive, in many regards cannot escape from the advocacy over climate science that he criticises so much. He is eloquent in putting forward his position, but I see him as an advocate nevertheless, albeit one arguing from a hierarchical individualist position as opposed to the egalitarians that he criticises. He may outline an ideal role for scientists in terms of the 'Honest Broker'. It is logical, yet I am not convinced he follows his own advice, certainly if his polemical position is viewed as a whole. We can perhaps characterise Pielke's position using Olli's (2012) notion of how individual cultural bias is formed by combinations of bias. He shows hierarchical bias in his apparent preference for centralised energy solutions, including nuclear power and giving priority for research into carbon capture and storage (Pielke 2007, 133–140). On the other hand, his approach seems shaped by an opposition to egalitarian bias, at least in terms of advocacy in the scientific field.

The fact that technological attitudes on energy are founded in pre-existing cultural biases rather than solely rooted in rationalistic assessments of countering climate change is reflected in the problems that proponents of the 'Eco-Modernist' Manifesto. They pursue an objective of countering climate change that egalitarians favour, yet in doing so promote a technological preference, nuclear power rather than mainstream renewables, which runs against the tide of egalitarian opinion. The fact that the Eco-Modernists have ended up being seen (in media terms) to have some sort of alliance with individualist 'sceptics' of climate change is a symptom of the Eco-Modernist problem. In order to succeed in their stated core objectives such programmes have to have coherent sets of cultural bias, not incoherent ones, as appears to be the case with the 'Eco-Modernist' initiative.

One conclusion that might be drawn from this is that protagonists of action or less action on combating climate change are talking past each other, in the sense that climate change is a battle ground for positions that flow from pre-existing cultural biases. Pielke may be right in pointing out that merely asserting scientific certainty about the risks of climate change may do little to convince people to take radical action. However, he is on far weaker ground if he is questioning an egalitarian agenda that prefers decentralised renewable energy since this can be supported on the basis of the ‘no-regrets’ policy that he champions himself. Indeed, the message for egalitarian campaigners could be that they should appeal more to ‘no-regrets’ objectives. These include countering local air pollution and also depletion of oil and gas resources. This may be a means of convincing hierarchical individualists who are otherwise sceptical of climate risks to support their preferred policy measures of renewable energy and energy conservation measures. Indeed, now that renewable energy costs have declined, this seems a plausible strategy since there can be an appeal to more individualist notions of cost-effectiveness and the rights of individuals to pursue green energy objectives.

References

- Adler, E. and Haas, P., (1992), ‘Conclusion: epistemic communities, world order, and the creation of a reflective research program’, *International Organization* 46(1), 367–390.
- Arrhenius, S., (1908), *Worlds in the Making – the evolution of the universe*, London and New York: Harper Brothers, <https://archive.org/details/worldsin-makingev00arrhrich>.
- Asafa-Adjaye, J. and 17 other authors, (2015), *An Ecomodernist Manifesto*, www.ecomodernism.org/manifesto-english/.
- Callendar, G., (1938), ‘The artificial production of carbon dioxide and its influence on temperature’, *Quarterly. Journal of the Royal Meteorological Society* 64, 223–240.
- Carrington, D., (2010), ‘IPCC officials admit mistake over melting Himalayan glaciers’, *Guardian*, 20/01/2010, www.theguardian.com/environment/2010/jan/20/ipcc-himalayan-glaciers-mistake.
- Demeritt, D., (2001), ‘The construction of global warming and the politics of science’, *Annals of the Association of American Geographers*, 91(2), 307–337.
- Godsen, E., (2014), ‘Climate change forecasts “exaggerated”, ex-environment secretary Owen Paterson claims’, *Daily Telegraph*, 15/10/2014, www.telegraph.co.uk/news/earth/energy/11163094/Climate-change-forecasts-exaggerated-ex-environment-secretary-Owen-Paterson-claims.html.
- Grundmann, R. and Stehr, N., (2012), *The Power of Scientific Knowledge: From Research to Public Policy*, Cambridge: Cambridge University Press.
- Hart, D. and Victor, D., (1993), ‘Scientific elites and the making of U.S. policy for climate change research’, *Social Studies of Science* 23, 643–680.
- Hulme, M., (2010), ‘There’s no right and wrong to tackling climate change’, *Guardian*, 13/05/2010, www.theguardian.com/environment/2010/may/13/right-wrong-tackling-climate-change.

- IPCC Secretariat (2010), *IPCC statement on the melting of Himalayan glaciers*, Geneva: Intergovernmental Panel on Climate Change, www.ipcc.ch/pdf/presentations/himalaya-statement-20january2010.pdf.
- Lomborg, B., (2001), *The Skeptical Environmentalist*, Cambridge: Cambridge University Press.
- Lynas, M., (2015), 'Ecomodernism launch was a screw-up of impressive proportions', *Guardian*, 30/09/2015, www.theguardian.com/environment/2015/sep/30/ecomodernism-launch-was-a-screw-up-of-impressive-proportions.
- Mann, M., Bradley, R. and Hughes, M., (1999), 'Northern Hemisphere temperatures during the past millennium: inferences, uncertainties and limitations', *Geophysical Research Letters*, 26(6), 759–762.
- Marcott, S., Shakun, J., Clark, P. and Mix, A., (2013), 'A reconstruction of regional and global temperature for the last 11,300 years', *Science* 339, 1198–1201.
- Nordhaus, W., (1993), 'Optimal greenhouse-gas reductions and tax policy in the "DICE" Model', *The American Economic Review*, 83(2), Papers and Proceedings of the Hundred and Fifth Annual Meeting of the American Economic Association (May), pp. 313–317.
- Nordhaus, W., (2007), 'A review of the stern review on the economics of climate change' *Journal of Economic Literature* XLV (September), 686–702.
- Paterson, O., (2015), 'Owen Paterson: economic growth is the key to saving the planet', *Guardian*, 20/09/2015, www.telegraph.co.uk/news/earth/environment/climatechange/11877170/Owen-Paterson-Economic-growth-is-the-key-to-saving-the-planet.html.
- People's Climate March (2017), 'Lineup', <https://peoplesclimate.org/lineup/>.
- Pielke, R., Jr, (2007), *The Honest Broker*, Cambridge: Cambridge University Press.
- Pielke, R., Jr, (2010), *The Climate Fix*, New York: Basic Books.
- Pielke, R., Jr, (2013), 'Have the climate sceptics really won?', *Guardian*, 24/05/2013.
- Pielke, R., Jr, (2016), 'My unhappy life as a climate heretic', *Wall Street Journal*, 02/12/2016, www.wsj.com/articles/my-unhappy-life-as-a-climate-heretic-1480723518.
- Toke, D., (2011), *Ecological Modernisation and Renewable Energy*, Basingstoke: Palgrave Macmillan.
- Weart, S., (2011), 'The development of the concept of dangerous anthropogenic climate change', in Dryzek, J., Schlosberg, D. and Norgaard, R., (eds), *Oxford Handbook of Climate Change and Society*, Oxford: Oxford University Press.