

Conflicting Discourses of Knowledge: understanding the policy adoption of pro-burning knowledge claims in Cape York Peninsula, Australia

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David Ockwell* and Yvonne Rydin **

* Centre for Ecology, Law and Policy (CELP), Environment Department, University of York, York YO10 5DD, UK. Email: dgo102@york.ac.uk

** Centre for Environmental Policy and Governance (CEPG), Department of Geography and Environment, LSE, Houghton Street, London WC2A 2AE, UK. Email: y.rydin@lse.ac.uk

Correspondence address: Centre for Ecology, Law and Policy (CELP), Environment Department, University of York, York YO10 5DD, UK. Phone: +44 (0)1904 430000, Fax: +44 (0)1904 432998 Email: dgo102@york.ac.uk

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Abstract

Using as a case study the dominant pro-burning policy paradigm in Cape York Peninsula, Queensland, Australia, this paper examines how knowledge claims become adopted in environmental policy. Stakeholder views in Cape York are polarised between pro and anti discourses regarding anthropogenic burning, each with their own contested knowledge claims. This paper carries out a discourse analysis of stakeholder views on the use of fire and enhances this with detailed stakeholder consultation and policy analysis. Through this it demonstrates how an examination of the discursive nature of the conflicts and alliances among different knowledge-holders within an environmental policy debate can provide a powerful heuristic approach to fully understanding how contested knowledge claims become accredited and established in policy.

Discourses of knowledge

The days of seeing knowledge, particularly scientific knowledge, as unproblematic are long gone. The insights of the sociology of scientific knowledge have shown us over the last two decades or so that knowledge is socially constructed and shaped by the institutional contexts within which it is generated and accredited. This has given rise to calls for a more democratic engagement with the processes of accrediting knowledge, particularly where it is influential within environmental policy processes. Irwin coined the phrase ‘citizen science’ to describe this prospect (Irwin 1995). In particular there has been an emphasis on creating policy spaces for deliberative processes in which to debate the role of scientific knowledge in policy (Bloomfield *et al.* 2001; Petts 2001; Smith 2001). This has been accompanied by a recognition that different kinds of knowledge can be important within policy - local, lay, experiential and intuitive knowledge have all been identified as having a contribution to make. The ideas of Jasanoff on the co-production of knowledge and policy show that there is scope for redefining what counts as knowledge within policy contexts (Jasanoff 1990). For those who argue that social constructivism results in the denial of a material reality, Latour has demonstrated that such social construction can incorporate the agency of material reality itself in the form of actants (Latour 1999). Even if some find Latour’s ideas contentious, the debate between Demerit (2001a; 2001b) and Schneider (2001) makes it clear that few scientists themselves deny the significance of construction processes. As Schneider says (p.338):

“As a natural scientist working at the social interface (climate effects, impacts, and policy issues) and as the founder and editor of the interdisciplinary journal *Climate Change*, I have long been swayed by the arguments of the Science and Technology Studies (S&TS) community that science is not the value-free, objective enterprise it often prides itself as being.”

Recent debates in *Science Studies* have also emphasised that social construction is now coming to terms with the testing of knowledge claims rather than accepting all claims as relevant knowledge (Collins & Evans 2002).

This raises interesting issues of exactly how, in policy contexts, knowledge is constructed, alternative knowledges accredited and conflicts between such knowledges handled. To date, it has been assumed that the most interesting questions are those concerning engagements and conflicts between accredited, scientific knowledge and other forms of knowledge. Wynne's seminal article (1996) on sheep farming in the Lake District in the aftermath of the Chernobyl nuclear accident set the accredited and generalised knowledge of government scientific experts against the detailed and contextualised local knowledge of farmers. Not all knowledge conflicts, however, are of this kind. Conflicts between different proponents of scientific knowledge remain common and pertinent. In the case we examine here there are conflicts between scientists, conflicts between scientists and local stakeholders, and also alliances between local stakeholders and scientists. Here, alliances between different knowledge-holders were built up over time resulting in a conflict between alliances, in which knowledge claims figured significantly.

Understanding knowledge conflicts is of direct relevance to the field of Green Politics in helping to analyse situations where existing environmental policy positions represent a taken for granted status quo. An example of one such policy position that might be better understood by attending to knowledge conflicts is the simple tree planting policy that dominated the response to the African fuel wood crisis in the 1970s and 1980s (see Leach & Mearns 1996). Governments and donors for a long time ignored the knowledge claims of those who challenged the policy status quo. Now, however, it is widely recognised that the perceptions of the problem that justified the tree planting policy response did not account for the complexities of the problem faced by those people whose livelihoods were actually affected by the fuel wood crisis (Adams *et al.* 2003). The

knowledge claims of those who originally contested the tree planting policy approach have since been adopted into mainstream policy and provide a far more effective, if more complex, approach to tackling the problem of fuel wood scarcity.

Our argument is that conflicts and alliances between different knowledge-holders can only be fully understood through examination of the discursive bases of the various linkages. Testing knowledge claims in the pursuit of a more-or-less consensus on what should count as truth is rarely actually undertaken within policy contexts; this was Jasanoff's argument. Furthermore, in many environmental contexts, such testing to generate consensus will often be a mirage. Ecosystems are inherently variable and complex, a fact often obscured by the simplicity with which environmental problems are portrayed and policy solutions prescribed. As a result of such variability and complexity, environmental issues are characterised by high degrees of uncertainty (see, for example, Barbier *et al.* 1995:159; Barkham 1995:83; Neumayer 1999:100-101; O'Riordan 1995:8). In addition, as Dryzek (1997:198) points out, when ecological systems interact with social, economic and political systems through the policy process, the degree of uncertainty associated with environmental issues is greatly magnified, a situation that Hajer & Wagenar (2003:9) refer to as policy making under conditions of "radical uncertainty".

Such uncertainty increases opportunities for knowledge conflicts. The play of power and political pressures are inevitably implicated in such conflicts. After all, it is widely recognised that environmental issues are invariably linked to issues of resource distribution and, as a result, there are always political implications of any environmental policy (see, for example, Flournoy 1993; Rees 1990:351; Wheeler & McDonald 1986). Such political influences always need to be considered, and we make reference to them below in our analysis. It has been increasingly recognised, however, that a power-based account will be insufficient to explain dynamics and outcomes. Indeed, some argue that the very concept of power itself has to be rethought to take

account of the diffused nature of control in modern societies; the recent influence of this Foucauldian perspective has been quite profound (and is discussed further below). Our argument is that a discursive account must be an element of understanding knowledge conflicts and how they are apparently “resolved” as different knowledge claims become recognised or legitimised. It is worth noting here that whilst we would not wish to argue that any knowledge claim can be so legitimised, at least in the longer term and within wider society, neither would we wish to see discourse as simply cloaking realist reality claims (see, for example, Collins & Evans 2002; Jasanoff 2003; Rip 2003; Wynne 2002; 2003).

Discourse analysis

The term “discourse” is complex and contested with multiple roots in the social sciences and humanities (Hastings 1999; 2000). Dryzek (1997:8) defines discourse as:

“... a shared way of apprehending the world. Embedded in language it enables subscribers to interpret bits of information and put them together into coherent stories or accounts. Each discourse rests on assumptions, judgements and contentions that provide the basic terms for analysis, debates, agreements and disagreements...”

Rather than assuming that policy language is a neutral medium through which ideas and an objective world can be represented and discussed (Darcy 1999), discourse analysts argue that this overlooks the extent to which policy is contingent on social constructions of reality. They see the way that policy issues are enunciated as the outcome of power relations, ideological contestations and political conflict, and also as a source of such influences. Advocates of discourse analysis claim that examining and explaining how language is used in such contexts is crucial for revealing aspects of social and political processes that were previously obscured or misunderstood.

There are a large number of alternative ideas as to exactly how discourse influences the policy process and hence an equally large number of different approaches to empirically analysing discourse in practice (Lees 2004, makes a similar assertion within the context of urban geography). Foucault's work has been pivotal in the development of the study of discourse. Through the study of the history of sexuality, madness and the disciplinary basis of the academy, Foucault, referring to what he called "power/knowledge", developed the idea that knowledge was constructed as discourse and represents the capillary flow of power within society (Bevir 1999; Foucault 1980; 1984; Rydin 1999). Foucault highlights the regulatory power of discourses as they act to select appropriate and meaningful utterances and actions within a struggle for hegemony in the policy-making process (Foucault 1979; 1990; Rydin 1998). Most Foucauldian approaches therefore find themselves discussing hegemonic discursive positions and are best suited to situations where a particular knowledge claim is dominant, indeed so dominant that it is unquestioned and unchallenged (see Darier 1999). Knowledge becomes an institutionalised aspect of society in which it is part of the taken-for-granted assumptions about how the world is understood. This is how power is exercised.

For discursive approaches that lend themselves to accounts of conflicts between differing knowledge claims, we turn instead to Hajer's post-Foucauldian framework. Hajer has taken Foucault's combined concept of power/knowledge and adjusted it to the problem of understanding environmental policy situations (Hajer 1995; Hajer & Wagenaar 2003). Discourse is seen as constituting both text and practice with a strong social constructivist emphasis running throughout (Dryzek 1995; Hajer 1995:17&44; Keeley & Scoones 2000; Richardson & Jensen 2000). In this view discourses are the product of institutional practices and individual activities that reflect particular types of knowledge. They are actively produced through human agencies that undertake certain practices and describe the world in certain ways. Actors do not, however, act within a vacuum. Discourses simultaneously have structuring capabilities as they provide

parameters within which people act and shape the way actors influence the world around them (Hajer 1995; Keeley & Scoones 2000).

Hajer's view of politics involves a struggle for discursive hegemony in which actors seek to secure support for their definition of reality, thus achieving "discursive closure". From Hajer's perspective, discourse analysis is a method to illuminate the social and cognitive basis of the ways in which policy problems are constructed (Hajer 1995:15), with analysis focussing on the socio-cognitive processes in which discourse coalitions are formed. He emphasises the constitutive role of discourse in political processes, but allocates a central role to discoursing subjects though maintaining the context of a duality of structure and agency. Social action is seen as originating in human agency, however, social structures of various sorts exist that both enable and constrain this agency. It is thus possible for agents to achieve policy change through discursive interaction in the context of these structures, but this inherently involves deconstructing the "discursive hegemony" achieved by current dominant political interests.

A central concept within Hajer's framework is the notion of "story-lines". This describes the common adoption of narratives through which elements from many different domains are combined to provide actors with symbolic references that suggest a common understanding (Hajer 1995:62; Rydin 1999). The underlying assumption is that actors do not draw on a comprehensive discursive system; instead discourses are evoked through story-lines. Therefore, by uttering a specific element, for example, "rainforest", a whole story-line is effectively invoked. In this way story-lines can act to define policy problems. The significance of the storyline idea lies in Hajer's assertion that the widespread adoption of a story-line results in the formation of "discourse coalitions", groups of actors drawn to particular story-lines as they reflect common interests (Bakker 1999; Hajer 1995:12-13; Rydin 1999). These actors may not necessarily have ever met and may apply different meanings to a story-line, but in the assumed struggle for

discursive hegemony within the policy-making process, storylines act as the “discursive cement” that keeps the discourse coalition together through the production of “discursive affinities”.

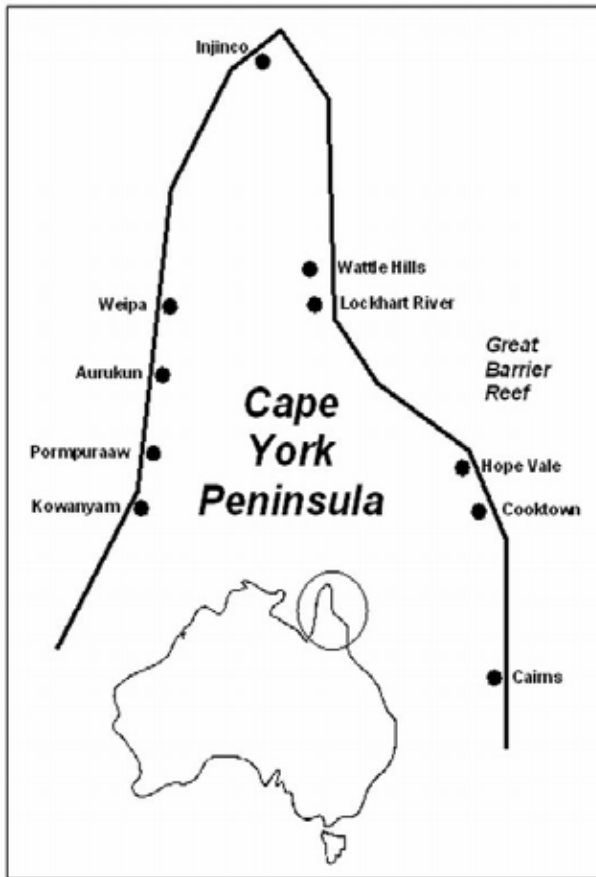
This approach raises the potential for different discourse coalitions to draw on opposing knowledge claims as central elements in their distinctive story-lines. Each story-line would involve a different account of what is true and what counts as a representation of reality. These justified knowledge claims would form part of a more-or-less coherent narrative thread. An example of such opposing discourse coalitions can be seen in contemporary debates about climate change. Those supporting policy action to combat climate change espouse a narrative of the anthropogenic greenhouse effect as supported by “mainstream” science such as that represented by the Intergovernmental Panel on Climate Change. The opposing discourse coalition instead draws on the arguments of “sceptic science” which present alternative truth claims and argue for using a different evidence base for assessing climate change (Demeritt 2001a; 2001b; McCright & Dunlap 2003; Schneider 2001). The point here is not to assess the relative truth claims of mainstream and sceptic science but rather to point to how they are used to support coalitions which then seek to exercise political power, both through their control of material, economic and political resources, and through their command of the policy discourse. In Hajer’s approach, story-lines also play an essential role in positioning actors, adding credence to the claims of certain groups and rendering those of other groups less credible. In this way story-lines also act to create social and moral order within a given domain as devices through which actors are positioned and ideas of blame, responsibility and urgency are attributed. Knowledge claims are thus closely inter-related with moral claims.

In our case study, we undertake an analysis of the story-lines and discourse coalitions involved in a particular case of conflicting knowledges concerning anthropogenic burning in Queensland, Australia. We amplify the account in these terms with a more detailed rhetorical analysis, which

adds depth at the level of specific words and tropes (Dryzek 1997; Myerson & Rydin 1996; Rydin 2003). The case study is outlined below.

Case study: Anthropogenic burning in Cape York Peninsula, Queensland

Cape York Peninsula (Cape York) is situated at the north-eastern tip of Queensland, Australia (Figure 1). Consisting of an area roughly equivalent in size to England, Cape York has a low population density with just 18,000 people concentrated mostly in a few mining towns and Aboriginal reserves as well as scattered cattle stations. Northern Queensland, including Cape York, is thought to have a long history of anthropogenic fires stretching back at least 40,000 years (some estimates date it as far back as 70,000 years), coinciding with the arrival of the first Aborigines (Stocking & Mott 1981). Rhys Jones (1969) popularised the idea of ‘fire-stick’ farming to describe the practices of Aboriginal land users in which low-intensity, early dry-season burning was used across small areas to drive game into specific hunting grounds and to increase the productivity of resource rich areas such as monsoon forests.¹

Figure 1. Map of Cape York Peninsula

Today, however, there is considerable controversy over knowledge about the impact of Aboriginal use of fire on the ecology of Australia. In particular, a debate persists as to whether, in tropical northern Australia, Aboriginal burning caused the recession of earlier rainforest in favour of savannah or whether the recession of the rainforest was actually the result of climate change (Bowman 1998; 2000; Flannery 1994:217-36; Hill 2003:178-9; Rose 1996:64). Bowman (1998:2) highlights the lack of scientific consensus surrounding this debate characterising it as “an inherent circular argument concerning the cause and effect of climate change, vegetation change, and burning through the late Quaternary.” What is, however, widely accepted is that in modern times the pattern of burning in tropical northern Australia has changed, coinciding with the displacement of Aborigines by European settlers. Anthropogenic burning is now often

characterised by late dry-season, high-intensity burns with increased fuel loads over larger areas that has reduced fire-sensitive vegetation in some areas. At the same time, the absence of previous traditional burning practices in other areas has consequently enhanced fire sensitive ecosystems (Bowman 1998; 2000; Gill *et al.* 1990; Hill 2003).

Cape York Peninsula is a typical example of such changes in burning practices. The dominant land use in Cape York is fire-assisted pastoralism. Pastoralists tend to burn the land to encourage the growth of green grass for their cattle to feed on. There are also significant areas of Cape Yorkⁱⁱ set aside as national park and wildlife reserves under the control of the state government controlled Queensland Parks and Wildlife Service (QPWS) who also use fire extensively as part of their land management approach. It is estimated that around 80% of the total area of Cape York currently burns each year (Cape York Sustainable Fire Management Programme, personal communication, 2004).

State government policy in Cape York is in favour of the use of fire as a land management tool. This can be seen in both the policies of the Queensland Rural Fire Service who are responsible for policing the use of fire and the policies of those state government departments with jurisdiction over environmental considerations in land management. The principal legislation governing the use/misuse of fire in Queensland is the Fire and Rescue Services Act 1990 which establishes the Queensland Fire and Rescue Authority as responsible for the protection of life, property and the environment. As Cape York is predominantly rural land, the lead government agency with responsibility for fire in the region is the Queensland Rural Fire Service, the arm of the Queensland Fire and Rescue Authority that deals specifically with fire in rural areas as distinct from urban areas.

The Queensland Rural Fire Service released a Position Statement to the Queensland State Government in 2001 based on consultation with regional stakeholders in each bio-region of the state, including Cape York (RFS 2001). This outlines the Rural Fire Service's intended direction for the 21st century.ⁱⁱⁱ The 2001 Position Statement endorses the "Permit to Light Fire" system that currently defines the legal requirements for lighting fires on Cape York. A network of local volunteer Fire Wardens appointed by the Rural Fire Service administers this system. Wardens are chosen on the basis of assumed local knowledge of their area of responsibility. They are all landholders themselves and their geographical areas of responsibility range from encompassing solely their own land to including theirs and a few of their neighbours' properties. With each property covering tens of thousands of hectares, each Warden is responsible for a vast area of land that usually spans a range of different ecosystem types. If a landholder wants to light a fire, they are obliged to contact their local Fire Warden (usually their neighbour or themselves) and obtain a Permit. This is a simple process involving the provision of information on when and where they are going to burn. The Fire Warden then issues a Permit to Light Fire based on the Warden's own discretion and their asserted knowledge of the local area.

Although the Fire and Rescue Services Act 1990 establishes the Queensland Fire and Rescue Authority as responsible for the protection of life, property *and the environment*, in practice, they tend to treat fire solely as a public safety issue as opposed to an environmental issue. The Rural Fire Service's 2001 Position Statement specifically states that, aside from dealing with smoke management issues, it does not take responsibility for environmental issues associated with fire; "the Lead Agency across Government for environmental issues should be the responsibility of other Government Agencies, not the Rural Fire Service" (RFS 2001:1-1). Smoke management is of little concern in Cape York due to the enormity of the space involved and the sparse level of human inhabitancy. The 2001 Position Statement also highlights the fact that "the local volunteer Fire Warden should not be responsible for policing environmental issues" (RFS 2001:1-1) on the

basis of them possessing insufficient knowledge to do so. The recognised knowledge claims reside with the central agency. The 2001 Position Statement responds to the requirement under the Fire and Rescue Authority Act 1990 for the Queensland Fire and Rescue Authority to be responsible for the protection of life, property *and the environment* thus: “ ‘Environment’ under the Fire and Rescue Authority Act 1990 needs to be defined given an increased understanding of environmental issues since the introduction of the Act ...” (RFS 2001:1-2), again emphasising the Authority’s control of such “understanding”.

Knowledge claims are also recognised on the part of the state government’s Department of Natural Resources, Mines and Energy. This Department has released various reports which promote the desirability of fire for hazard reduction and habitat management (Marlow 2000). As outlined above, they sometimes have agreements with landholders that encourage them to burn for habitat management purposes, including weed management and species conservation (Crowley *et al.* 2003; DNR 2001). The Department of Natural Resources, Mines and Energy also recognise the use of fire for “pasture improvement” as desirable (Marlow 2000:30-1). This refers to the benefits of burning grassland to encourage the return of nutrients to the ground.

The only federal government influence on the use of fire in Cape York comes indirectly via the funding of the new Natural Resource Management scheme, a scheme that is also based on claims of understanding the issue in an accredited way. Within the constraints of federal standards and targets (2003), state governments have been given responsibility for developing Natural Resource Management Plans across the states. Queensland has done this on the basis of individual bioregions, a scientific construct. Interestingly, in every other bioregion except Cape York this has been achieved via a process of consultation between stakeholders and a decision-making group made up of members of the community. In Cape York, however, the decision-making group consists solely of government employees known as the Cape York Interim Advisory Group

(CYIAG). The Draft Cape York Peninsula Natural Resource Management Plan's only direct reference to fire management is in recognising the success of the Cape York Peninsula Sustainable Fire Management Project, a project set up to monitor fire on Cape York and provide internet-based satellite information to local stakeholders on the extent and spread of fires with the aim of improving fire management. The Draft Plan states an intention to continue this Project's funding (CYIAG 2004). It is notable that this has been met by particular objection from some of those involved in promoting the interests of Aboriginal people. They see the continued funding of Euro-centric scientific fire research as a contemporary form of colonisation that diverts resources away from Aboriginal land users who need support in re-establishing links with the land and resuming past Aboriginal land use practices (Balkanu - Cape York Aboriginal Development Association, personal communication, 2005).

The policy context outlined above highlights the fact that policy in Cape York today tends to be unquestioningly pro-burning and that the knowledge claims of the various state organisations are used to support this position. This is not, however, a view that is shared unanimously by all local stakeholders in Cape York. Whilst there are those stakeholders who are pro-burning, including Aboriginal communities, pastoralists and government scientists whose rationales for burning were explored above, there are also two key stakeholder groups who are predominantly anti-burning. These are the residents of Wattle Hills^{iv} (a self-sufficiency community pursuing sustainable forestry practices on their 35,650 ha property), and a number of independent scientists who cite a growing body of scientific and anecdotal evidence that questions the environmental sustainability of the pro-burning policy culture (see, for example, Ockwell & Lovett 2005).

The actors in Cape York are organised around two opposing discourses, constructed as pro and anti-burning, each of which makes reference to knowledge claims in different ways. This strongly drawn distinction sets the context or frame for the policy discussion and, as such, it can support

the argument for two discourse coalitions coalescing around these two opposing perspectives on the use of fire. Whilst a few individual members of these broad discourse coalitions might be observed to draw on knowledge claims that cut across discourses, stakeholder views as represented within policy discussions are polarised between the two diametrically opposing “discourses” of pro and anti-burning. In the ‘pro’ discourse coalition are the stakeholder groups outlined above who are aligned with the pro-burning discourse and in the ‘anti’ coalition are those aligned with the anti-burning discourse.

In order to investigate the nature of conflicting knowledge claims in this case study a detailed discourse analysis was undertaken, using primary data in the form of a series of interviews undertaken between 1999 and 2005 and textual material in the form of a transcript of a seminar hosted by the Cairns and Far North Environment Centre (CAFNEC) in 1992 entitled “Tropics Under Fire. Fire Management On Cape York Peninsula” (CAFNEC 1992).^v The seminar invited stakeholders to come together and give a short (twenty-minute) presentation outlining their views on the use of fire in Cape York. Ten presentations were made overall by the stakeholders that were present. Whilst this seminar was held some time ago and others have been held since, this particular seminar has been chosen for analysis for two reasons. Firstly, analysis of later conferences and extensive consultation with Cape York stakeholders has demonstrated that there has been little change in attitude since the 1992 seminar was held. Secondly, the 1992 seminar provided the widest and most equally proportioned representation of the various stakeholder groups. The transcript thus provides an excellent summary of both the pro and anti-burning discourses from the perspectives of all the key stakeholders and interest groups. This summary was supplemented with understandings gained from later interviews. Double close-reading by both authors of the transcript of the seminar forms the basis of the analysis presented in this paper. As will become apparent from the analysis, the discursive construction of the burning issue engages conflicting knowledge claims in the two opposing pro and anti-burning positions.

Understanding the pro-burning discourse coalition in Cape York

Rather than rely on the simple construction of the two opposing discourses, Hajer's approach points out that any construction of a broad 'anti' or 'pro' discourse coalition will depend on the extent to which the individual story-lines being used by actors support or undermine each other. What is notable here is that the three pro-burning story-lines all represent a slightly different take on the same underlying story about human engagement with nature and hence on how knowledge about this relationship is constructed.

In the Aboriginal story-line, there is a strong emphasis on the historic knowledge of how to use fire gained by millennia of active engagement between the Aborigines and their local environment. This is contextualised with a moral claim that the Aborigines are the "custodians" (p.6) of the land and the anti-colonial discourse about the European repression of Aborigines. As such, the Aboriginal story can rely on strong affinities with the established cause of native title claims, which has gained increasing political credibility since the early 1970s. This reflects Hajer's idea of how moral orders are established through discourse, as blame and responsibility for the historical and current marginalisation of Aboriginal communities is attributed to European descendants to justify prioritising the Aboriginal representatives' views on land management. It also shows how knowledge and moral claims are interconnected. In terms of social practice, it is significant that one of the Aboriginal representatives was asked, out of respect, to open the seminar.

Contemporary anthropological work has sought to challenge the interpretation of aboriginal burning in the past as a management activity, an interpretation that recasts historical indigenous knowledge as a form of modern instrumental knowledge. Rather recent anthropological work has emphasised the previous failure to highlight customary practices, or *processes*, defined by

customary law, as being of equal importance as the actual *outcomes* of Aboriginal fire strategies (Hill 2003:179). The anthropocentric emphasis of the idea of fire-stick farming is also at odds with the Aboriginal understanding of peoples' place within nature. Farming implies manipulation of the land to meet human needs. Aboriginal Australians, however, do not conceive of people as being separate from nature. Their actions, including burning, are defined by custodial responsibilities to the land with any resulting benefits to people understood as an inadvertent consequence of fulfilling these responsibilities (Victor Steffensen, Balkanu - Cape York Aboriginal Development Association, personal correspondence). From this perspective Aboriginal knowledge is profoundly different to contemporary scientific knowledge. Contemporary policy discourses, however, re-frame Aboriginal knowledge in modernist terms and this allows the two knowledge claims to be bound together in related story-lines and, therefore, to support a single discourse coalition.

Although couched in very different terminology, the discourse of the government scientists follows the same narrative thread. Here, there is a need for human engagement with ecosystems to ensure conservation, thus reasserting the modernist duality between 'man' and nature. There are two subsidiary discourses here: a story-line of "habitat diversity" (p.36) preservation through burning, and a story-line of "fuel reduction" (p.37) where fire is promoted as a means of avoiding the catastrophic ecological consequences of naturally occurring fires by reducing the volume of standing fuel. The basis for such engagement is scientific knowledge rather than traditional knowledge but the story is the same. By advocating "patch" or "mosaic burning" (p.31), thought traditionally to have been pursued by Aborigines (p.27), and claiming that it results in ecologically desirable "stable" vegetation patterns, discursive affinity with the Aboriginal discourse is also exhibited. The connection is also facilitated by the construction of Aboriginal practices in scientific terms, with reference to scientific papers on Aboriginal land management and indeed the inclusion of one such paper in the transcripts.

This narrative thread is reinforced again by the pastoralists' discourses, in which everyday economic practices support burning in both environmental and economic terms. This represents a resort to a form of experiential knowledge. Again active engagement between humanity and nature (through burning) is seen as beneficial in the long term. The pastoralist representatives maintain the story-line of fire being beneficial from an environmental perspective at the same time as emphasising the economic desirability of fire. By describing pastures as "botanical communities" (p.29) they claim fire is able to maintain "botanical stability" (p.32) and thus preserve environmental "integrity". This provides a clear example of discursive affinity with the government scientists, which is also evident in their adherence to the story-line of burning being desirable in terms of reducing the risk of wildfire. Discursive affinity with Aborigines is also expressed by stating that the economic benefits derived by pastoralists from cattle fodder through new growth and safe mustering of their herds are the same as those traditionally derived by Aborigines (p.40). As well as the direct economic benefits from pastoralism, burning is also promoted as economically desirable for encouraging tourism by clearing ground for hiking and attracting wallabies and kangaroos to the fresh new after-growth.

Looking in more detail at the rhetoric of the various discourses and story-lines provides additional material for understanding how conflicting knowledge claims are constructed. Starting with the Aboriginal discourse, the key entities here are constructed as: Aborigines with an innate set of rights and responsibilities in relation to the land; nature as a distinct entity; and Europeans, constructed as bearing blame and guilt. While the Aborigines are seen as in tune with the 'natural rhythms of life' and intrinsically seeking to preserve the land, Europeans are constructed as destructive of nature and operating in pursuit of economic profit. These constructions support the pro-burning story-line. Love for and care of the land is therefore equated with the practice of burning; this is also a connection made by the government scientists (p.34).

Analysis of the rhetoric of the government scientists' discourse is very revealing. The main constructed entities are: scientists, constructed as responsible, knowledgeable but also realistic; and ecosystems, a scientific category. This combination of constructions gives the government scientists considerable authority. They are the main means of accessing knowledge about ecosystems. Reference is made to "experience of over 50 years of research" (p.37) that supports government pro-burning policy. One representative states that the government stance on the use of fire is "so clearly established factually" that anyone disputing it should "go and read literature" (p.5).

The government scientists also present themselves in a variety of moral terms - they are responsible, they acknowledge the limitations of scientific knowledge in terms of uncertainty: "we are never going to have perfect knowledge" (pp.12 and 14). They also make reference to the importance of local knowledge and of cultural heritage, thus enabling the detailed connection of their discourse with that of the Aborigines. This is carried further in the way that the key relationships are constructed. Scientific knowledge is seen as justifying traditional practices of the kind undertaken by the Aborigines. Inter-textual reference is made to carbon dating evidence proving a 40,000 year history of the use of fire in Australia to justify an accusation of "supreme arrogance" on behalf of those opposed to burning in terms of "denying the ancient order" (p.34). Science can work with tradition within an overall assumption of the possibility of a positive human engagement with nature to enable management. Indeed, such human management is inevitable and has always happened: "There is no such thing as natural management" (p.13). This puts modern scientific management on a par with traditional Aboriginal management. The ethos of scientific rationality relied on here does not therefore undermine the potential of an alliance with the Aboriginal discourse.

The third party to the dominant discourse coalition, the pastoralists, has a similar discourse in terms of mixing scientific and emotive rhetoric. The pastoralists' discourse again constructs the key entities in terms of, on the one hand, nature in scientific terms – botanical communities with scientific names for species – and, on the other hand, humans as individuals who can act responsibly (although this is identified as an individual choice, not inevitable). The assumed relationship between nature and humans is seen in terms of win-win scenarios as is typical of the broader sustainability discourse. The added value of this discourse over the scientific/traditional management discourses of the government scientists and the Aborigines is that it suggests that economic profit can also be harnessed to the goal of conservation. This makes the combination of the three discourses rhetorically very strong indeed.

And as with the government scientists' discourse, there is a rich use of emotive rhetoric, combining scientific terminology with moral imagery. Thus the pastures are seen as biotic communities with “stability” and “integrity” (p.32), both moral and eco-scientific terms. There is also a use of quasi-religious rhetoric around the references to fire. A more primal form of religiosity is invoked:

“... we are always going to have trouble with fire, as long as some of us feel a thrill, a quickening of the pulse, as we light up the edge of a road, or feel a grim satisfaction as we watch the flames leap up the hillside, because since mankind first learned to use it, everyone loves a fire.” (p.42).

The scientists also see fire in these terms bringing a strong cultural reference point to support the management claims for the burning technique: “mankind has held fire in both a revered and feared position.... Fire has been given God qualities and worshiped” (p.29). The symbolism of fire is linked with the scientific claims for fire as rejuvenating habitats with “old trees sacrificed for new seedlings” (p.12).

Understanding the anti-burning discourse coalition in Cape York

The story-lines of the anti-burning coalition focus on opposing the dominant discourse rather than building links within the coalition. The aim of the proponents of the anti-burning discourse tends to focus principally on discrediting the government scientist story-line of fire being ecologically desirable with the national parks agency, QPWS, constituting the main focus for attack. The Wattle Hills representative promotes a story-line of 'fire as destructive to life' which is diametrically opposite to that of the government scientists. The government 'fire management' line is directly confronted and a non-interventionist, 'let nature take its course' line is promoted instead. Both independent scientists promote a story-line of fire as environmentally damaging. Again, a direct attempt to deconstruct the government scientists' story-line of fire being ecologically desirable is made by stressing the degree of uncertainty surrounding current knowledge of the impacts of fire. Policies involving the use of fire are described as "stabbing in the dark" (p.43). The 'fuel reduction' story-line is also attacked on the basis of increased soil fertility as argued by the Wattle Hills representative. The argument being that in the absence of fire dead matter will decompose resulting in increased soil fertility as opposed to being burnt and therefore losing biomass through combustion.

There is little discursive connection between the 'let nature take its own course' discourse of the Wattle Hills residents and the strong scientific rationality of the independent scientists, with their attempts to link the anti-burning story-line to global environmental story-lines. Indeed the Wattle Hills residents' discourse is positioned as anti-knowledge, rejecting the modernist settlement on which the claims of scientific knowledge are based (Latour 1999). Unlike the discursive connections made by the government scientists and pastoralists with Aboriginal knowledge, there is no attempt here to translate or reframe the Wattle Hills perspective into a version that would be commensurate with other pro-scientific discourses. This has implications for the strength of the anti-burning discourse coalition.

While the Wattle Hills residents emphasise their own credentials as self-sufficiency pioneers, the independent scientists have considerable academic credentials and a strong professional involvement with Cape York including, in one case, having worked on television documentaries on bird life in the Cape. Their scientific background is reflected in the rational, scientific tone of their representations with extensive inter-textual reference made to scientific papers in support of their arguments. Several globally popular story-lines are invoked in support of avoiding the use of fire, including “maintenance of biological diversity” (p.19), combating “increased levels of greenhouse gases” (p.18) and protection of “endangered species” (p.19). There is little attempt to build bridges between the ‘global’ of the scientists and the ‘local’ of the Wattle Hills residents and yet, without this, the ‘anti’ discourse coalition remains discursively weak.

By contrast, the Wattle Hills residents’ discourse constructs humans and nature as part of the same entity; effectively this places humans as part of nature. This undermines the notion of human agency with the appropriate role being one of non-intervention and self-sufficiency. Nature, by contrast, is credited with substantial agency and is also credited with the superior knowledge: ‘nature knows best’. This detailed construction of the Wattle Hills discourse places them at discursive odds with the previous three discourses; it reinforces the structure of the discourse coalitions discussed above. The Wattle Hills discourse does use a limited amount of scientific rhetoric (p.9) but has no rhetorical means of combining the scientific and the emotive and this leaves the discourse as predominantly emotional, a position that is bound to reduce its standing in any policy debate.

The rhetorical nature of their discourse does, however, play a role in constituting the identity of the Wattle Hills residents. They pursue a very different environmental management policy from most other landholders in the Cape and are well known for their community’s alternative

lifestyle, based around self-sufficiency and natural regeneration. This is reflected within their presentation by an overall departure from the rational, scientific approach adopted by the other representatives at the seminar. The discourse here constitutes Wattle Hills as a alternative community but this undermines their attempt to take a central place within the policy debate. There is an attempt to appeal to Cape York landholders with the 'economic advantage' of a fire-free management regime which, it is claimed, will "halt the decline in soil fertility", healthy farmland being a "priceless resource" (p.11). This could be interpreted as an attempt at achieving discursive affinity by engaging with those for whom economic gain is a priority. This is not, however, going to be a winning trope in a debate framed in terms of environmental protection and where scientific rationality plays such a key role.

In contrast to the Wattle Hills discourse, as might be expected, the independent scientists' discourse has parallels with the government scientists' discourse in terms of the pattern of social construction and rhetoric. Humans and nature are seen as distinct and scientific knowledge legitimises certain practices, through revealing the key relationships affecting natural systems. Again scientists are seen as responsible and, again, scientific terminology is combined with emotional language. The difference here, however, is the predominantly negative ethos and loose use of apocalyptic rhetoric such as "destroyed" (pp.17-20), and "disaster" (p.43). There is also the use of tropes that suggest that nature would be better off un-managed. Burning is equated to a violation (p.17), suggesting a preference for a virgin state. And wilderness, presented as unmanaged land, is favourably compared to managed landscapes (p.20), particularly as wilderness is seen as the source of sublime romantic encounters: "a place where we can stand with our senses steeped in nature" (p.20).

The rhetoric used pushes the independent scientists' argument towards the conclusion that humans will inherently destroy rather than conserve nature and that management is opposed to

the natural state of the land. The government scientists, by contrast, managed the 'man' and nature ethos to suggest a more positive message. In policy debates this is going to carry greater weight than a purely negative and oppositional discourse. While such negative rhetoric is highly influential within environmentalism and can help build coalitions among environmentalist groups, it is less effective within government policy settings.

Concluding on a discourse analysis of conflicting knowledges

The analysis presented above suggests that attending to the discursive nature of knowledge contestations can play an essential part in fully understanding the policy adoption of particular knowledge claims. In the case of Cape York, the political influence of the pro-burning coalition formed between the government scientists, Aboriginals and pastoralists is reinforced by the discursive power of their rhetoric, characterised by rational, institutionalised, scientific language, and their appeal to inter-connected storylines. In contrast to the political power of the pro-burning discourse coalition, the weak policy influence of the anti-burning coalition is reflected in the fragmented discourses of the independent scientists and Wattle Hills residents, both of whom lack formal institutional contexts from which to operate, a point that is most obviously reflected in the informal, emotional rhetoric of the Wattle Hills residents.

The discursive strengths and weaknesses of the two coalitions are clearly mirrored in the discourses that dominate environmental policy in Cape York which were highlighted in the case study section above. One of many examples centres on the ecological impact of traditional Aboriginal burning practices, an issue characterised by strongly contested knowledge claims. The pro-burning discourse coalition has been highly effective in forming discursive connections by reframing Aboriginal knowledge into modernist terms that are commensurate with European fire management approaches. This is reflected in the burning policies of both the key state government departments that have specific responsibilities for environmental management in

Cape York; the QPWS (national parks) and the Department of Natural Resources, Mines and Energy. Both these departments cite the maintenance of the habitat diversity that resulted from the long history of Aboriginal burning in Cape York as the ecological basis for their own burning practices.

Another example is the Permit to Light Fire system. This is the central policy framework governing the use of fire by Cape York landholders, which effectively allows landholders relatively unregulated freedom to pursue a pro-burning land management approach. This system reflects the knowledge claims of the pro-burning discourse coalition and institutes none of the checks and balances that would be required if the knowledge claims of the discursively weak anti-burning discourse coalition were accepted as valid policy concerns.

The Department of Natural Resources, Mines and Energy's support for pastoralists' use of fire for "pasture improvement" (Marlow 2000:30-1) provides a further example of discursive strengths being reflected in the policy adoption of knowledge claims. Here the 'win-win' rhetoric of pastoralists has been effective in achieving credibility for the knowledge claim that their primary goal of economic profit can simultaneously be effective in achieving conservation goals, despite the existence of empirical evidence suggesting that fire assisted pastoralism in Cape York is in fact socially sub-optimal from both an economic and environmental perspective (Ockwell & Lovett 2005).

These are just three examples that illustrate the reflection of the discursively strong pro-burning discourse coalition's knowledge claims in policy. There are no examples that suggest that the anti-burning coalition has achieved similar credibility for their claims. Overall, our analysis suggests that a combination of political/institutional and discursive factors contribute to the dominance of the pro-burning discourse within environmental policy in Cape York. Most

importantly, it suggests that an examination of the discursive nature of the conflicts and alliances among different knowledge-holders within an environmental policy debate can provide a powerful heuristic approach to understanding how contested knowledge claims become accredited and established in policy.

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Notes

ⁱ Contemporary anthropologists and many Aboriginals themselves contest this euro-anthropocentric interpretation of Aboriginal burning – this is outlined further later in this paper.

ⁱⁱ Approximately 1,950,000 hectares, or 14.2% of the total land area of Cape York in 2004 and increasing annually (Queensland Parks and Wildlife Service, personal communication, 2005).

ⁱⁱⁱ The Queensland Fire and Rescue Service has since released a Strategic Plan for 2003-2007 (QFRS 2003). There has not, however, been any update of the Rural Fire Service's 2001 Position Statement in response to this.

^{iv} Wattle Hills is a 35,650 ha property in the northeast of Cape York which was once managed as a cattle property but taken over in 1986 by a group of people under the banner of a company named Scudo PLC. A community of Scudo PLC shareholders now live on Wattle Hills and manage the property on a self-sufficiency basis pursuing various sustainable forestry practices

such as tree planting and seed harvesting. Their management practices include the routine exclusion of fire from the property through the upkeep of firebreaks and pro-active fire fighting (see Ockwell & Lovett 2005). Wattle Hills tends to be viewed as “alternative” by many other Cape York stakeholders.

^v Page references in brackets from hereon refer to the transcript of the “Tropics Under Fire” seminar under analysis.

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