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"What sceptics believe": The effects of information and deliberation on climate change scepticism

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Abstract

Scepticism about climate change now appears a pervasive social phenomenon. Research to date has examined the different forms that scepticism can take, from outright denial to general uncertainty. Less is known about what climate sceptics value and believe beyond their climate change doubt, as well as how "entrenched" such beliefs are. In response, this paper discusses research into public reactions to projected climate change in the Australian Capital Region. Using Q Methodology and qualitative data, it outlines five discourses of scepticism and explores the impact regional-scale climate scenarios and a deliberative forum had on these discourses. Results show that both forms of intervention stimulate "discourse migration" amongst research participants. However, migrations are rarely sustained, and sceptical positions are infrequently dispelled outright, suggesting the relationship between climate scepticism, broader beliefs, and the methods used to inform and debate about climate change, are pivotal to comprehending and addressing this issue.

Keywords

climate change, discourse, Q methodology, scepticism

1. Introduction

> What sceptics believe is an important question, because their voices are heard in governments, editors' offices, boardrooms, and – most importantly – the street. (Black, 2007: 1)

In its 2007 Fourth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC) asserted that the scientific evidence for anthropogenic climate change was now "unequivocal" (IPCC, 2007).

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However, there remain many individuals who think otherwise. Public opinion polls suggest that, for example, 10% of Australians (Ong et al., 2010) and 25% of those polled in the UK (Populus, 2010) do not think that the climate is changing in any significant way (see Poortinga et al., 2011), with even higher figures for the USA (Weber and Stern, 2011). Even more believe that – although climate change may be happening – it is not caused by human activity but is the result of natural cycles alone (Gallup, 2010). Therefore when it comes to climate change, it seems that "a non-trivial modicum of doubt and scepticism linger in various sectors of society" (Moser, 2010: 32).

Such "doubt" has been examined as individual dispositions and reactions to the confronting realities of climate change (Norgaard, 2006; Stafford-Smith et al., 2011). It has also been examined as discursive tropes that have waxed and waned in the public sphere, particularly the media (e.g. Takahashi, 2011): as well as an organised social movement in the USA (Jacques, 2006; Oreskes and Conway, 2010) and Australia (see Hamilton, 2007). More recent research has focussed on "what sceptics believe." That is, how scepticism relates to other beliefs and worldviews (e.g. Poortinga et al., 2011; Whitmarsh, 2011), underscoring its articulation with "meta cognitive" frameworks (Scannell and Grouzet, 2010), broad moral and social commitments (see Bamberg and Mösera, 2007), as well as levels of trust and ideological-political leanings (e.g. Zia and Todd, 2010). However, little is known about the "mobility" (Lezaun and Soneryd, 2007) of climate change scepticism. While some argue "most climate sceptics may not hold their views very strongly" (Poortinga et al., 2011: 1021) others suggest that climate scepticism appears "relatively entrenched" (Whitmarsh, 2011: 698): both claims require further exploration, if the "lingering" presence of scepticism is to be understood in depth.

This paper undertakes such analysis, examining how individuals who express climate change scepticism respond to interventions that provide new information in addition to a deliberative experience around this subject. It discusses results of research into social responses to climate change in the Australian Capital Region, drawing on quantitative and qualitative data from 103 one-to-one scenario-based interviews; a 4-day deliberative process involving 35 participants; and 20 follow-up interviews. In particular, it employs Q Methodology to outline discourses produced during the research, argued here as representing different forms of climate scepticism. It then examines what happens to these discourses when "sceptical" research participants are exposed to climate change information via scenarios, as well as public dialogue through participation in the deliberative process: a methodology argued elsewhere as crucial to overcoming the divisive and polarised nature of the climate change debate (e.g. Whitmarsh, 2011).

2. So what is wrong with being a sceptic?

Before discussing the empirical methodology and results of this research, it is necessary to discuss what might be meant by the term "scepticism." Broadly speaking, the answer to this section's heading might indeed be "not a great deal." Developing "intelligent doubts about one's own beliefs and ways of thinking" (Hetherington, 2009: 39) has been a cornerstone of centuries-old ontological and epistemological debates around whether humans can ever truly know the world, ourselves, and others. Here, scepticism is more than just a singular act of casting doubt on a particular piece of information or opinion: shorthand for "I am not sure about that/I have doubts/I don't trust that information." Rather, it is a purposeful and incremental exercise in intellectual humility, which explores the fallibility of one's own knowledge (Hetherington, 2009).

However, within modern public discourse, scepticism stands more for a broader suite of positions and rationales for which no singular definition exists. Terms such as "sceptic" and "denier" have been repeatedly mobilised in ideologically driven wrangles over the reality, causes, and appropriate

collective responses to climate change (e.g. Jacques, 2006). They have also been used to examine socio-cognitive responses to climate change. For example, Stoll-Kleemann et al. (2001) outline how, in Swiss focus groups that discussed responses to climate change, diverse forms of "denial" emerged. These included displaced commitment (e.g. I protect the environment in other ways); condemning the accuser (e.g. you have no right to challenge me); denial of responsibility; and feelings of powerlessness to make a difference: responses that can occur in reaction to a suite of other perceived risks (e.g. Thompson and Schlehofer, 2008: Parkhill et al., 2009). Also Norgaard's (2006) ethnographic work in a Norwegian village shows that even though inhabitants' levels of climate change awareness were relatively high, action was limited or non-existent.

Cohen's (2001) book *States of Denial* argues that responses to events such as genocide include literal denial (i.e. the actual event did not take place); interpretive denial (i.e. the raw facts are not denied but are given a different meaning); and implicatory denial (i.e. it did happen, but has nothing to do with me/I can't make a difference). Such a typology could be applied to responses to climate change. For one, literal denial captures claims that climate change is not happening: a disposition often called "Climate Denial" in popular comment (e.g. Diethelm and McKee, 2009). Interpretive denial encompasses rationales like "it may be happening but is caused by natural cycles/is not that big of a deal": a position sometimes labelled "climate scepticism." And Norgaard (2006) utilises Cohen's typology to suggest her interlocutors are practising implicatory denial i.e. "I know it is happening but has nothing to do with me/I can't do anything about it."

Thus, researchers and commentators now have the means to categorise and discuss different forms of climate change scepticism. However, more needs to be known about how to challenge such scepticism because, as Stoll-Kleemann et al. (2001: 115) argue, there is:

> both a coherence and a rationality to dissonance and denial [that] will not make it easy for democracies to gain early consent for tough climate change mitigation measures. Indeed, this analysis suggests a level of sophistication and cohesion in socio-psychological reactions that will prove difficult to alter, unless very wide-ranging policy responses are integrated over a prolonged period of time.

Suggestions for appropriate "wide-ranging policy responses" include strong leadership (Tranter, 2011); a "more participatory and ethically centered citizenry" (Stoll-Kleemann et al., 2001: 115); and greater public engagement (Lorenzoni et al., 2007). But how does one engage those sceptical about climate change? In terms of communicating climate change, researchers have examined the impact of information framing, as well as engaging different forms of cognitive processing (Marx et al., 2007; Morton et al., 2011). This work has underscored the need to articulate climate change with personal experiences and frames of reference (Macnaghten, 2003); and to avoid "scare tactics" to evoke responses (O'Neill and Nicholson-Cole, 2009).

In addition, the role of public dialogue and deliberation (e.g. Adger et al., 2009) has received some attention, as part of a broader participatory and deliberative turn in environmental decision-making (Dryzek, 1997; Niemeyer, 2004). Here, the ability of individuals to debate values, information, and potential policy actions is claimed to facilitate reflection upon personal beliefs, leading to a more robust public sphere (Baber and Bartlett, 2005). Such processes are, in theory at least, pertinent in addressing climate change scepticism because – as Cohen (2001: 63) argues – scepticism (or denial) is a fundamentally sociological phenomenon. And as "The study of denial is the study of giving and receiving accounts," sceptics accounting for themselves in public deliberative settings could indeed potentially foster significant challenges to their beliefs and concerns: a hypothesis explored in the remainder of this paper.

3. Social response to climate change in the Australian Capital Region: Research design and methodology

The research discussed here aimed to develop greater knowledge about how members of the Australian public currently perceive, and will potentially react to, future climate changes. While research has examined Australians' climate change policy preferences (e.g. Pietsch and McAllister, 2010) it does not illuminate how such preferences and associated practices link to other beliefs, nor how they might respond to projected climate changes. In response, the research reported herein explored public responses to projected climate change for two case study regions in the Australian Capital Region (ACR): the Australian Capital Territory (ACT) and the Goulburn-Mulwaree Shire (GMS). The ACT is a small and highly urbanised state that contains Australia's capital Canberra (population 340,000), with a higher than national average per capita income and education level, and a significant proportion of residents employed in Federal or State government, as well as higher education. By contrast, GMS – which is across the border in New South Wales – is a predominantly rural area, with employment focussed on grazing agriculture, and with the regional town Goulburn (population 21,000) providing supporting services.

These case study areas are set within a national context that has seen sometimes-rancorous debate take place about climate change. For example, an Emissions Trading Scheme (ETS) Bill was defeated in the Australian Senate in 2009, sparking substantial media attention and the Liberal Party political opposition – whose leader has repeatedly made sceptical pronouncements about climate change (see Hodge, 2009) – calling for a double dissolution election (see ABC News, 2010). In 2010 a proposed nation-wide "citizens' assembly" on climate change met with widespread condemnation and was eventually scrapped: while free market think tanks such as the Institute of Public Affairs (see http://www.ipa.org.au), along with the newly formed "Climate Sceptics" political party (http://landshape.org/news) work to actively frame public discourse about climate change in Australia.

To return to the "Climate Change and the Public Sphere" research, its main components were divided into three key phases as follows.

Phase 1: Developing climate change scenarios

A series of climate scenarios was constructed to represent impacts of projected climate change within the ACR over a time frame up to 2100. The scenarios were developed using the Commonwealth Scientific and Industrial Research Organisation's (CSIRO) OzClim model.[1] As a reference point, a Baseline scenario for the year 1990 was developed using the average climate over a 30-year period (1976–2005). Another two scenarios were produced: a Medium scenario based on emissions trajectories associated with the Special Report on Emission Scenarios (SRES) A1B, and a High scenario based on SRES A1FI (see IPCC, 2007).

The scenarios were created with climate parameters for two time-slices: 2050 and 2100. They covered a range of climatic variables relating to temperature, rainfall, growing range for key species and "climatic domain" representation. In most cases the information was produced in map form, except where indicated as data. The changes to scenario parameters in map, graphical, and schematic form were animated between the time-slices to highlight changes occurring over time: all of which can be viewed in full at http://delibdem.anu.edu.au/ccps/scenarios.

Phase 2: Individual scenario interviews

During May 2010 the scenarios were used in Phase 2, which comprised 103 face-to-face interviews held in the ACT and GMS. Interviewees were recruited via mail out invitations, sent to 2300 ACR

households selected randomly from the electoral roll. A total of 262 people responded and registered an interest in participating (188 from the ACT, 74 from the GMS).

The final 103 interviewees (72 from the ACT, 31 from the GMS) were selected by researchers using two main components. First, participants' responses to a questionnaire that accompanied the initial invitations were analysed. This questionnaire asked about beliefs and attitudes towards climate change, with the aim of selecting at least 15 participants who self-identified as uncertain or disbelieving about climate change, to reflect the proportion of Australians falling into this category (e.g. Hansen, 2010; Ong et al., 2010). Second, basic socio-demographic information[2] was utilised and participant quotas derived from Australian Bureau of Statistics data on age, education and gender were deployed to reflect wider population distribution. Overall, the aim was to achieve representation of a variety of attitudes and individuals, with a focus on the former, as the Q methodology deployed to analyse the data seeks to represent discourses around a particular issue rather than "people" per se (see Dryzek and Niemeyer, 2008).

All interviews lasted for at least 2 hours, during which time the Phase 1 scenarios were shown to participants. Q methodology (or Q Method) was used to elicit subjective reactions to the scenarios, analysed using inverted factor analysis to produce a series of factors. These factors were interpreted in the form of discourses against which the positions of participants could be benchmarked. However, while past research using Q Method maps discourses as fixed positions (e.g. Wolf et al., 2009), this research used it as a dynamic tool to track individuals' movements and discursive changes over Phases 2 and 3 (see Niemeyer, 2004; Niemeyer et al., 2005). Thus the overall aim was to collect data about the social dynamics of this issue, and how it might unfold as the climate changes, represented through the Baseline, Medium and High scenarios.

The Q survey (or Q sort) involved participants sorting and responding to a sample of 33 statements relevant to climate change. The statements were drawn from pilot interviews, mass media and parliamentary records. Participants sorted the statements into a forced distribution, where each statement is allocated across a grid containing 11 columns, in a continuum from left (disagree with strongly) to right (agree with strongly), requiring participants to evaluate the statements relative to each other. All interviewees undertook the Q sort three times during Phase 2 i.e. for each scenario (Baseline, Medium, High): and a sub-sample undertook it again twice, at the start and end of the deliberative process (Phase 3). Finally, in October 2010, 20 individuals who had taken part in the scenario interviews only (i.e. not the deliberative process) were re-interviewed, to explore whether any impacts had been sustained or had altered in the ensuing months (Phase 3).

Phase 3: The deliberative forum

In Phase 3, 35 individuals who had participated in the interviews were invited to a deliberative forum at the end of May 2010. Overall the aim of the deliberative forum was to enable participants to learn more about the issues featured in the scenarios through presentations by academic and policy experts on the main topics. In addition, it aimed to provide the opportunity for participants to deliberate with each other, and question experts about the facts and values underpinning climate change debates: all components that deliberative theory and empirics suggest can be effective in fostering deeper understanding, as well as shifting attitudes, around a range of topics (see Thompson, 2008).

In terms of selecting participants, the aim was to achieve a discursively representative sample (Dryzek and Niemeyer, 2008) across the main discourses identified in initial analysis of Phase 2: as well as a reasonable spread of age, gender and education level. To this end, 21 men and 14 women agreed to attend: with the age distribution being 6 participants falling within the 18–29 age category; 5 in the 30–44; 14 in the 45–59; and 10 in the 60–75. The relatively low proportion of females (40%) and younger participants (<30) was not intentional but rather the outcome of ongoing difficulties

faced in recruiting from these groups, particularly given the requirement of sustained participation in a demanding 3-day process. But it also reflects the difficulty in achieving a discursively representative sample within these demographic constraints. Thus, although the selection process used had shortcomings, one advantage is that it works to ensure a range of attitudes among the participants often not adequately captured by demographic categories alone (Dryzek and Niemeyer, 2008).

The actual forum ran for 4 days in total. The first day (Friday 28 May) began with an ice-breaker session; the completion of a pre-deliberative Q sort by all participants; and the setting of deliberative ground-rules by the participants themselves, with the help of the facilitator. The remainder of this day – and the beginning of the following day (day 2) – comprised presentations on the scientific and socio-economic aspects of climate change, along with small group break-out sessions and questions to the floor. In the afternoon of day 2, there were group discussions and a voting exercise on the priorities for action, in terms of mitigation and adaptation. On day 3, participants were split into their respective geographical locations. This was undertaken as the focus of discussion on this day shifted to appropriate policy responses, and both regions have different political and institutional contexts: the ACT is a State with its own Government and GMS is a Shire within the State of New South Wales. Thus, on Sunday 30 May the GMS participants met in Goulburn and on Saturday 5 June the ACT participants met in Canberra. Both groups separately undertook the same exercises, which were small group deliberations on priorities for action, recommended policy approaches – which went through several iterations and revisions after feedback to the main group – followed by the final Q sort and a "closing remarks" session.

Although there is not space within this paper to evaluate if the forum was truly deliberative as argued within the theoretical literature, it did aim to meet criteria for effective public processes (see Chilvers, 2008: 176). For example, the rules of engagement were not imposed by the researchers, but worked out between the facilitator and participants on the morning of day 1, thus giving the participants ownership of the process. Through the talks by academics and policy makers on days 1 and 2, underlying scientific assumptions were made explicit and brought into debate e.g. how exactly do we know that the climate is warming and that sea levels are rising? In all talks, discussions and written material, the aim was to provide appropriate and understandable information; and an emphasis was placed throughout on diversity and difference in terms of not only the viewpoints represented but how individuals chose to engage. Thus overall, the goals of providing participants with information and space to talk were met: with the majority of participants in an exit survey of the deliberative process saying it was the forum – not the interviews – that had had the most impact on them, in terms of rethinking their position and feeling engaged with the issue.

4. How do you know a sceptic when you meet one?

During the recruitment process and interviews, only a small proportion of participants (<10) self-identified as uncertain about climate change, stating either that they did not believe it is happening, or that it is mostly the result of natural cycles, with uncertain impacts a long way off in the future. However, there is a difference between voluntarily identifying oneself as a climate sceptic, and responding to a survey questionnaire that aims to locate those who might be considered as sceptical in some way but do not self-identify as such. Indeed, analysis of recruitment questionnaires and Baseline Q sorts reveal a more complex picture of the multiple forms that scepticism can take, drawn as a flow diagram in Figure 1.

Thus, despite only 10 people labelling themselves as sceptical, 44 out of 103 interview participants held views that can be located in some part of Figure 1. For example, 4 participants stated that climate change is not happening and never will: labelled here as embodying Deep Scepticism,

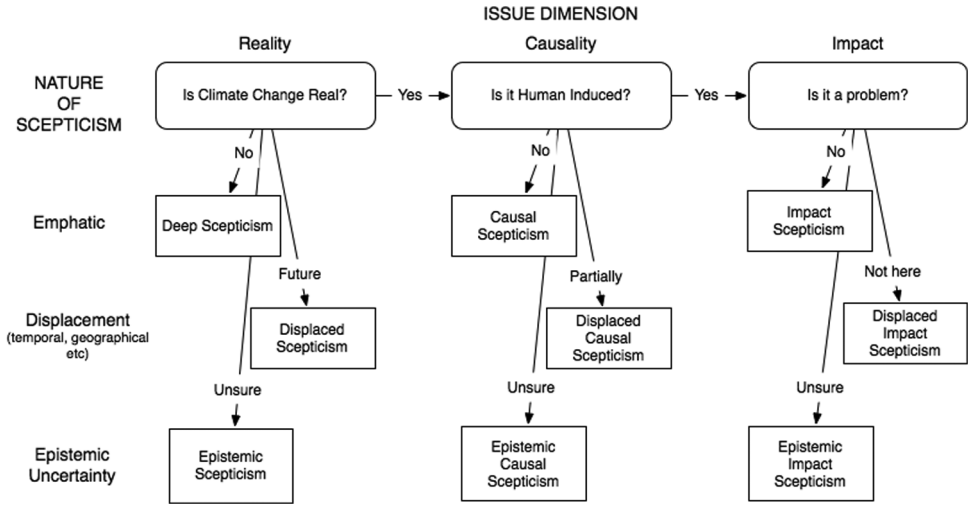

Figure 1. Components of climate change scepticism.

on a par with Cohen's (2001) "literal denial." And the 19 individuals who stated climate change "might be happening but are not sure" can be considered as displaying Epistemic Scepticism, as they are unclear about their own knowledge around the reality of climate change.

The same pattern is repeated for beliefs about the causes and impacts of climate change. In relation to the former, responses ranged from a single Deep Causal Sceptic who outright did not believe that climate change is human induced, to those who thought that humans were only partially responsible for climate change (Displaced Causal Scepticism: 5 individuals), and those who were unsure about causes (Epistemic Causal Scepticism: 2 individuals).

But what more can we say about the individuals who made up Figure 1, beyond the different forms their scepticism takes? While the above schema was a useful starting point to unpack the issue, mapping specific individuals onto each category proved infeasible, as many had a mix of viewpoints and were thus spread across several categories. Moreover, while useful for identifying broad types of scepticism, Figure 1 tells us little about the relationship between individuals' broad opinions and values, and their climate change scepticism.

In response Q Method was utilised to draw out the multifaceted components represented in Figure 1. Analysis followed established Q Method practice of performing an inverted factor analysis (Principal Components, followed by Varimax rotation) on the Baseline Q sorts of the 44 sceptical individuals identified from Figure 1. This analysis created five discourses, given the following labels in reference to their main characteristics:

A: Emphatic Negation
B: Unperturbed Pragmatism
C: Proactive Uncertainty
D: Earnest Acclimatisation
E: Noncommittal Consent

These five discourses are schematically represented in Figure 2 in the form of five overlapping rectangles.

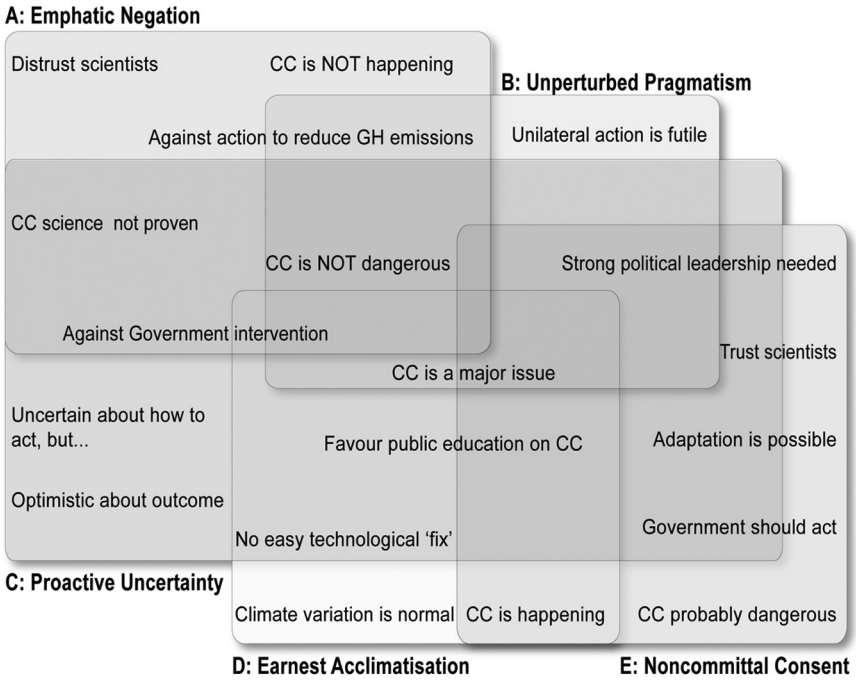

Figure 2. Discourses of climate change scepticism.

Each rectangle contains the main elements of the respective discourse, shown as paraphrased statements from the Q sort.[3] Features that are shared by two or more discourses appear in the areas of overlap. One notable overlap is a stated concern for the environment (or more specifically, the planet), consistent with the propensity of a range of perspectives to proclaim their environmental credentials (Hajer, 1995). Beyond this, there is a good deal of diversity among the discourses, outlined in the remainder of this section.

Discourse A: Emphatic Negation (5 individuals uniquely loaded; 7 significantly loaded). The primary feature of this discourse is the belief that, given the current state of knowledge about climate change, nobody is in a position to say whether it is real or not. Thus any observed changes can and should be put down to climate variation. Individuals associated with this discourse categorically believe that climate change is not happening, and hence distrust comment in the media about the issue. They also dislike any suggestion that Australia should take unilateral action to reduce emissions: a range of opinions shared with, for example, the Australian Climate Sceptics Party. In terms of policy preferences, most preferred a strategy of maximising economic growth, or doing nothing. Thus, this discourse has a lot in common with Cohen's idea of literal denial: but added is a profound distrust of a range of authority figures and a somewhat hubristic conviction in their viewpoint, making individuals loaded onto this discourse actively opposed to talk of, and action on, climate change.

Discourse B: Unperturbed Pragmatism (3 individuals uniquely loaded; 18 significantly loaded). Compared to A, this discourse is less adamant in its climate change denial, although it was still negatively associated with Q statements like "I think it is safe to say that climate change is here." Underscoring this milder form of climate change scepticism is a rejection of proffered policies, wherein an element of impact scepticism seems driven by a form of implicit cost–benefit analysis. For example, discourse B supports the proposition that Australia would suffer economically if it acted unilaterally to reduce greenhouse emissions: again, a refrain commonly found amongst self-proclaimed

Australian climate sceptics (e.g. see http://www.lavoisier.com.au/index.php). And there is little impetus to engage in public education or appeal to stronger political leadership to address the climate change issue. Rather, there is definite, if phlegmatic, optimism that society will be able to adapt to any coming changes: not because of belief in the capabilities of society but because there is still time to take action as any climate change is not yet upon us.

Discourse C: Proactive Uncertainty (4 individuals uniquely loaded; 28 significantly loaded). This is the broadest of all five discourses: a kind of centrist scepticism that shares specific elements with the other four. With discourse A it shares doubt about whether the climate really is changing; and with A and B it shares general impact scepticism. Consequently there is no need to do anything so rash as impose a charge for emissions or divert the attention of government to address the issue. But this is not an emphatic perspective, and appears to adopt a form of hedging by agreeing that, despite the uncertainty surrounding climate change, something should be done about it at individual and collective levels. Moreover, there are no relatively easy technological solutions to the issue. The policy prescriptions that tend to be preferred involve implementing a programme of research and development or dispersed adaption measures that facilitate individuals, communities and businesses to adapt to climate change. Thus discourse C is not as overtly uncertain about climate change as A and B, but neither is it emphatic that something should be done. This suggests a relative indifference to policies that address climate change in a fairly broad sense and thus a tendency towards inaction.

Discourse D: Earnest Acclimatisation (2 individuals uniquely loaded; 13 significantly loaded). Discourse D is most strongly associated with causal scepticism. Its distinguishing feature is a belief in climate change as a natural phenomenon, about which we should be concerned. But, as humans have not contributed to causing climate change, this discourse is strongly associated with a desire to adapt to climate change, but not to reduce greenhouse emissions.

Discourse E: Noncommittal consent (3 individuals uniquely loaded; 29 significantly loaded). Individuals associated with this discourse overwhelmingly come from positions of epistemic uncertainty or, to a lesser extent, causal or impact displacement. That is, they are not emphatic in their scepticism but rather are fundamentally uncertain about key aspects of climate change: a finding backed-up by other research into this topic (e.g. Poortinga et al., 2011; Whitmarsh, 2011). Consequently, there is an overall greater level of concern about climate change compared to the other discourses. There is also a concession that it is probably a real, anthropogenic phenomenon. But the uncertainty means greater emphasis is placed on doing something about potential impacts rather than causes, with adaptation policies rated higher than mitigation.

5. Impact of scenario interviews on sceptics

What impact did taking part in the Phase 2 interviews have on the individuals associated with the above discourses? Figure 3 shows these impacts, using the same diagram as Figure 2 but with arrows that show the "discourse migration" of participants, taken from their Q sort responses to the Baseline, then Medium and High emissions scenarios. The start of each arrow denotes the originating point at the Baseline scenario, and the numbers next to each arrow denote specific individuals.[4] Here, individuals can fall wholly within a single discourse e.g. participants 432 and 473 at the Baseline stage on discourse A. However, many participants map onto overlapping discourses e.g. 2206 is associated with all four discourses B, C, D and E – but less so on B, compared to participant 1461 who is more centrally located on that discourse. The end of each arrow shows individuals' movements after viewing the emissions scenarios.

Overall there is a strong net migration between the Baseline and High scenario towards discourse E. The notable exceptions are the Emphatic Sceptics, 2 of whom (432 and 505) did not

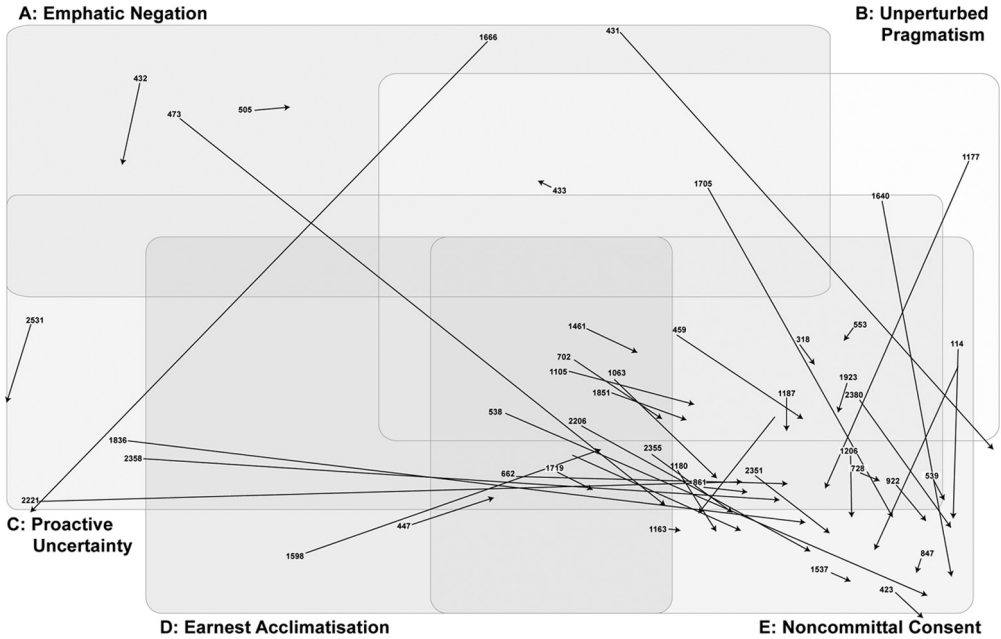

Figure 3. Discursive migrations: from Baseline to High scenario during Phase 2 interviews.

appreciably change position, while the remaining individual strongly associated with A moved toward discourse E. The 2 individuals weakly loaded on A at the Baseline stage (431 and 1666) both changed position: the former moving toward E, the latter towards C.

Overall, during Phase 2 interviews most participants headed, to differing degrees, towards "Noncommittal Consent." This suggests that the interviews saw more adamant forms of scepticism dissipate somewhat, with a growth in optimism about collective ability to adapt. However, a lack of commitment still prevails, founded upon a lingering doubt about climate change being an immediate problem. Thus although there is a willingness to consent to action, there is little impetus to act. Like discourse C, this suggests a willingness to consent, rather than a call, to action.

However, questions remain about how sustained such changes might be. Of the 44 sceptics interviewed, just under half agreed to participate in follow-up interviews that repeated the same conditions as for the Baseline scenario. Figure 4 shows the discourse migrations for these participants, between the Baseline and High scenario in interviews (solid line): and then between the High scenario and the follow-up interviews (dashed line). In about half there is a distinct return to the participant's original (Baseline) position. Thus, participation in the interviews and exposure to the climate change scenarios appeared to have little lasting effect on overall climate change perspectives. Most of those who did change tended not to move toward a less sceptical discourse, especially those who were not associated with E at the outset.

This result is not surprising, as similar outcomes have been noted in analysis across all 103 interview participants (see Hobson and Niemeyer, 2011), as well as in other research into responses to climate change information (e.g. Howell, 2010) and the nature of entrenched individual attitudes, from a social psychological perspective (e.g. Lord et al., 1979; Nyhan and Reifler, 2010). So, if the interviews had little lasting impact, does engaging in deliberation with other citizens – along with interaction with climate change experts as part of a deliberative forum – have a different impact?

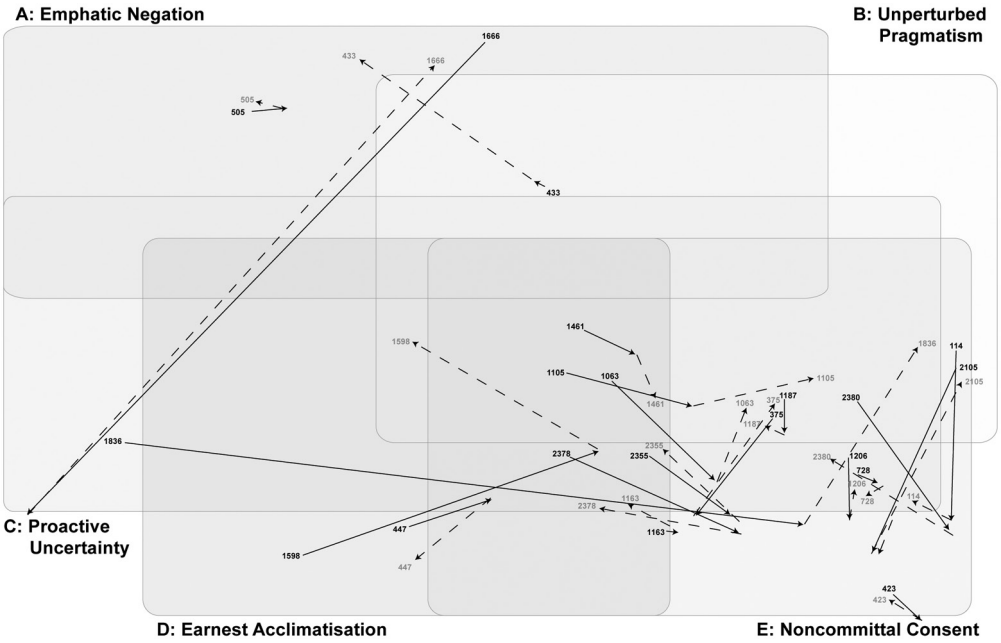

Figure 4. Discursive migrations: from High scenario to follow-up interviews.

6. Talking to sceptics about climate change: What impact does deliberation have?

Of the sceptical interviewees identified above, 13 were selected and invited to take part in the deliberative forum. The discourse migrations for these individuals between the Q sort taken at the Baseline scenario and the post-deliberative Q sort are shown in Figure 5. As in the follow-up migrations discussed above, the figure shows a mixed picture in relation to changes that occurred during deliberation.

Again, there was a general move towards discourse E, with one person (participant 1163) notably moving more towards B, which suggests an increase in "impact scepticism." This participant's migration makes some sense by examining transcripts from the forum, which reveal that this individual was notably affected by the climate scientists who spoke at the forum, whose discussions of the uncertainties underpinning climate modelling evoked considerable debate amongst participants. As he commented:

> With the flexibility of the models … I think that sort of creates some of the uncertainty because there is so much room to shift around in there. I think it makes it very hard for people to collectively say "bang, that's what's happening."

What Figure 5 does not show is that of the 13 sceptics who started the forum, only 11 finished it. By the end of day 1, the 2 individuals uniquely loaded onto discourse A had left. While there is not space here to detail the machinations of how this happened, this is a significant point, in terms of both the dynamics of the forum and broader debates about the role of deliberation in addressing controversial issues. That is, there is uncertainty about whether public processes can attend to "deep"

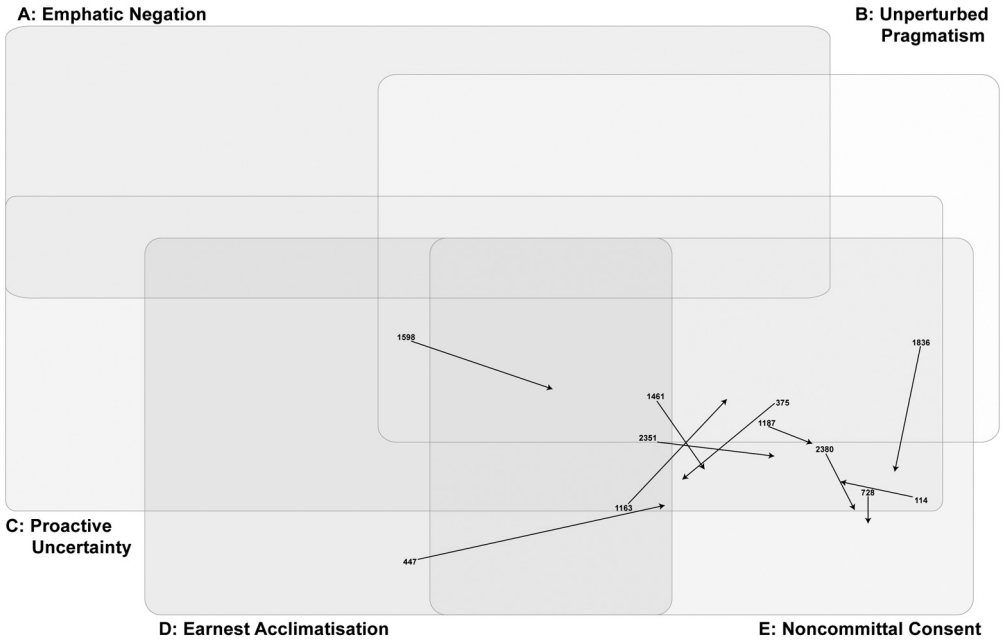

Figure 5. Discursive migrations: from Baseline to post-deliberation.

differences (see Dryzek, 2005) that exist around such contentious issues as climate change. If it is the case that deliberation requires participants to personify the "free and equal citizens" of deliberative democracy theory (Bohman, 2004: 23), what happens when, as Campbell (2005: 693) suggests, participants become "angry, confused, demanding, and uncooperative"?

In this case, the Emphatic Negators arguably came to the forum with little intention of embodying this "free and equal citizen," and of subjecting their beliefs to the same scrutiny they subjected others' to. For example, when asked for clarification by another participant as to whether a statement he had just made was a question or a suggestion, one Emphatic Negator stated "I'm not suggesting … I know. I never ask a question if I don't know the answer." In another session, the same individual had this brief exchange with another participant:

Emphatic Sceptic: What is the ideal global temperature?
Other Participant: That's a tricky question.
Emphatic Sceptic: It's an impossible question: it's meant to be.

However, given the nature of the deliberative process, wherein the principles of fair and civil engagement were debated amongst participants and collectively agreed upon during the first morning, these individuals soon found themselves out-numbered and criticised by other participants: not only for their beliefs, but also for their manner of engagement.

What then happened to the other forum participants loaded on the five sceptical discourses? Some, such as participant 447 – shown in Figure 5 moving from Earnest Acclimatisation towards Noncommittal Consent – stated at the end of the process that: "I'm one that has had reasonable doubts, but he [one of the speakers] put foolproof arguments, so more or less a lot of doubts have gone." However, such shifts of perspective do not signal a wholesale move away from a sceptical position. For example,

participant 2380 signalled his desire to find a way out of the apparent doom and gloom of climate change projections, when he commented:

> There has been a lot said about the negative effects of climate change, but are there more positives? So what about less influenza virus for example if it's warmer weather, I don't know.

Arguably such a comment has resonance with Cohen's (2001) Interpretive Denial i.e. looking for a different evaluation of the implications of climate change than those presented by the forum speakers.

Finally, mention must be made of participant 1598: one of the few participants who stridently self-identified as a climate sceptic throughout the research process, including at the end of the deliberative forum. She talked about her spouse as a firmly committed climate sceptic, and through the forum repeated key sceptical storylines e.g. that the presence of debate and disagreement amongst climate scientists is proof of fundamental problems with their "story"; and the "evidence" of global cooling from the ARGO Buoys adds further weight to such claims. The fact that the initial data from the ARGO programme – that did suggest ocean temperatures cooling – have since been corrected and show ocean warming was not noted or commented upon during the deliberative forum (see Schiermeier, 2007). Indeed, even though this individual continued to publicly espouse a sceptical position, Figure 5 shows that she moved towards a more conciliatory position: that is, from discourses B and D towards C and E post-deliberation. Thus, it would seem that, for this individual in particular, the identity of "the sceptic" has become "an important component of the person's self-concept" (Smith et al., 2007: 2728): and one that would be difficult to alter, in her own mind at least.

7. Concluding remarks

This paper began by asking the question "what do climate sceptics believe?," with the aim of drawing attention to the need for better understanding of the complexities of this now seemingly pervasive social phenomenon. Previous climate scepticism research has outlined the many different forms it can take as well as its articulation with broader worldviews: an approach supported here, as the five sceptical discourses outlined are closely intertwined with other beliefs such as mistrust of institutions and protectiveness towards Australia's national interests.

As well as fleshing out the multifaceted nature of sceptical beliefs in an Australian context, this paper sought to explore how "entrenched" these viewpoints appear to be: a pivotal but under-researched component of this debate. For example, the individuals loaded on discourse A – who might be called climate deniers – were not moved by the scenario interview, and 2 left the deliberative process as they felt, in their words, they were not being listened to. Indeed, qualitative data from the interview and forum suggest that not only were these individuals unmoved, they became more dogmatic and belligerent, suggesting that public climate change communication strategies or interventions can unintentionally alienate such individuals further.

Individuals loaded onto other discourses were more mobile in their beliefs, with a broad overall move towards discourse E: the most accommodating and least strident of the discourses. While this is a positive outcome in one sense, given the time and resources put into both the interviews and the deliberative forum by researchers and participants, that more participants did not move wholly away from a sceptical position raises questions about the forms of intervention required to challenge climate scepticism. In short, if 2 hours seeing (at times quite challenging) climate scenarios for your local region, and then 3 days spent deliberating cannot dispel the myriad of forms of climate scepticism, what will? This question echoes Stoll-Kleemann et al.'s (2001) claims about the "cohesion

in socio-psychological reactions" to climate change, which has been empirically tested in this paper: and is set within a national context where seemingly political recalcitrance and a pervasive public discourse promoting inaction around mitigation have fostered climate scepticism as an acceptable – and indeed at times a laudable – public position.

These findings suggest a rich vein of future research into this area: a vein that this paper has only begun to tap. For example, do the five discourses outlined in this paper suggest a way in which climate change communications could be tailored and targeted at particular groups? If so, how would one identify these groups amongst the population at large: and how would one test the various treatments? Do these discourses appear in other settings within and outside Australia? And what happens to those people who take part in deliberative fora, once the formal process is over?[5] Addressing these and many other questions is both salient and pressing, not only from a research perspective, but also from the perspective of addressing public scepticism into climate change which, as this paper suggests, appears somewhat "entrenched" amongst members of the public, including individuals one might not initially identify as – and who may indeed not call themselves – a climate change sceptic.

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Notes

1. See http://www.csiro.au/ozclim.home.do. A report covering the development of the scenarios is available at http://delibdem.anu.edu.au/CCPS/scenarioreport.pdf.
2. See Hobson and Niemeyer (2011) for further information on the demographic and socio-economic characteristics of research participants.
3. The number of statements in the figure is greater than the number used in the study ($n = 33$). This is because one statement may feature twice, as reactions to some statements were key to creating the discourses, in both their negative and positive framings. To reflect this, the same statement is rephrased to reflect whether there is agreement or disagreement.
4. Throughout the project, participants were identified through a unique number rather than their name, to preserve anonymity and to avoid any confusion due to similar first and/or second names.
5. Initially, this research did intend to re-interview forum participants 6 months later, as in the follow-up interviews. However, due to lack of research funds – as well as participants saying they were "surveyed out" – separate meetings were held in early December 2010 in the ACT and GMS, where research results were fed back to participants for their information and to elicit reactions. Comments made in these meetings suggest participants were feeling less buoyed about the possibilities for collective action than they had 6 months earlier, and few had taken any action personally, although this was not subject to Q Methodology testing.

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