

Political Psychology of Climate Change

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Abstract

In the USA, the beliefs of Democrat and Republican voters about whether climate change is occurring, whether humans are responsible, and the measures that should be used to respond to climate destabilisation differ widely. This paper reviews evidence for a similar politically based polarisation in Australia, and discusses it in the light of the insights of political psychology. At the most fundamental level, the differences arise out of the normal process of human cognition: our attitudes to any input, including a potential threat, are initially determined emotionally. We then use our conscious, deliberative processes to justify our initial, emotionally determined attitudes. The fact that highly consequential political decisions are strongly affected by non-systematic, non-analytical processes receives inadequate attention, but poses enormous challenges for effective democratic response to climate change.

Introduction

Over most of its life the Howard Liberal-National Coalition government (1996–2007) of Australia responded to the threat of anthropogenic climate change in much the same way as for other issues, by minimising any potential impact on its supporters in the country's fossil fuel intensive energy sector and accommodating and supporting the Republican George W. Bush administration in its opposition to effective national and international response.

Over the second half of this period of national government, from 2002 till 2008, the Australian Labor Party (ALP) formed government in all States of the country, and early in that period, these governments worked to develop an emissions trading scheme, which was intended to be introduced in 2010. In response to growing community concern, on 10 December 2006, John Howard established a Prime Ministerial Task Group on Emissions Trading, and on 4 June 2007 he announced that a Carbon Trading Scheme would be in operation in 2012. Response to climate change was a significant feature of the 2007 Federal election campaign, and the perceived greater commitment by the ALP is regarded as a significant contributor to its defeat of the Howard government.

The first Rudd ALP national government published a Green Paper outlining the proposed Carbon Pollution Reduction Scheme (CPRS), and a final White Paper on the scheme in December 2008, and announced that the scheme was intended to come into effect in July 2010. The proposed legislation was supported by the Liberal Party under its then leader, Malcolm Turnbull, but he was replaced in December 2009 by Tony Abbott who did not support action against climate change. Following this, the legislation for the CPRS failed to gain Parliamentary support and lost public support, and in April 2010, the Government deferred it. Following replacement of Kevin Rudd as leader of the ALP by Julia Gillard in June 2010, the ALP was returned without a Parliamentary

majority to govern with the support of the Greens and Independents in September 2010. Prior to the election, while explicitly contemplating putting a price on carbon through an emissions trading scheme, Gillard ruled out a tax on carbon emissions. Following the election and the agreement with the Greens and independent MPs enabling minority government, Gillard announced a carbon pricing scheme that would include an initial fixed price period: this was legislated in late 2011 as the Clean Energy Bill. During 2011 Liberal and National Party MPs, especially Tony Abbott, campaigned vigorously against the legislation, characterizing it as a tax, emphasizing its potential cost implications while largely ignoring its purpose to reduce emissions.

Thus over the current century, Australian conservative party support for action on climate change has oscillated from opposition, to support, to more trenchant opposition to the most symbolically important policy measure, carbon pricing or taxing. Over the same period, the ALP has consistently recognised the reality of human caused climate change, but has been very variable in its enthusiasm for effective action through pricing emissions, and leading party members have largely failed to promote community understanding of the need for effective action. These features of political behaviour have almost certainly been major drivers of the loss of community support for effective action against climate change.

In contrast, the position of Republicans and Democrats in the USA at the national level has been much more consistent – the Republican Party and officials in their trenchant denial of climate change, the Democrats in their recognition of climate change as a reality and a generally, if hesitant and patchy, pro-climate legislative performance by the Obama administration. This polarised party political performance has been associated with large partisan differences of voter belief in climate change, its human causation, the need for action and the nature of the response (e.g. Leiserowitz et al 2011), and an increase in partisan polarisation of such beliefs over the first decade of this century (e.g. McCright and Dunlap 2011).

Australian Climate Change Beliefs

Most Australian surveys of public attitudes to climate change (Bulkeley 2000, 320; Jackman, 2009, 2; Hoyer 2010a, 2; Ipsos 2010, 4; Leviston et al 2011, 4; The Climate Institute 2012, 8) indicate that most Australians believe that the climate is changing and that human activities are responsible to a greater or lesser extent. Reser et al (2011, 1) found that 90 percent of Australians 'believed that human activities were playing a causal role in climate change.'

There have been many public opinion surveys by market research organisations, government agencies and environmental NGOs, some characterised by poorly framed questions, with little or no attention to consistency of question wording over time and between surveys. This makes interpretation of trends hazardous. Nevertheless they form the grist of political commentary and social understanding, and influence - or are used to justify - the decisions of political actors. As Reser et al (2011, 5) note, there has been an increase in the number of surveys including questions on climate change, but

unlike in the USA, until very recently no programmatic research initiatives to measure changes in psychological, social and behavioural responses over time.

Some Australian opinion surveys ask questions about beliefs in climate change, but include only a narrow range of demographic questions (typically age, gender, location), and none on voting preferences or intentions e.g. DECC (2007), McAllister (2008), Lamberts, Grant & Martin (2010), The Climate Institute, (2012), Agho et al (2010). Ashworth, Jeaneret and Gardner (2011) in a survey conducted in October 2010 included a wide range of demographic factors, but not political orientation. The Climate Institute paper reported higher levels of belief by women (69 percent) than men (59 percent) that the climate is changing, and lower levels of belief that the threat of climate change is exaggerated (37 percent of women, 48 percent of men) (The Climate Institute 2012, 14). Ashworth, Jeaneret and Gardner (2011, 26) found that women were more engaged and concerned than men, that the most engaged age group was between 45 and 54 years old, and those most dubious of climate change were more likely to be older, and to be part of childless households. People in the youngest age category of the DECC NSW (2007) survey were more likely than older age groups to nominate climate change as a high priority for government action (DECC 2007, 6), and, curiously, people with children were less likely than those without to do so (DECC 2007, 10). Agho et al (2010, 758) assessed the perception by residents of the state of New South Wales of the threat of global warming, finding that levels of threat perception were lower among males than females; were greater in urban than rural households; increased with level of education; increased with age category from 16 to 54, then declined; and were higher among households with children. Ipsos-Eureka found (Ipsos 2010, 4) that climate change deniers were more likely to be males (11 percent) than females (5 percent), and Liberal Party voters.

In a stratified national survey in May 2010, GA Research explored the relationship between a number of climate and environment related beliefs and practices, and asserted value preference characterized as “Healthy Environment” and “Financial Wealth” (Hoye 2010b). This revealed large differences in perception of climate change and belief about its human causation, with a much higher proportion of those asserting preference for a healthy environment indicating a belief that climate is changing, and mainly due to human activity, as shown in Table 1.

[INSERT TABLE 1 ABOUT HERE]

Level of belief in human causation increased with increasing annual income up to the range \$90,000-\$150,000, then declined, and was higher among women than men (Hoye 2010b, 22).

Support for strong action to mitigate climate change was found to be far greater among those who believe in its human causation than among those who believe that the cause is natural (Hoye 2010c, 10), and among those who value a healthy environment than among those who value financial wealth (Hoye 2010c, 12). Belief in human causation of

climate change was much greater among Greens and ALP voters than among NCP Coalition voters (Hoye 2010a, 2).

Social Science and Climate Change in Australia

Leviston and Walker (2012, 6) of the CSIRO Climate Adaptation group found that when asked whether they believed that the climate is changing, 77 percent responded positively, 23 percent did not; women, younger people and those in higher income households were slightly more likely than men and older people to believe that the climate is changing. When given a wider range of choice regarding their beliefs, about 7 percent said that they did not think the climate is changing, about 4 percent had no idea, and the remainder were more or less evenly divided between those who believe that it is changing due to natural causes, and those who believe that humans are largely causing, or significantly contributing to it. Half of their participants were offered slightly different wordings for the last category question and this resulted in a small but significant difference to the responses, illustrating the importance of consistency of question wording.

Despite the methodological limitations of some of the survey work and inconsistency of question wording, a strong correlation is consistently observed between political party affiliation or voting behaviour and belief about the existence and human causes of climate change. Leviston et al (2011, 6-7) analysed the results from a large number of opinion surveys, finding that beliefs about climate change in Australia, the USA, and Europe divide along political lines, support for left wing political beliefs being associated with higher levels of belief in human causation of and concern about climate change. Reser et al (2012, 104) found higher levels of belief in climate change among Australian Labor Party (ALP) and Greens voters than among voters for all other parties. As Table 2. illustrates, much smaller proportions of Liberal and National Party voters than ALP or Greens voters believe climate change is caused by human activity.

[INSERT TABLE 2 ABOUT HERE]

Leviston and Walker's (2011a) survey was conducted immediately before and during the 2010 Federal election campaign, when addressing climate change was an especially contentious policy issue. Leviston and Walker (2011a, 17), noting the strong correlation between beliefs about climate change and voting intention, suggested that some people's voting intentions may have been influenced by each party's stance on the issue – or conversely - that people's attitudes to climate change may have been influenced by the stances on the issue taken by the party they intended to vote for. Regardless of the direction of this influence, the beliefs of voters at the time of Jackman's (2010) survey - little more than a year earlier – appear to have been much less polarised on party political lines. However it is important to be cautious in comparing results of the two surveys, because the questions asked were not the same. Respondents in Jackman's survey were asked whether they believed that 'human production of greenhouse gases is a leading cause of climate change' (Jackman, 2010, 3), with the choice of five different responses; 'strongly agree', 'agree', 'disagree', 'strongly disagree', and 'not sure'. Respondents to Leviston and Walker's survey had to

choose between: 'I don't think climate change is happening'; 'I have no idea whether climate change is happening or not'; 'I think that climate change is happening, but it is just a natural fluctuation in Earth's temperatures'; and 'I think that climate change is happening, and I think that humans are largely causing it' (Leviston and Walker 2011, 8). This set of responses did not allow for those who believe that humans are partly, but not 'largely' responsible for climate change, at least some of whom may have responded by taking the 'is just a natural fluctuation.' option. This probably resulted in an underestimate of the extent of belief in human causation, and as evidence discussed below suggests, it may well be that it overstates the difference in belief in climate change between Liberal and National Party voters as opposed to ALP and Green voters. Greenhill et al (2013, 14) give some support for this interpretation. They analysed a number of different climate change belief surveys, and noted that if a survey made such a response available, the belief option 'that climate change is a mixture of natural and anthropogenic causes' was chosen by the majority of respondents. Ipsos-Eureka (Ipsos 2010, 4) made the same finding, the option 'climate change is partly caused by natural processes and partly caused by human activity' being supported by 41 percent of respondents, compared with 26 percent who adopted the second most favoured option 'climate change is mainly caused by human activity'.

In a survey conducted in June and July 2010, Reser et al (2012, 78) offered three options for those believing in climate change: 'natural', 'partly human/natural' and 'human activity'. They found that the 'partly human/natural' option was associated with the least variation across political party voting intention, between 40 and 46 percent, independents showing the highest level for that option, 57 percent. Liberal and National voters showed the highest levels of support for 'natural'; ALP and Greens (especially) showed most support for 'human activity' - which over 20% of Liberal and National voters also supported. Importantly, a clear majority of all parties (66 percent of Liberals, over 62 percent of Nationals, 83 percent of ALP and 93 percent of Greens voters) supported either partly human/natural or 'human activity'.

The fact that much larger proportions of ALP and Greens voters chose the 'strongly agree' option than did Liberal and National voters in Jackman's (2010, 3) survey can at least tentatively be interpreted as meaning that respondents have been taking the 'agree' option as meaning support for a mixture of causes, the 'strongly agree' option as support for a larger proportion of human causation.

Nonetheless, the pattern of change from 2009 to 2010, with the proportion of people believing in human causation increasing among Greens voters, declining somewhat among ALP voters, and declining strongly among Liberal and National Party voters, is also consistent with an interpretation that electors had changed their beliefs in the light of the behaviour of the political parties in the interval between the two surveys. Malcolm Turnbull, a strong supporter of action against climate change, lost leadership of the Liberal Party in December 2009 to Tony Abbott, who notoriously described the evidence for anthropogenic climate change as 'crap'; Kevin Rudd, the previous ALP leader who had described climate change as 'the greatest moral, economic and social challenge of our time', was replaced as leader following his failure to secure parliamentary support

for an emissions trading scheme. The differences between the 2009 and 2010 surveys are almost certainly a result of both the difference in survey questions *and* political factors, with supporters of all the parties adjusting their beliefs to conform with the behavior of their respective political leaders, and possibly some former ALP voters with a strong belief in climate change switching allegiance to the Greens.

Leviston, Walker and Morwinski (2012) asked survey respondents in 2010 and 2011 to estimate the general community level of support for each of four beliefs relating to climate change: 'not happening'; 'don't know'; 'occurring but natural'; and 'occurring and largely human caused'. They refer (Leviston, Walker and Morwinski 2012, 1) to two misperceptions well-established in the psychological literature that people have regarding the prevalence of opinions: the 'false consensus effect' (a tendency to overestimate how common one's 'own' opinion is); and 'pluralistic ignorance' (where most people privately reject an opinion they assume incorrectly that most others accept). The authors identify a number of possible reasons for the false consensus effect: people tend to associate with others of similar opinion and worldview; the phenomenon may serve our needs for social support, especially if the opinion is a minority one; and people's own opinions may be more accessible when asked in a survey to estimate the prevalence of different opinions in the broader community.

They found strong evidence for both of these effects among survey participants. Those who believed that climate change is not happening, and those who didn't know, greatly over-estimated the prevalence of those views. In 2010 'not happening' respondents represented 5.6 percent of the sample, but on average they estimated that 43.3 percent of the electorate held that view; 'don't know' respondents formed 3.8 percent of the sample, but estimated 34.7 percent of the electorate shared that view. In 2011, the corresponding figures for 'not happening' were 7.2 and 49.4 percent, and for 'don't know' were 4.4 and 32.7 percent (Leviston, Walker and Morwinski 2012, 2). 'Not happening' respondents in the earlier survey also greatly underestimated the levels of community belief in 'occurring but natural' (average estimate 18.8 percent, actual 40.2 percent), and in 'occurring and largely human caused' (average estimate 19.7 percent, actual 50.4 percent). Each opinion type on both occasions estimated that its own opinion was the most common. Those of the 'happening but natural' and 'happening and human caused' opinions underestimated community support for their opinion. All groups overestimated the prevalence of the 'not happening' opinion, those of that opinion most grossly, followed by 'don't know'; the extent of overestimation by the 'happening but natural' and 'occurring and human caused' groups was much lower. In summary, *the less common a view, the more the holders of that view overestimate community support for it, and the more they underestimate alternative views; the more common a viewpoint, the more the holders of that view overestimate the opposing views and underestimate support for majority views.*

Leviston, Walker and Morwinski (2012, 4) note that the four belief options they offered are categorical; specifically respondents were not offered the option 'happening and partly due to both natural and human causes'. They also note that their scale is strongly associated with political preferences, and with behaviours: people who think that climate

change is 'happening but natural engage in more pro-environmental behaviours, think the impacts of climate change will be more severe and feel a greater moral obligation to respond than do those who think climate change is not happening at all'. The association between this belief and the behavioural and moral responses is clearly not strictly logical, and suggests that some of those giving this response in fact believe that there is *some* human contribution. However, given that human behavior is by no means exclusively rational, we should not confine our search for explanations to the rational: Leviston, Walker and Malkin, (2013, iv) note that 'certainty in anthropogenic climate change is not the greatest predictor of behaviours; rather, *ratings of the importance of climate change* (italics added) are most strongly related to pro-environmental behaviour'. This finding is supported by Reser et al's (2012, 113-118) modelling of the antecedents of climate change behaviour, which showed that such behaviours depend on belief in the reality of climate change, a particularly potent cognitive pathway being from *Belief*, through *Concern*, then *Distress*, and then psychological *Adaptation*, to *Behaviour*. *Concern* and *Distress* are clearly related to perceived importance. Hoegh-Guldberg et al (2010, 23) in their survey of the climate change beliefs of politicians discussed below, found that 2.7 percent of Liberal/National, 19.5 percent of ALP and 64.3 percent of Greens politicians rated 'tackling global warming' as the most important issue facing Australia. Out of 15 policy areas, these were respectively, their equal 6th, equal 2nd, and top ratings of importance. Thus in terms of Leviston, Walker and Malkin's finding that ratings of importance of climate change are the most strongly related to pro-environmental behaviour, the much lower vigour of the Liberal and National Party policies on climate change can be attributed more to the fact that their politicians give much lower importance to the issue, than to their lower certainty about its reality.

Fielding and collaborators at the University of Queensland (Fielding et al 2012, Hoegh-Guldberg et al 2010) conducted an on-line survey of the climate change beliefs and related sources of information of some 300 Federal, State and local government politicians in October 2009. They point to the anomaly that '(d)espite the extensive polling of the general public in many countries around the world that probes climate change attitudes and beliefs, relative prioritisation of the issue, and support for climate change policy, research has not investigated the attitudes and beliefs of political elites even though they are instrumental in promoting or opposing climate change policy' (Fielding et al 2012, 4).

The study produced similar outcomes to contemporaneous population surveys of the variation of belief with political party affiliation. Whereas 88 percent (10 percent) of Greens and 52 percent (37 percent) of ALP politicians 'strongly agreed' or 'agreed' with the statement 'the planet is warming because of human activity producing greenhouse gases', only eight percent (30 percent) of Liberal/National politicians did so (Hoegh-Guldberg et al 2010, 10). The authors noted that 'Liberal/National respondents' average responses in relation to belief in the theory of climate change, and beliefs about the seriousness and the current impacts of climate change are below the mid-point of the scale, suggesting that they hold sceptical views of climate change' (Fielding et al 2012, 15).

The survey also asked respondents to indicate their position on an ideological scale from left to right, and found that belief in climate change decreased from left to right, as well as with political party affiliation (Fielding et al 2012, 19).

The survey asked respondents to assess the priority given by their electorates to climate change. Each party assessed their electorate's priorities as lower than their own, the estimates of community priority decreasing from the Greens to LNP, in line with those given by the politicians themselves (Hoegh-Guldberg et al 2010, 19). This outcome cannot be described as an example of 'false consensus' because the electorates' priorities were not measured, but it suggests that the same mechanisms as drive false consensus are operating in the minds of our politicians.

A similar pattern was observed in terms of the strength of belief that emission of greenhouse gases results in climate change. The perception of their electorates' strength of belief fell from Greens through ALP to LNP, in line with the politicians' own strength of belief. Interestingly, LNP politicians' strength of belief was not different from their perceptions of the strength of belief of their electorates, whereas Greens and ALP politicians reported their levels of belief as considerably higher than their perceptions of those of their electorates (Fielding et al 2012, 2).

It is strictly not possible to compare the University of Queensland's study findings regarding the attitudes and beliefs of politicians with those of the community reported in other surveys because of differences in question wording and differences in the nature of permitted responses (Hoegh-Guldberg et al 2010 use 0 to 10, or five point 'strongly disagree' to 'strongly agree' response scales rather than reporting the percentages responding to a categorical question). In addition their sample was small, and Liberal and National Party politicians are lumped together as 'Liberal/National'. Nonetheless their finding (Hoegh-Guldberg et al (2010, 10) that 8.2 percent of Liberal/National politicians 'strongly disagree', 20.5 percent 'disagree' and 32.9 percent are 'uncertain' of their belief about the statement 'the planet is warming because of human activity producing greenhouse gases' (compared with 2.1, 3.1 and 6.2 percent respectively for ALP) appears in sharp contrast with Reser et al's (2012, 78) finding that over 60 percent of both Liberal and National party voters endorsed 'partly human' or 'human' causation of climate change. At the least, these responses raise the question whether the beliefs of Liberal and National Party politicians regarding anthropogenic climate change are representative of the those of their own party supporters, let alone of their electorates at large.

The perceptions of Liberal and National Party politicians regarding their alignment with their own beliefs can be interpreted in terms of Leviston, Walker and Morwinski's (2012) finding cited above regarding 'false consensus' about climate change. As individuals holding minority views, they are likely to (greatly) overestimate the prevalence of those views in the community and to believe that their views regarding climate change were less different from those of their electorates than would be true of Greens and ALP politicians. The latter, holding high levels of belief in human caused climate change, are likely to underestimate the strength of support for those widely accepted beliefs.

Fielding's study also shows that politicians' views about whether climate change will affect aspects of the Australian environment, in terms of increased bushfire risk, threat to the Great Barrier Reef, Kakadu and alpine ecosystems, drought in the Murray Darling Basin, and ocean acidification, are strongly related to party affiliation. Greens strongly agree, ALP politicians agree, but LNP politicians evince lower levels of agreement or are equivocal about the link between climate change and these outcomes (Fielding et al 2012, 16).

Consistent with their hypothesis that '(p)oliticians' political party affiliation will be a significant predictor of how much they rely on specific sources of information, with politicians relying more on sources that align with their beliefs', they found that Labor and Greens politicians relied more on climate change advocates - environmental groups, and international figures - than did Liberal/National politicians (Fielding et al 2012, 21). Regarding the influence of scientists on their attitudes to climate change, 96 percent of Greens, 84 percent of ALP but only 44 percent of Liberal/National politicians indicated that they were influenced a great deal (Hoegh-Guldberg et al 2010, 17). This selective inattention to scientists by Liberal/National politicians is consistent with the finding that people selectively seek, and attend to, information consistent with their existing beliefs and worldview. Nonetheless, such selective inattention by potential decision makers to scientists about a quintessentially scientific issue is worrying.

Disturbingly, 32 percent of the whole sample said they believed the global average temperature could rise by 4 degrees Celsius before the situation became dangerous, and 7 percent believed a rise of up to 6 degrees would be safe, despite scientific warnings that a global temperature increase of 2 degrees or more could be dangerous. Among Liberal/ National Party politicians, only 7 percent endorsed the 1-2 degrees option, and 38 percent reported that they did not know what level of temperature rise would be dangerous (Hoegh-Guldberg et al 2010, 20).

In 2010, Reser et al, 2011 surveyed both Australian and UK attitudes to climate change, using similar questionnaires in both countries. They found (Reser et al 2011, 1) that a distinctive minority of both populations, approximately 5.8 percent, of Australians and 5.1 percent of the British sample, 'could be characterised as being disbelievers or strong sceptics with respect to the reality of current climate change and/or the causal role of human activities and environmental impacts.'

Reser et al (2012) report findings from a very comprehensive geographically-stratified Australian national survey of risk perception and attitudes to climate change, conducted in July and August 2011, including some comparisons with a similar 2010 survey. They made available a much larger range of options concerning causation of climate change: 'entirely natural', 'mainly natural', 'partly natural and partly human', 'mainly human', and 'entirely human'. Much larger proportions of Liberal and National Party voters than ALP and Greens chose the 'natural' and 'mainly natural' options (Reser et al 2012, 96). However, summing scores in 2011 for 'partly', 'mainly' and 'entirely' yields 94 percent of Greens, 83 percent of ALP, 60 percent of Liberal, and 52 percent of National voters. That is, given the

opportunity, a majority of voters for all parties assert a belief that humans are at least partly responsible for climate change, and the differences in belief across parties are less stark than when people are obliged to make a categorical choice between 'natural' and 'human caused'.

The study included an assessment of objective knowledge about the causes and effects of climate change (Reser et al 2012, 48), and found this declined significantly between the two surveys. The authors speculated whether this was a result of a decline in citizens' confidence in their objective knowledge, in turn a consequence of the continuing lobbying efforts by conservative interests, or a result of the change in the population surveyed, and their real differences in knowledge (Reser et al 2012, 49). The measure was strongly dependent on political party identification, falling sharply from Greens, through ALP, Liberal to National Party (Reser et al 2012, 93). As the authors observe: 'This suggests that 'objective' knowledge is not divorced from ideologies, world views, or party positions on contested and politically loaded issues such as climate change' (Reser et al 2012, 94). Put more bluntly, this pattern of politically determined levels of objective knowledge can be interpreted as biased search for, and avoidance of information consistent or inconsistent with people's political worldview: the substantially lower levels of objective climate change knowledge among Liberal and National voters, for instance, being consequent on avoidance of such knowledge sources.

Discussion – Psychology and Climate Politics in Australia

Summarising the above, Australian community beliefs about climate change display similar features to those found in the USA. A larger proportion of women than men believe that the climate is changing, and are concerned about it. A greater proportion of men than of women believe that the threat of climate change is exaggerated. A much larger proportion of those who value a healthy environment believe in climate change and its human causation than do those who value financial wealth. Though the extent of research linking political orientation to climate change belief is less extensive in Australia, as in the USA, Australian studies show that people's beliefs about whether the climate is changing, and whether the changes are due to human activities, are closely correlated with their political partisan alignment. The proportions of those who believe in human caused climate change are much greater among progressive party voters than among conservative party voters. The proportion believing that climate change is due to natural causes is much greater among conservatives than among progressives.

A more precise understanding about people's belief about human causation of climate change, however, appears to have emerged from recent Australian work. When given options that represents a belief that humans are partly responsible for climate change, a much larger proportion of the community will select such options, and the degree of partisan polarisation of belief is much less than when people are only offered categorical 'human caused' and 'natural' options. Nonetheless, when given those wider options, people who vote Green (especially) or ALP, are significantly more likely to indicate they believe that the climate is changing, and that human activities are responsible, than are Liberal or National Party voters.

The work of CSIRO researchers and those at the University of Queensland, taken together, provide interesting insights into the way in which some well-known features of human social psychology bear on community perceptions of the extent of specific beliefs about climate change, and the ways in which those community beliefs might interact with those of politicians. Those who hold the least common beliefs – that the climate is not changing, and those who profess not to know – vastly overestimate the proportion of the community holding those views and greatly underestimate the proportion of those who believe that the climate is changing, while those who hold the two most common beliefs – that the climate is changing due to natural causes or that it is changing and humans are responsible - overestimate the numbers who do not believe in climate change, and underestimate the numbers who share their much more common beliefs. The minority beliefs are predominantly held by Liberal and National Party voters. It can be reasonably assumed that Liberal and National Party politicians share the (minority) views of their supporters, at least to the same extent, and that they therefore vastly overestimate community support for those minority views, and underestimate community belief in climate change. This likely mistaken belief about community support was illustrated in Fielding et al's (2012, 2) finding that Liberal/National politicians believed that their electors' views about whether greenhouse gas emissions caused climate change were not appreciably different from their own. By the same token, it is likely that both ALP and Greens politicians underestimate the level of community belief in climate change.

Belief among conservative party voters in human causation of climate change fell between 2010 and 2012, when Tony Abbott, the Leader of the Liberal Party was campaigning vigorously against the ALP government's emissions trading scheme, a period when levels of belief by ALP and Greens voters was stable, and significantly increased among Independent voters. This pattern mirrors what happened in the USA between 2001 and 2010. It demonstrates the phenomenon of 'elite cueing', under which people determine their positions on policy issues (and their beliefs that would support them) not on the basis of individual assessment of those issues, but on what their tribal leaders are saying, and which they interpret on that account as being consistent with their preferred worldview. When politicians advocate a partisan view, their partisan supporters adopt it: politicians hear an echo of that view reported to them directly at party gatherings and through opinion surveys. They take this as popular support for it, further supporting their belief in the correctness of that view, and strengthening their advocacy - regardless of scientific advice to which they give selective attention. So partisan support for a political position increases over time, like a positive feedback echo.

The fact that a left-right political spectrum exists is an expression of the fact that people vary in their beliefs and attitudes about a range of political issues in a fairly systematic manner: there is a cluster of beliefs and attitudes that characterise people of progressive orientation and a different cluster of beliefs characterising a conservative worldview. These represent different perspectives on how society should be organised. Progressives are more concerned about equity and believe that the state should

intervene to reduce gross injustices; conservatives are more concerned to maintain order and the current distribution of wealth and power, and believe that individuals should be free to seek their own material advancement without restriction by the state. Like all of our other attitudes, policy preferences in relation to specific issues arise largely unconsciously so as to be more or less consistent with our basic worldviews. The politically differentiated responses to climate change follow that pattern. Among conservatives, climate change represents a challenge to order expressed as relatively stable climate. It therefore promotes an emotional or affect-based response and is rejected. At the rational level it also represents a threat to individual material advancement, and a need for the state to restrict private activity by reducing emissions. For people of a left or progressive orientation, climate change is far less threatening because they are more open to change, less concerned with order and individual material advantage, and hence comfortable with restrictions on emissions.

However, people's political values and worldviews do not arise from a clinical objective assessment of what is best for modern society with a global population of 7 billion faced by human caused climate change and a host of other resource and environmental constraints. Human cognitive processes, which determine the manner in which we form our choices, evolved through selection processes that permitted humans and their precursor species to survive in vastly different biophysical, social, and climatic conditions.

The American Psychological Association's Task Force on the Interface between Psychology and Global Climate Change produced a comprehensive review (APA 2010) of research relating to the role of psychology in understanding human behaviour related to climate change. The report covers the impact of climate change on mental health, the limitations of our cognitive processes in dealing with risks, the psychological barriers that limit individual and collective action on climate change, and what psychology can offer to help deal with the issue and its social consequences.

The report notes that human cognition involves two distinct processes: one evolutionarily older, based on association and emotion, and which is innate, quick, unconscious, and approximate, and represents risk as feeling; and the evolutionarily much more recent system of analytical processing of information, which is slower, deliberative, and conscious, and must be taught (APA 2010, 23). In modern humans the processes driven by emotion and association guide the attention of the systematic process, which can readily be overridden under conditions of stress or anger. Normal human cognition is strongly influenced by affect, or emotion-based biases, resulting in our perceiving issues in a manner that is self- and group-serving, overly optimistic in assessing our chances of success in dealing with issues, valuing potential losses more highly than potential gains, and discounting the future and distant others. Humans determine their attitudes to issues initially on the basis of an association- or affect-based response - a response based on a conceptual connection, a mental link between the issue or object with positive or negative outcomes and emotional loadings that have become associated with it either genetically or through childhood experience. They then use their affect based processes to guide their rational processing capacity to notice,

select and interpret information that supports that attitude, and to selectively fail to notice, reject or misinterpret contradictory information. The authors note when the outputs from the two processing systems disagree, the affective, association-based system usually prevails.

They also note (APA 2010, 23): 'Evidence from cognitive, social, and clinical psychology indicates that risk perceptions, in a broad range of domains, are influenced by associative and affect-driven processes as much or more than by analytic processes' and:

'Global climate change appears to be an example where a dissociation between the output of the analytic and the affective systems results in less concern than is advisable, with analytic consideration suggesting to most people that global warming is a serious concern, but the affective system failing to send an early warning signal.'

The report's description of human behaviour and cognitive processing focuses on the behaviour of ordinary citizens, but is just as applicable to political actors. Politicians use the same cognitive equipment, the same error-prone processes to apply to major decisions as electors use in making choices about their personal responses to risk. They determine their attitudes to risks like climate change initially on the basis of affect or association based processes and then use those affect based processes to guide their rational processing capacity to notice, select and interpret information that supports that attitude, and to selectively fail to notice, reject or misinterpret contradictory information. This selectivity over sources of information about climate change is documented in Fielding et al's (2012, 21) findings about the use by politicians of environmental advocates as sources of information and Hoegh-Guldberg et al's (2010, 17) finding about the influence of climate scientists. Whereas the consequences of an ordinary citizen's selective attention to and processing of information will generally be limited to his or her own immediate circle, the consequences of the same processes operating in politicians will be very much wider and more important. In addition, politicians are subject to very strong and often conflicting demands related to their roles as decision makers on behalf of the nation and as members of a political party seeking political or electoral advantage, and these stresses may well emphasise the role of non-systematic processes in their decision making, and specifically our tendency to discount the future.

Concluding Comments

Accepting the assessment of the climate science community that human caused climate change represents a major threat to civilisation, in addition to the already understood major difficulties in responding to climate change, a number of issues of concern arise regarding the effectiveness of our capacity to respond politically. The policy choices that all politicians make about climate change are governed by attitudes that are strongly influenced by non-systematic cognitive processes reducing the perception of risk; those same choices are strongly affected by political orientation, leading to partisan based selective use and interpretation of climate related information and inter-party conflict over an area of policy that should be common ground; consequent inconsistency of

policy over time leading to inefficiency and ineffectiveness in achieving intended outcomes, to confusion and loss of community support for climate related policy, and increased community partisan based polarisation of belief in climate change and the need to respond to it. Climate change is of course not the only issue to which these concerns apply, only the most critical.

Faced with the above, how should we respond, and who should take responsibility to do so?

One clear necessity is for politicians to understand both the limitations of our common cognitive processes and their implications, and given that psychologists and other social scientists have that understanding, they have a responsibility to raise these insights both directly with politicians through their professional organisations and in other ways, and indirectly through the media.

Major environmental and climate NGOs already make use of psychologists and public relations professionals in the design of public campaigns intended to increase public understanding of the causes and nature of climate change and measures the public can deploy to reduce their emissions. However, there is a real risk that where such campaigns are not designed to minimise this, partisan selective attention to, and processing of such information will simply increase public polarisation. Psychologists and public relations specialists cognizant of the need for climate related market segmentation should be employed for these purposes, as well as to help design strategies and approaches directed at individual politicians and other community leaders, focused on increasing their understanding of the limitations of our cognitive processes and on measures to overcome them, and on building intra-party and cross-party networks of trust and shared understanding.

Finally there is a need for an analytical community discussion of the conflict between the roles of politicians as producers of public policy and as members of parties seeking electoral advantage, a conflict that is producing disastrous policy outcomes in Australia, in relation to climate change and other spheres such as asylum seeker policy.

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Table 1. Climate Change Beliefs and Asserted Value Preferences (Hoye 2010b)

Opinion about Global Climate	Value Preference	
	Healthy Environment	Financial Wealth
Is changing, mainly due to human activity	62%	42%
Is changing, mainly due to natural processes	26%	36%
Is not changing significantly	5%	12%
Unsure	7%	11%

Table 2. Voting intention and beliefs of Australians in anthropogenic climate change.

Year	Greens	ALP	Independent	Liberal	National
2009 ^a	74	78	na	48	52
2010 ^b	83	63	38	28	23
2011 ^c	81	60	40	23	20
2012 ^d	81	65	44	20	17

Sources

a - Jackman (2009, 2-3), b - Leviston & Walker (2011a, 14), c – Pers. Comm. Zoe Leviston, d - Leviston, Walker and Malkin (2013, 11).