

10 The politics of researching carbon trading in Australia

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Introduction

In recent times, conducting environmental research has become an increasingly dangerous activity for the researcher. Revealing the biophysical and social reality of our economic systems threatens a range of vested interest groups who rely upon resource exploitation, pollution and environmental destruction as necessary business practices. The capital-accumulating growth imperative dominates modern society – East, West, South and North – and anything that is deemed a threat to the beneficiaries of this system is subject to their attack, by whatever means necessary.

Carbon markets create a new set of beneficiaries who include fossil fuel corporations, large polluters, financial intermediaries, banks and speculators. They are a neoliberal triumph supporting the idea that markets can solve environmental problems, and show the way forward for addressing other problems such as biodiversity loss (Spash 2011). Research on carbon markets inevitably either supports, makes apologia for, or criticises a set of institutions and organisations in society. Criticism, no matter how legitimate or revealing of the inability of carbon markets to address climate change, means becoming a target for political attack.

Undermining the credibility of the natural and social scientific basis for environmental concern can be seen as aiding the maintenance of a weak market-based regulatory approach. This has been most prominent in the human-induced climate change policy arena due to the rise of climate denialism and its sponsorship by right-wing think-tanks from the USA (Jacques *et al.* 2008). The campaign of denial waged against the science that supports action to prevent human-induced climate change is merely the latest form of corporate-sponsored attempts to avoid radical greenhouse gas mitigation. Direct political lobbying by corporations in the USA to fight the Kyoto Protocol in the late 1990s amounted to at least US\$ 100 million (Grubb *et al.* 1999: 112). Supposedly scientific economic studies emphasising control costs and downplaying the benefits of mitigation (i.e. avoided damages) were funded by electric power generators from the USA and then cited as evidence against taking action (Chapman and Khanna 2000; Spash 2002: 160). Exxon corporation, copying the tactics of the tobacco industry, has been involved in

documented campaigning to spread misinformation on human-induced climate change (Union of Concerned Scientists 2007). Yet all this has not seemed enough. When corporate lobbying and media campaigns proved inadequate, the tactics moved to discrediting scientists as untrustworthy. For example, the equivalent of industrial espionage was employed in the ‘Climategate’ case of the University of East Anglia email theft and publication, and this was followed up with an internet campaign where numerous right-wing bloggers claimed climate science is nothing but a religion (Nerlich 2010). Attempts to silence climate researchers have also involved direct harassment, threats of violence and death threats (Hamilton 2011). In Australia, public debate has been subject to use of the full arsenal of weaponry supplied to the climate deniers by their corporate backers who control or are connected to powerful media outlets (as detailed in a series of articles for the Australian Broadcasting Corporation by Clive Hamilton (2010a, b, c, d, e)).

While the level and open vehemence of the orchestrated international attack on human-induced climate change research appears new, the general phenomenon is far from uncommon. Questions over the scientific credibility of environmental arguments pointing out the harms posed by new technologies have been repeatedly raised with respect to diverse subjects, from nuclear power (Carter 1987) to genetic modification (Burgess 1999; Robins 2012; Sarewitz 2004). For years industry has backed the organised denial of health impacts from DDT, smoking, asbestos, lead and so on (Markowitz and Rosner 2002; Oreskes and Conway 2010). Research exploiting scientific uncertainty has been funded by corporations to delay government regulation of, and action against, harmful company products and practices (Michaels 2005).

Researching human-induced climate change and addressing how to control greenhouse gases is inherently about revealing the structure of power relationships in society. In this context, a highly relevant concern is that of Galbraith (2007 [1967]) for the undemocratic power wielded by professional corporate managers (whom he termed the technostucture) and their ability to capture those agencies meant to be regulating the corporations within which the managers operate. The institutions – conventions, norms and formally sanctioned rules – of scientific research seem to provide poor protection against vested interest groups for environmental researchers entering the minefield of public policy. Indeed researchers often seem unaware that the science–policy interface is a battlefield where the contest is for control over the role and status of knowledge in modern society.

Rather than abstractly speculating on these matters, I will detail the treatment of my own critical research on carbon emissions trading in order to reveal how political sensitivities can arise in research. More specifically I will report on my personal experience working as a Science Leader, and Senior Civil Servant, in Australia for the Commonwealth Scientific Industrial Research Organisation (CSIRO) between 2006 and 2009. I had been head hunted for this role within their Sustainable Ecosystems Division. As an economist with an interdisciplinary research record, I was promised an open remit to build up, develop and

lead ‘blue skies research’ on environmental values and policy. The CSIRO, a leading national and international scientific research organisation (employing 6,500 people), was and remains an organisation dominated by those trained in the natural sciences and engineering, supplemented by a handful of mainstream economists and a small sprinkling of other social scientists. The dominant belief within the organisation is in a modernist tradition that regards science as creating an objective, value-free knowledge on the basis of empiricism. In 2007, a corporate trained manager, Dr Megan Clark, became the Chief Executive Officer (CEO) of the CSIRO. She had previously worked in the Australian mining industry with its heavy involvement in the high greenhouse gas emitting aluminium and coal sectors.

In detailing the treatment of my work critical of carbon trading, by Dr Clark and others, I will show how, in practice, norms supposed to achieve quality control can be perverted to achieve justifications for censorship and suppression of politically sensitive work. In this case, the CSIRO was brought into disrepute in public media and the Australian Senate for allegedly engaging in censorship. However, there was no impact on the structures used to control and manipulate information, and indeed they were reinforced by the *a posteriori* defence of the need for even greater direct managerial ‘quality’ control. This can, then, be seen as providing a *carte blanche* for future potential censorship.

The case study raises general questions about the foundation of scientific ‘evidence-based’ policy, how Western democracies can suffer from the suppression of information of substantive public interest, and how the spreading role of managerialism from the corporate world is being used to control research and researchers. The case study shows how the mythical fact–value dichotomy, presumed by the naive objectivism of much contemporary natural scientific and economic research,¹ collapses and why the sociology and politics of science cannot be ignored. The attempt to totally separate climate science (as fact) from policy (as value laden) is then revealed as deeply flawed and also a poor defence for researchers, especially social scientists. This raises questions as to how regulatory design, such as carbon markets and alternatives to them, can be debated in an open and explicitly value-laden research context, and how the necessary societal debate should be conducted concerning the future of our social, ecological and economic systems.

Carbon trading and the science–policy interface in Australia

Among OECD countries, Australia is the highest per capita emitter of all greenhouse gases combined, and in 2009 overtook the USA as the highest per capita source of CO₂ emissions (Lo and Spash 2012). The Kyoto Protocol allowed the country to increase emissions by 8 per cent over 1990 levels during the first commitment period (2008–2012). Australia only ratified the treaty in 2008 after a change of national government from John Howard’s Liberal Party to Kevin Rudd’s Labor Party. The Rudd government then staked its reputation on getting an emissions trading scheme in place. This was an idea originally

floated by the Howard government. Entitled a 'Carbon Pollution Reduction Scheme', it was contentious and, in 2009, struggling to get passed into legislation by the Senate. In Australia coal is king and the mining sector is powerful and politically influential. The political support for the scheme was shifting and corporations exploited this to the full by negotiating massive multi-billion dollar permit bonanzas for the worst polluters. Despite this effort, by Rudd, to buy off the big fossil fuel interests and their political allies, the scheme was voted down by the Senate in the middle of 2009. At the end of that year, when my censorship case was at its height, a second vote was to be held and Senate debates were a hot topic for Australian media attention. The proposed free permit transfers to the corporate greenhouse gas emitters were being increased, but media attention seemed more preoccupied with climate change denial. Tensions were high when the Senate narrowly voted the scheme down for a second time and dealt a major blow to the credibility of the Rudd government.

Julia Gillard was then able to ascend to the prime ministerial role in Australia after an internal Labor Party coup. That coup was inspired by the failure to get the carbon emissions trading scheme into legislation, and the disaffection of the mining sector due to a proposed tax on their profits. Gillard substantially revised the mining tax in consultation with corporate leaders. She then called a general election in July 2010, that resulted in a hung parliament. The Labor Party managed to form a minority government supported by the Australian Greens and three Independents who favoured carbon pricing. This has been described as Australia's climate change election, because the expectation at the time was that Labor would be forced by the Greens to adopt a stronger environmental position (Rootes 2011).

The resulting compromise scheme was a carbon tax for three years leading to an emissions trading scheme in 2015. Like its predecessor it offered large financial transfers to the worst polluters. Australia had done nothing to limit emissions to the Kyoto mandated increase of 8 per cent on 1990 levels, and the Gillard scheme limited itself to reducing the rate of increase (i.e. choosing a base of 5 per cent reductions now on 2000 levels rather than 1990 levels). While touted as a major environmental success the reality was not impressive at all and seemed unlikely to do much to control Australia's runaway greenhouse gas emissions (Spash and Lo 2012).

In 2013 Gillard lost a leadership election within the Labor Party and Rudd returned to become prime minister once again. A national election soon followed that Rudd and the Labor Party lost to Tony Abbot and a right-wing coalition government. Abbot vowed, as one of his first acts, to remove the carbon tax/trading scheme established by the Labor coalition.

The brave new world of carbon trading

In February 2009 I completed drafting an article on carbon emission trading schemes for a special issue of *New Political Economy*, a leading academic journal in the field of economics and public policy. The article argued that carbon

emissions trading schemes are fundamentally flawed, and it critically analysed support for their recommendation. I used a descriptive, institutional and logical analysis to deconstruct claims made by economic theorists and carbon market designers. The argument was not directed at any specific country or scheme design, but written as a general critique using a variety of examples to illustrate key points. A common position among economists was, and remains, that emissions trading schemes are the most efficient regulatory control for pollution, and any implementation problems they encounter can be solved by simple redesign (see also Lane and Stephan, this volume). My paper criticised both the claim of economic efficiency for carbon emissions trading and argued redesign was not feasible given the structure of the real economy (e.g. the power of corporations, the banking and finance sectors), which such economists fail to take into account. The paper also raised a variety of concerns over the operation of carbon markets including greenhouse gas accounting, permit allocation, the Clean Development Mechanism (CDM), and the role of voluntary offset markets.

As a Science Leader within the CSIRO my work was subject to an internal review process prior to sending an article off to a journal. This was often treated as no more than a formality, especially for a senior researcher, and the process was not anonymous. However, on this occasion, prior to completion of the internal review process, my divisional manager, Dr Daniel Walker, intervened citing concerns over the political sensitivity of the work.

At the time, the Australian Senate was soon to conduct its first debate over whether to pass the Carbon Pollution Reduction Scheme, which aimed to establish greenhouse gas emissions trading. The divisional manager noted a requirement within the CSIRO that the Minister for Innovation, Industry, Science and Research (then Senator Kim Carr) be informed when politically sensitive research was due to appear. That was, apparently, meant to be merely an information process not a control or influence on the research findings. However, the divisional manager also expressed his concern that the contents be judged of high quality and thus be defensible against the minister. To that end he requested a higher standard than internal review, cited international peer review as such a standard and agreed, with myself and my co-author, that this would be most easily achieved by immediate submission to the international journal for which the paper had been written.

The paper was, therefore, formally submitted to the journal *New Political Economy*. This meant it was sent out for international peer review by the journal while the internal CSIRO review was still on-going. Shortly after, the internal review (now superseded by the international review process) was completed and, while noting the political sensitivities, approved publication with some minor suggestions. A working paper would normally have then been published and made available online, but in this case was delayed awaiting the international review. The journal's international anonymous refereeing process resulted in my receiving a report that noted the positive contributions of the paper, made some critical remarks and suggested several revisions and

amendments. All the points made by the international referees report were then addressed and responses to each and every point noted in a cover letter to the journal editor, who accepted the revised paper. My divisional manager was informed of the successful forthcoming publication and, as a courtesy, sent the referee reports, response and revised version.

At this point something unusual happened. A few days later I received an email from Dr Walker stating that the publication should be withdrawn from the journal to undergo further internal review and discussion. A totally ad hoc procedure was suggested involving a further three unnamed managers, as well as input from his superior Dr Andrew Johnson and from those driving the CSIRO's Carbon Strategy. Research at the CSIRO involved investigating various schemes that might have been expected to benefit directly from making carbon into a valuable commodity through emissions trading (e.g. carbon sequestration in forestry and agriculture, carbon capture and storage for coal-fired power stations, clean coal technologies and more). The reasons stated for stopping publication were that: 'This paper deals with an extremely important public policy issue for Australia (and globally) and raises significant considerations. The proposed ETS is extremely politically sensitive at present' (email, 24 June 2009).

I refused to withdraw the paper from the journal and stated my intention to publish without CSIRO affiliation. This stalemate continued through various meetings until Dr Walker himself wrote directly to the journal stating the paper must be withdrawn for not having completed 'internal CSIRO approval and review processes'.

Over the course of several meetings and correspondence this same manager repeatedly made clear that the reason for stopping publication was purely concern over unspecified political sensitivities. Three options were at one point tabled: publication with CSIRO affiliation, publication without affiliation, no publication. However, after conferring with his superiors, only the last option was deemed suitable. This led to the CSIRO discussing their claim over anything I might write (including in a personal capacity) which would have had the effect of allowing them to prevent me from publishing the paper even as a private citizen. My co-author, also a CSIRO employee, had several visits from management, feared for his job and withdrew from the paper.²

In light of previous concerns over gagging of climate scientists within the CSIRO, freedom to 'speak' about research of public interest was still deemed permissible. An understood option was to claim no affiliation and present ideas as an individual. The CSIRO Charter states 'Researchers who speak as individuals should not claim to represent an organisation'. So, about five months after the publication ban was applied, I submitted the paper to an international conference for anonymous review as an independent researcher (with no CSIRO affiliation) so it could be accepted for presentation. I was later criticised by management for not seeking approval to present. Many CSIRO staff presented at the same conference and I know of only one person having sought official approval for doing so,³ despite (unlike me) presenting their work under the CSIRO banner.

A few days after the conference presentation, the matter became national news, with *The Australian* (2009) running a front page headline 'CSIRO Carbon Trade Dissenter Silenced'. The story was quickly picked up and spread. The media concern was the attempted suppression of information of public interest by CSIRO management. That led to the CEO, Dr Clark, calling me to a meeting at CSIRO headquarters. During this meeting she expressed little concern over the content of the paper and stated only 'tiny changes' would be required to meet her requirements, namely conforming to 'the Charter' (the need for tiny changes was also reported in *Nature*, see Pincock 2009). The CSIRO then made a press release stating the paper would be published after all.

The Charter is an agreement that had been signed with Science Minister Senator Carr. This was meant to be a document that affirmed the freedom of speech of CSIRO researchers and, as Senator Carr had stated in a press release, defended 'frank and fearless' debate. This implied debate without ministerial or government intervention. However, the text ends with the following sentence: 'As CSIRO employees, they should not advocate, defend or publicly debate the merits of government or opposition policies (including policies of previous Commonwealth government, or State or local or foreign governments).'

This sentence leaves much open to interpretation. It could be seen as merely stating 'avoid being partisan', or it could be taken as a total ban on any research deemed as touching on any government policy anywhere in the world at any time. Taking the latter position would mean banning most, if not all, CSIRO research. For example, among other things, the organisation advocates clean coal technology, carbon sequestration, Green jobs, extracting wealth from the oceans, adaptation to climate change, biotechnology and publishes food diet books. All these are quite clearly areas of government policy. In addition, the CSIRO takes specific positions on water and land use, farming practices, management of pests, wildlife and biodiversity, and much else.

This one sentence of the Charter provides a key instrument for control of information flowing from the organisation. At the time of my meeting with the CEO, I was led to believe a few minor word changes would address the Charter. Within a week of that meeting I was given an ultimatum to accept an anonymously changed paper which (among other things) had cut crucial sentences and text (11 per cent in total) and halved the concluding section.⁴ I was called to a meeting of senior managers, including Andrew Johnson, at which the CEO informed me to either accept all the changes as they were, with no input on my part, or have the paper ban imposed once again and also be personally banned from speaking to the press. I chose the bans.

The essence of the censored version of the paper was to substantively change the argument concerning carbon emissions trading. My argument involved a series of points to establish that emissions trading is fundamentally flawed as an approach. This involves failures by mainstream economists to take into account economic and social reality such as corporate power, strong uncertainty and the

exploitation of the poor to establish carbon offsets. The censorship removed key sentences and paragraphs so that the revised argument took the familiar mainstream environmental economist's line that, while emission trading has its problems, these things require more research and, through redesign, over enough time, such schemes can be improved and all issues resolved. Strangely enough, putting the cut text together created a coherent critique of emissions trading.⁵

The issue did not stop with the ban by Dr Clark, because the Green party lobbied the Australian Senate to hold a debate about the paper and the issue of government censorship at the CSIRO. That debate led to the passing of a motion which instructed Senator Carr to table the paper in the Senate as a matter of public interest, something which he initially refused to do.⁶ When he acquiesced, after further Senate pressure, the paper appeared in a version which had been submitted to the aforementioned international conference for peer review. Senator Carr (using parliamentary privilege) also simultaneously tabled a personal attack on my character in the form of a letter written by Dr Clark. In that letter she threatened me with unspecified punishment for having presented the paper at the conference and included copies from a webpage showing it had already been published online.

Indeed, the paper had miraculously appeared as an online publication, without my knowledge, just a few hours before Senator Carr presented it in the Senate. A conference proceedings website had suddenly released the paper without seeking or being given any permission, and despite the ban status of the paper being common public knowledge.⁷ A mystery surrounds how the CEO of the CSIRO knew about this release and, within a few hours of its posting, was able to write a letter about it and supply a copy of both to the minister in time for his Senate appearance. Personally, I only heard of the online posting during the public broadcast of the Senate tabling of the paper by Senator Carr, and I had it removed within hours after contacting the website manager.

I resigned within a week of these events, having concluded the organisation to which I belonged lacked all credibility and its scientific integrity was being compromised by senior management. This ensured the publication of the internationally peer-reviewed version of the paper in an unadulterated form.⁸ I was also free to speak about the contents, which I did in a series of public lectures around Australia.⁹ The publication was officially released as an independent discussion paper (Spash 2009) and later as a journal article (Spash 2010a). However, the story did not stop there.

Quality, peer review and political control

On 10 February 2010, a few months after I resigned, the CSIRO, represented by its CEO, Dr Clark, and Head of the Environment Division, Dr Andrew Johnson, appeared before the Senate Estimates Committee. During discussion of my case, Senator Carr went on record making direct derogatory comments

about the paper. In addition, he supported the latest position of the CSIRO management as to why the paper could not be published.

Now, apparently, the paper had been too low in quality. In the Official Hansard transcript of that meeting Dr Clark, stated:

This was always an issue of quality; it was always an issue of maintaining the standards of the organisation. We always encouraged Dr Spash to publish the paper. I personally encouraged him to do so.

(Australian Senate 2010: E48)

Later she stated that:

In this case, the scientist was not prepared to make those changes to meet the quality. But there was always the encouragement to publish this work and to get it out there into the arena with quality changes that we required.

(Australian Senate 2010: E50)

Senator Carr intervened in the questioning of Dr Clark and made two claims. First, he tried to claim the paper had been published as a conference proceeding so there was no issue of a ban. Second, he tried to deride the paper itself by quoting a confidential referees' report from the journal in which it was accepted. This was the report I sent my divisional manager, Dr Walker, along with my comprehensive response to referees' comments, prior to the first banning of the paper. Clearly CSIRO managers passed the confidential peer review to Senator Carr. In his attempt to deride my work the Senator chose half sentences and bits and pieces of the confidential referees' report. After quoting these he stated: 'In my judgement, this is a clear case of CSIRO defending the brand name of this organisation and has absolutely nothing to do with the personal political opinions of the author of this paper' (Australian Senate 2010 E49).

This is rather strange as prior to my resignation the CSIRO management claimed the right to stop me publishing the paper even without their brand name on it. In addition, he chose to cite the external referees' report because there was no document or statement from the CSIRO showing any internal concern over the publication's quality prior to my resignation.

Senator Carr did not stop there in his attempt to claim his support for quality assurance at the CSIRO. He stated: 'As a former schoolteacher, I really wondered whether or not this was the sort of thing we would be employing people to write on behalf of the CSIRO. The quality just was not there' (Australian Senate 2010: E50).

This from a Science Minister who, when launching Charters to protect the integrity and independence of public research agencies, had gone on record supporting the scientific peer-review process, the importance of avoiding government intervention in that process and the need for 'frank and fearless debate'. He had then stated (press release 16 January 2008): 'The value of

scientific endeavour and importance of vigorous and transparent public debate, unfettered by political interference but subject to peer review, is something I have advocated for my entire public life.'

When questioned by Mark Colvin of the ABC (broadcast 24 February 2010) about the treatment of my paper, the office of Science Minister Carr stated that: 'Clive Spash may have made some revisions but the revisions did not address all the concerns of the reviewer and still failed to meet the standards of quality required of a CSIRO paper.'

This baseless claim is flatly contradicted both by the support for publication of the paper from CSIRO's internal reviewers, the point-by-point revisions addressing all referees' comments and subsequent acceptance for publication by the journal editors at *New Political Economy*. The fact that the journal is internationally peer reviewed had actually been regarded as a higher standard than that of the CSIRO internal review. Indeed, *New Political Economy* was ranked 'A' class by the Australian Research Council in their 2010 Excellence in Research Assessment report.

This direct political intervention in the case raises serious concerns about the independence of scientific review in Australia, especially by its government agencies and, specifically, the CSIRO. Senator Carr had intervened in a process to deride a paper, prior to its actual publication, on the basis of comments which had led to its revision and subsequent acceptance. In a letter (dated 24 November 2009) from Professor John O'Neill to Senator Carr the editors of *New Political Economy* had made clear their position.¹⁰

The CSIRO is asking not for minor but for major changes in the central arguments of the paper. This is clearly unacceptable to the author. I should add that is also unacceptable to me as the editor of the special issue. It involves interference in our own peer-reviewing procedures that would be incompatible with academic integrity of the journal.

The letter from the journal also addressed the role of Dr Clark in demanding changes to the paper.

What is clearly improper is for her to use her position to insist on changes to the paper which alter its conclusions prior to publication. No international journal would accept a paper under those circumstances. Neither would or should any academic scientist be expected to agree to such alterations to his or her work.

Both Senator Carr and the CSIRO management took a stand that placed their own (non-specialist) opinion above that of the expert peer-review process the Science Minister had himself claimed was the ultimate test of quality for engaging in public debate. Their claims of poor quality and no political motivation for the banning of the paper must confront the facts. None were prepared to publicly debate the contents of the paper or even specify any issues of concern.

The case reappeared in later Senate Estimates Committee meetings and the CSIRO was forced to explain itself further. This involved a new elaboration of why the paper was banned compared to other similar work, and specifically the public advocacy of the Gillard government's climate policy by CSIRO's Dr Wonhas (see also endnote 4). In response to a question (SI-71, 19 October 2011) by Senator Colbeck, the CSIRO reiterated claims of the need for quality control and meeting the Charter, but also stated:

The issues related to Dr Spash were not about the content of his paper, nor were they related to any public comments regarding his paper. . . . CSIRO's internal review concluded that the original paper did not report new research or present empirical evidence to support all of the authors' conclusions. The paper was also viewed as offering opinion on matters of government policy by applying a critique of neoclassical economic theory to the ETS. Therefore it was not approved for publication.

So now, besides falsely claiming the CSIRO only publishes evidence based on empiricism, criticism of neoclassical economic theory had also become a reason for banning research work on emissions trading! What is this if not a matter of content?

During the Senate Estimates discussion, of February 2010, an interesting remark came from Dr Clark in terms of the control management have over the science coming out of the CSIRO:

Our processes are very consistent across all our scientists in terms of working with them to make sure they are published in the most appropriate journals, making sure that the science is robust, making sure that the conclusions can be drawn upon that science.

My former line manager wrote to Dr Clark about her Senate Estimates statements. His letter was entitled 'Misinformation given to Senate Estimate committee' (dated 1 March 2010). In this letter he made clear that, in his opinion, Dr Clark and Senator Carr had misled the parliamentary committee and Dr Clark had abused the peer-review system in releasing confidential referees' reports to the Senator. In addition, he also made clear his belief that the quality of the paper was actually diminished after CSIRO editing.

Even more seriously, this raises questions regarding what goes on behind the scenes at the CSIRO. Prior to becoming CEO of CSIRO, Dr Clark built her career in the mining industry and was a vice-president at BHP Billiton, one of the largest resource extracting multinationals in the world (which publicly proclaims its active engagement in extracting coal, petroleum and aluminium, among other natural resources). This has inevitably led to expressions of concern and speculation over the influence on the CSIRO of corporate interests, the powerful Australian mining sector and specifically 'big coal' (Manning 2010).

In all this some things are very clear. Massive financial transfers to polluters have been an essential part of the design being employed by emissions trading

schemes to get buy-in from powerful vested interest groups. The Australian Carbon Pollution Reduction Scheme was no different, and built in generous ‘allowances’ for the coal, aluminium and petrol-driven transport sectors (Spash 2010a). This was repeated under the scheme passed into legislation by the Gillard government (Spash and Lo 2012). Similarly, the gains to be made by the finance and banking sectors in running a new multi-billion dollar commodity market have been touted as a great economic opportunity (Stern 2006: 270), rather than a massive transaction cost to society. My work indicated how these financial flows are more appropriately characterised as side payments, bribes and deadweight loss. As this work brought the development of carbon markets into question, it became an act threatening the potential for those massive transfers, speculative gains and rent capture to take place or continue. Rather than enter into ‘frank and fearless debate’, the minister and CSIRO management sought to discredit the work. The strategies employed escalated from changing the content, to suppressing the whole work, to attacking the author and his reputation, to finally questioning the quality of the work and its scientific credibility.

The sociology and politics of knowledge

Knowledge (whether regarded as objective, subjective or something else) is necessarily embedded within social institutions. Scientific knowledge is produced by epistemic communities of scholars that have developed elaborate intellectual and social organisations to demarcate what is to be regarded as communal activity and how it should be conducted. Essentially, such scholarly communities, as social groups, control the way work is carried out, the goals of that work and who is employed to conduct such work. Interdependency creates community-based research standards as to competent use of research techniques to enable knowledge transfer. Researchers who fail to fit within this structure of dependency are regarded as not producing the right kind of knowledge and can be marginalised within or excluded from the community.

The epistemic community of scholars, investigators, analysts and others in any given research field can be regarded as being united by a set of norms of social behaviour, i.e. institutions of group and individual control over, and validation of, information. The range of practices for establishing hard-core ‘scientific’ credibility are then often regarded as self-evident, including such things as: peer review, mathematical formalism, experimental method, employing data and statistics, writing in the third person, avoiding explicit engagement in politics and trying to exclude value-laden statements. For many, perhaps most, within a community the conventions, norms and rules are not even perceived as such, they are just part of what defines their occupational practice.

Lee (2009: 12) explains this social organisation of science, and the interdependency of its members, as involving several factors including: the nature of the audience for which the scientific output is intended; control over (i) the means of production of scientific knowledge, including the equipment, techniques and

labouring skills, (ii) the format in which it is reported, and (iii) the communication outlets, such as journals; the role of individual and institutional reputations in affecting both the production (e.g. what is accepted) and the goals of scientific knowledge; and the role of State and other organisational power outside the science community in legitimising, supporting or otherwise affecting scientific knowledge, its goals and the reputations of specific individuals. Thus, a range of quite different social systems (e.g., hierarchical managerially controlled vs. diffuse locally coordinated) can exist for the production of scientific knowledge, with implications both for the type of work produced and how it is employed. Indeed, the intellectual and social organisation of such work, and who it is deemed to involve, is historically and consciously determined by its participants and the recipients of scientific knowledge (Lee 2009: 13).

Both the social and natural sciences share this communal framing of knowledge but have developed different practices of work. An important institution they share in common is independent and generally (but not always) anonymous peer review for quality evaluation. In democratic states, the intellectual and social organisation of work for both has been a matter for the scientific communities involved. Yet, as the case study indicates, this process is also susceptible to control or manipulation by those in powerful positions and gate keeper roles.

Which journals are 'appropriate', who decides and on what basis? Who selects referees and how? When is managerial consistency in publication practice merely code for uniform control and manipulation of what gets published? Why should empirical data and quantification be regarded as the test of 'truth'? On what substantive grounds is qualitative data or descriptive analysis regarded as less robust than quantitative data? Why is work of social scientists typically treated as less 'hard' or 'objective' than that of natural scientists and on what basis? Who should be the judge and who the jury in these matters? These questions relate to the philosophy and conduct of science as well as its relationship to public policy and political process in a democracy.

All social and natural scientists produce their work within a specific social and institutional context. At its best this can provide an empowering collegiate atmosphere where challenging common goals are set and tackled through collaboration among senior and junior researchers alike. At its worst this can be a disempowering hierarchical system of control where research managers force colleagues into serving narrow politically motivated ends. Derision of politically unpalatable research findings is then carried out via *ad hominem* remarks, harassment, bullying and questioning the scientific quality and credibility of the results on totally unscientific grounds.

The problem facing us today is the extent to which the latter approach is becoming dominant and there is creeping censorship of science in research by official government process in supposedly democratic states (Spash 2010b). In 2009, while I was fighting my case in Australia, Professor David Nutt was getting sacked by the UK government for speaking openly on the relative merits of drugs versus alcohol (Tran 2009). Then in the US there was the case, closer to my own, of two EPA lawyers told to remove and then edit parts out

of a video critical of emissions trading (Broeder and Kaufman 2009). More recently, in Canada public muzzling of government scientists seems to have become a legitimate political policy (Ghosh 2012). These high-profile cases involving government employees are likely the tip of the iceberg.

As neoliberal governments are elected around the world, the rhetoric of austerity is employed to shut down research which asks too many unwanted and difficult questions. Indeed, my own former social science division at the CSIRO, Sustainable Ecosystems, was quickly closed after I left, and the social scientists merged with entomologists within a natural science dominated Ecosystem Science division. This is now led by my former divisional manager, Dr Walker, who advocates an evidence-based science approach.

Government agencies and institutions, as well as individual civil servants, that try to protect the environment and society against damaging development, harmful technologies and pollution are subject to being removed under the guise of reducing red tape and increasing free market competition, boosting growth and providing jobs. Employing those with corporate experience to manage research (as in the CSIRO) further muddies the waters between the independence of science and the objectives of vested interest groups. In such a climate of fear civil servants are most vulnerable and self-censorship prevails. Yet the myth remains that if research is factual, empirically based, and avoids comment on policy, then researchers have nothing to fear.

The artificial division of science from policy and facts from values

In 2010, Australia's chief scientist, advising the government on all scientific issues, was Penny Sackett. She took a very traditional view of the science-policy interface. That is, one which claims the trust of people in science as progress is evident in their adoption and use of technology. The only real problem for science then is one of communication, i.e. the public disagree with scientists because they are ill-informed and misunderstand scientific facts. Her belief in scientists directly observing facts as truth reflects a naive objectivist position (see Sayer 2010). In a TV interview on ABC's Lateline (broadcast 18 March 2010) she stated that: 'a CSIRO scientist can and should speak out clearly on matters of scientific evidence'. Yet when asked directly about my case she stated:

The question is, when that crosses lines of policy there are matter [sic] – employment practices in the CSIRO that draw a distinction between matters of policy and matters of science and those matters are handled internally by the CSIRO. But I think one thing we can feel quite confident of is that the quality of research that is done by those researchers is recognised the world over as of the highest international standard.

She went on to draw a distinction, or division, between 'the science of climate change as opposed to a particular political solution to address climate change'.

Suppression and manipulation of research of the former was a concern, but not the latter. So social scientists and policy analysts within the CSIRO are fair game, but leave the natural scientists alone!

Simply calling for 'evidence-based science' as if this were an answer to the way in which science should interact with policy is to totally misunderstand the problem. Drawing such simplistic divides as policy vs. science comes across as a purely rhetorical argument, meant to convince without any substantive meaning. Take, for example, the introduction of genetically modified crops, which has been hotly debated in many countries including Australia (e.g., see Robins 2012). Where is the divide between evidence-based science and policy advocacy? That senior scientists within the CSIRO have heavily promoted research on such crops leaves many questions unanswered. We might ask who funds the research, who benefits from the results and what norms and beliefs drive that research? Why do these researchers not promote organic farming, permaculture or other alternatives?

The presumption of evidence-based policy is that there is no community of scientists or institutional context within which science is conducted, and that facts always speak for themselves. Compare this with an article in *Nature* on nanotechnology which explains how science embodies the perspectives of the researchers involved. That article concludes:

Different positions on fundamental questions, such as the relationship between humanity and nature, permeate technology development and social debate. . . . [They] are much more than simple factual descriptions . . . each of them rests on different assumptions, supports different beliefs and leads in different directions

(Wickson 2008: 315)

Once we move from the natural to the social sciences the claims of a dichotomy between facts and values becomes even more starkly ridiculous. Mainstream economists who push for carbon trading as 'the answer' to human-induced climate change are implicitly criticising a range of social institutions which offer different regulatory options (e.g., taxes, direct regulation), other pathways in society (e.g., degrowth) and alternative social, ecological and economic futures outside of their abstract conceptions of human society as a money-obsessed, competitive trading enterprise. That the CSIRO chooses to support some avenues of research rather than others is a direct reflection of its values, or today those of its managers. The CSIRO Charter and the positions of those like Clark, Carr and Sackett, if taken seriously, would ban all social science research from the CSIRO, which would also need to remove all connections with industry, including the use of the word 'industrial' in the organisation's title. Clearly none of these people would seriously consider closing down all CSIRO research advocating new industrial technologies, despite these clearly creating societal path dependency and crossing the imagined science-policy divide. Yet all seem to advocate placing social science within the confines of evidence-based fact finding, naive objectivism and value-free knowledge.

In conducting social science research, such as that on carbon markets, there is no value-free information. All such research in promoting one set of institutional arrangements over another must involve a complex of facts and values. This does not mean there is no factual knowledge or social reality, but rather that knowledge requires conceptualisation and leads in specific directions which are far from value free.

In the end public policy requires ethical judgement and this cannot be avoided. We need institutions that allow for open debate and democratic decision processes. As Alan Holland (2002: 33) has stated:

The penalty for not developing institutions in which ethical and other deeply felt concerns can be properly voiced will be residues of grievance, mistrust, injustice and guilt which are as corrosive of the civic body as are pollutants in the natural environment.

Conclusions

The development of public policy on climate change has been heavily influenced by a scientific credo from the outset of the Intergovernmental Panel on Climate Change. This provides a specific instance in which science becomes involved in answering political and ethical questions using a set of practices and methodology ill-suited to the task, and employing people formally trained to believe their work, as scientific research, can and should be isolated from societal context and implications. This creates a major weakness that has left climate science open to attack, because scientists cannot hope to live-up to their own claims of being providers of value-free knowledge. Rather than scientists identifying the failings of their own approach, admitting their own ignorance and limits to knowledge, they too often persist in an extreme and untenable claim to having access to the truth about reality based upon empiricism. So a second major weakness has been the inability to claim total certainty. This has left the door open for those who want to delay action on greenhouse gas control by allowing them to claim the need for more research to provide the ultimate proof.

Scientists who present evidence of fossil fuels being a danger to humanity and Earth's climate are directly criticising a set of institutions and social organisation (facts are connected to values). Thus, the resource extraction and energy industries, so closely associated with major emission sources of greenhouse gases, and other pollutants, are inevitably the enemies of a science which exposes their complicity in creating social and environmental harm. Similarly, all those citizens who like gas guzzling cars, Formula 1 motor racing, monster trucks and so on will feel themselves the subject of criticism. Indeed, anyone living a typical Australian, American, European or rich Chinese, Brazilian or Indian lifestyle is being held up to scrutiny for their high energy and material throughput. That researchers might believe their factual data and findings are free from association with politics and social values is clearly naive.

In effect, climate science tells us that society must remove the vast majority of fossil fuel combustion activities from the economy and do so quickly to avoid scenarios involving substantive and extensive damage and loss of life. This science is a major criticism of modern industrial society, fossil fuel-based economies, the competitive capitalist growth society and the institutions of progress it has constructed. Ideas of freedom and progress have become integrated with massive energy and material consumption per capita. Policy action based upon this science is then necessarily engaged in challenging some of the most powerful organisations in the capital-accumulating modern world, both within the structures of Western-style democracies and the totalitarian regimes of Asia and elsewhere. Scientifically pointing out the causal mechanisms is then akin to a political act. Claiming policy and politics are things ‘scientists’ can ignore, while they get on with the real work, is quite simply sticking your head in the sand.

Discovering knowledge about the world has implications for the way humanity organises its activities and interacts with the non-human world. The advocacy of carbon markets is based upon the naive objectivity encapsulated in neoclassical economics and its pursuit of efficiency. The lie of evidence-based science, like that of positive economics, is the claim that all information can be neutral and separated from the implications it has for the society within which that information is produced. If facts were so easily identifiable and separable from values there would be little need for the epistemic institutions, ethics in scientific conduct or critical academic debate.

Research on biophysical reality now interacts very directly and immediately with the social and economic world. Attempts to close-down and/or control critical science–policy debates are all too evident. Scientists of both the social and natural type must take responsibility for the institutions within which they work, the uses employers make of their work and the implications of their work for society. That includes exposing abuse of peer-review processes, speaking out against inappropriate managerial and political control of research organisations and universities, and avoiding work with clearly unethical consequences. This also means being open about the processes used by the community within which they work to create knowledge by bounding it, and the associated problems of partial ignorance that it creates.

The susceptibility of traditional institutional processes of quality control to manipulation and the spread of misinformation should not be underestimated. Choosing the ‘right’ referees, selecting the ‘right’ journal for publication, requiring use of the ‘right’ method of research can all be open to abuse aimed at controlling and suppressing information. The natural sciences are just as vulnerable as the social sciences.

More crudely, climate deniers try to harass and intimidate scientists and threaten their families in the hope that they will stop their work and others will be driven away from the field to less contentious research. Many corporations and national governments have vested interests in continuing emissions of, and destroying sinks for, greenhouse gases. Due to the prevalence of naive

objectivism they can exploit scientific uncertainty and fund research to increase doubt. The game is one of disempowering those who oppose their operations and threaten their sources of wealth and power.

The concern then switches to how we, the researchers, can conduct investigation of a complex problem such as controlling greenhouse gas emissions in a way that builds understanding. Scientists arrogantly claiming the truth about facts in the face of strong uncertainty do not help. Neither do economists arrogantly claiming the truth about the most efficient solutions. None of this means reverting to an extreme postmodern doctrine of belief in strong social constructivism or radical relativism that denies the existence of reality and treats knowledge as a form of storytelling.

Instead we can accept our fallibility and require a far more nuanced comprehension of how knowledge is created and used in modern society. We can recognise there is much consensus on biophysical reality and that this has proven easier to achieve than consensus over economic and social reality. The social world changes faster than the natural world and therefore needs to be reconceptualised more often to be understood. Some facts, relationships and patterns are more uncertain and contestable than others. Some uncertainty is also not susceptible to reduction to a scientific consensus via more research. We then need institutional processes that help address strong uncertainty openly and allow for critical reflection and meaningful public engagement and debate.

Knowledge is power and the creation of knowledge can be seen as a political act most clearly where it directly empowers some and disempowers others. Control over information and its sources then becomes central to holding power in society. The implication is that knowledge is suppressed when it has unpalatable social and economic implications for those in powerful positions.

What this means in the context of carbon markets is that the more established they become the harder they will be to criticise. However, the inherent contradictions of promoting markets to solve the problems of the market economy can only be tolerated as long as the system remains functional. While truths can be obscured, messages rewritten and messengers made to disappear, the resulting loss of knowledge and denial of biophysical and social reality will, in the end, lead to failure. Over time this failure becomes increasingly evident socially, ecologically and economically.

Notes

- 1 For further explanation of the meaning and use of the term naive objectivism and its relationship to the claim that values can be separated from values see chapter 2 of Sayer (2010).
- 2 Since this case, an increasingly vocal group of CSIRO employees have been making complaints about bullying and harassment within the organisation (e.g., Victims of CSIRO <http://victimsofcsiro.com/>). The CSIRO's managers were forced to respond after being held in breach of regulations by Comcare (the official government health and safety at work watchdog), and in 2013 initiated their own inquiry, which reports back to themselves. The consistent suppression and dismissal of whistleblowers and their reports left little doubt among victims that this would be a management whitewashing exercise.

- 3 The one person was my former co-author, who was then asked by his line manager why he was bothering to seek permission? He was told this was unnecessary, but as he insisted he got official approval.
- 4 Dr Clark indicated, at our meeting, that the referees would include Dr Alex Wonhas, a physicist, appointed in August 2009, to lead the CSIRO Energy Transform Flagship, from a job at the management consultants McKinsey & Co. Wonhas had previously co-authored a report on greenhouse gas control costs that claimed to be presenting the 'factual basis' for policy while advocating carbon trading and the benefits of engaging in the CDM (Lewis *et al.* 2008). My paper, besides being critical of emission trading and specifically the CDM, criticised this type of economic cost calculation and efficiency analysis.
- 5 The edited text the CSIRO wanted cut from the document can be found online at <http://www.clivespash.org/OrwellianGuidetoCarbonETS.pdf>.
- 6 This was happening at exactly the same time as the Carbon Pollution Reduction Scheme was being debated in the Senate.
- 7 The organisation, the Australian branch of the society for ecological economics, responsible for releasing the paper online was at the time headed by a senior CSIRO employee. The vice-president, and former president of the society, had also been a senior CSIRO employee, only recently having moved to the Department of Climate Change to directly advise the Labor government on emission trading. In a televised broadcast of the Senate debates on emissions trading in November 2009 he could be seen supplying Senator Penny Wong with answers to various questions. Both the society's president and vice-president were fully aware of the ban on the paper and had previously spoken directly with me about it.
- 8 The journal's publishers, Routledge Journal Division of Taylor & Francis, fearing litigation, wrote to the CSIRO seeking their approval before they would proceed with publication. My previous divisional manager sent them approval on the basis that I had resigned and there would be no CSIRO affiliation, although he simultaneously claimed the paper had already been published; presumably hoping this would affect publication.
- 9 Links to a full-length lecture presentation of the paper, radio interviews, news articles and related documentation, as well as the paper itself, can be found online at www.clivespash.com.
- 10 In response to a question by Senator Eggleston in Senate Estimates, 31 May 2010, Senator Carr's Office denied any knowledge of the letter sent to him by Professor O'Neill on behalf of the journal, *New Political Economy*, or that he had read it, and so denied being able to table the letter as requested.

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