

Climate Change Scepticism: Reconsidering How to Respond to Core Criticisms of Climate Science and Policy

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Abstract

The contextual drivers of climate change scepticism are well described and explained in the literature. A key assumption underlying most of the scholarly constructions of the sceptical phenomenon is that the key objections raised by sceptics to climate science and climate policy proposals represent some form of submerged deception or self-delusion on their part. This article refocuses attention on sceptics' central criticisms, and argues that direct responses to these criticisms should not be neglected in favor of a primary focus on sceptics' possible inner motivations. The article investigates the core objections raised by sceptics, with particular attention to the views of one prominent Australian sceptic, Andrew Bolt. We argue that some of these objections should be treated as legitimate forms of dissent, and that ongoing constructive responses to such criticisms are necessary to counter the impact of climate change scepticism.

Keywords

climate change, scepticism, global warming, climate change denial, Leximancer analysis

Introduction

This article poses a very simple question: What are the main concerns raised by climate change sceptics?¹ This is an important question for multiple reasons. First, it is a question that has been neglected in studies of scepticism and sceptics. Scholarly and popular attention has centered on the cultural, ideological, material, and psychological contexts of the sceptical phenomenon. Second, the core views of sceptics, particularly the prominent publicists, filter through to the public. Those in the general public who are receptive would be inclined, one might assume, to appropriate these arguments of the sceptic elites. In addition, thirdly, if one wished to counter or neutralize the sceptical arguments, a thorough understanding is necessary of the types of objections raised by sceptics to both the substance and conduct of mainstream climate science.

Taking notice of sceptics' express objections to the substance and conduct of mainstream climate science would address one of the most enduring criticisms that sceptics have continued to level against mainstream exponents, namely that mainstream exponents are uncritically foreclosing debate, and in the process become guilty of the exact same thing they are accusing the sceptics of, namely, protecting their vested interests, group-think, and pushing an ideological agenda.

Critical exposure of the machinations and sociopsychological biases of certain sceptics can be helpful,² yet we argue that progress in the climate debate will be better

advanced through open discussion and testing of arguments in the public sphere. Progress will not be achieved by avoiding direct engagement with the specific claims of sceptics. Instead, we envision a long, hard-fought victory in which the scientific evidence debate should occupy the foreground. We propose that not all sceptics are of the entrenched/obstinate kind, and that many sceptics sincerely share the values of transparency, critical freedom, and inclusivity associated with serious scientific enquiry.

The article elaborates this argument by first describing the prevailing depictions of climate change scepticism in the scholarly literature, followed by a consideration of the differential influences of scepticism at lay and elite levels. We then outline the specific (Australian) context of the sceptic views that will be canvassed, followed by a brief explanation of how we have used the textual analysis tool, Leximancer, to unpack some key texts. The main sceptical objections are mapped and cataloged, followed by a discussion of their significance and structure. The article concludes with some remarks about a way forward in dealing with climate change scepticism.

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The Scholarly Construction of “Climate Change Scepticism”

A recurring theme in scholarly explanations of climate change scepticism is that when sceptics think about the climate problem, they are heavily influenced by prior commitments (Rudiak-Gould, 2014). Scholars claim that sceptics’ opposition to mainstream climate science and climate mitigation policies is, in fact, a smokescreen for deeper values and consequent disputes about social and economic processes and policies (Dunlap, 2013, p. 695). Climate change scholarship argues that governments need to steer their economies away from heavy reliance on fossil fuels, entailing a major transition with costly adjustments. As such, the role of government, the role of the free market in determining the allocation of resources, and the prevailing consumerist culture in general have come under question. In short, the prevailing status quo is challenged by science-driven plans to reduce society’s reliance on industrial technologies that emit large concentrations of greenhouse gas (GHG), and it is this threat, scholars and observers insist, that sceptics are really targeting through their challenging of mainstream climate science (Boussalis & Coan, 2013, p. 3). The climate issues trigger, it is argued, a defensive reaction from political conservatives (McCright & Dunlap, 2000, 2003, 2010).

The worldview/ideological roots of climate change scepticism have been explored in the work of, among others, Peter Jacques, McCright and Dunlap, and Clive Hamilton. For Jacques, climate change scepticism is a species within the broader genus of “environmental scepticism,” and stems from a deep anthropocentrism among ideological conservatives (Jacques, 2006). In his view, environmental scepticism “guards against paradigmatic changes to world dominant social values and institutions that guide global accumulation and concentration of power” (Jacques, 2006, p. 78). In essence, climate change scepticism is a defense of economic modernity. McCright and Dunlap propose a similar thesis, describing climate change scepticism as one of the strategies deployed by conservatives to counter or undermine environmental “modernization” and associated policy reforms (McCright & Dunlap, 2010, p. 101). Similarly, Hamilton describes climate change scepticism as central to conservatives’ persistent efforts to block the policy strategies of “environmentalism,” which they see as a major threat to Western notions of prosperity (Hamilton, 2010, pp. 101-114).

The idea that climate change has become a battleground for conflicting worldviews is also argued by some political anthropologists. The school of Cultural Theory associated with the work of Douglas, Wildavsky, and Thompson proposes that individuals, when faced with a challenge, tend to favor solutions and strategies consistent with the “worldview” associated with their “cultural type” (Verweij

et al., 2006, pp. 818-821). The Cultural Theory “type” most associated with climate change scepticism is the “individualist,” who according to Thompson favors “individual pursuit of rational self-interest” and “the optimal allocation of resources” through free markets (Thompson, 2003, p. 227). Many of the policy solutions proposed to counter climate change might require major regulatory interventions to reduce GHG-intensive production, but such policy transformations would run counter to the individualist preference for free markets and limited government. As noted by Verweij and colleagues, individualists would tend to discount both the scientific basis of climate mitigation policies and the merits of response policies. By contrast, the individualists would tend to favor perspectives, consistent with their worldview, that nature is resilient and that human innovation and entrepreneurship offer the best prospect for addressing environmental challenges (Verweij et al., 2006, p. 827).

Other scholars have drawn on cognitive psychology for identifying distinct cognitive processes that might contribute to an individual’s stance on the climate issue. Mechanisms such as cognitive dissonance avoidance and assimilation bias have been found to distort the interpretive powers of the individual (Anderegg, 2010; Bell, 1994; Boykoff & Smith, 2010; Leiserowitz, 2005; Marshall, 2011; Poortinga, Spence, Whitmarsh, Capstick, & Pidgeon, 2011; Swim et al., 2010; Whitmarsh, Seyfang, & O’Neill, 2011). These mechanisms explain the significance of ideological, cultural, and other social predispositional influences. Avoidance of cognitive dissonance is the main cognitive-psychological process identified by scholars as helping to explain sceptics’ resistance to the evidence of human-induced climate change. According to Upham et al. (2009), individuals tend to notice and integrate information supporting their existing cognitive schemas, while ignoring or rejecting inconsistent information. If a conflict arises, people will “typically act to reduce the cognitive dissonance by changing their attitude to justify their behaviour, claiming (or perceiving) to have little or no choice in their action, or denying any inconsistency” (Upham et al., 2009, p. 14).

Scholars have also noted other cognitive heuristics or shortcuts, which might facilitate individual biases and misjudgments. Nisbett and Ross (1980) have cataloged diverse ways in which humans err in their judgments, many of which have been applied to explaining climate beliefs. The role of social groups and peer influence have been widely documented as shaping people’s responses to risks and issues (Kasperson et al., 1988, p. 185). Individuals are inclined to, belong to, and remain loyal to “affinity groups central to their personal wellbeing” (Kahan, 2013, pp. 417-418).

A sharply critical interpretation of climate change scepticism has drawn on the notion that such views are potentially pathological. According to this view, sceptics, especially those

engaging in public debate, display some of the behaviors consistent with the “paranoid style”—a term used by Richard Hofstadter (1964) to describe the irrational behavior of extremist fringe elements. According to this claim, sceptics may exhibit the paranoid personality’s sense of disconnection and alienation from the mainstream, and defensively attribute blame to specific enemies. Sceptics are, in the paranoid style, both irrational and extreme in their views. The theme of sceptic irrationalism is often used by champions of climate science (e.g., Hoegh-Guldberg, 2013). A related accusation is that sceptics indulge in conspiracy theories. Some scholars have pointed to impact of the sceptics’ suspicions that “green extremists” and “self-serving scientists” are manipulating the climate debate (Bricker, 2013, p. 220); such conspiracy theories may influence public opinion about the integrity and strength of mainstream climate claims (Diethelm & McKee, 2009, pp. 2-3).

The above constructions of climate change scepticism facilitate two interpretations of the phenomenon. A “hard” and critical interpretation holds that climate change scepticism is a contrived and ideological phenomenon. Sceptics deliberately manufacture heightened doubts about the core claims of mainstream climate science, as part of a strident defense of the status quo. This critique is reflected in the titles of numerous accounts of the activities of climate change sceptics and their political and financial backers (see Dunlap & McCright, 2011; Gelbspan, 1997, 1998, 2004; Hamilton, 2007, 2010; Hodder, 2010; Hoggan, 2009; Leggett, 2001; Oreskes & Conway, 2010; Pearse, 2007; Pooley, 2010). A “softer” interpretation of the phenomenon is that the worldviews are acting indirectly, as background dispositions that are reinforced by various cognitive and psycho-sociological mechanisms noted previously (e.g., Anderegg, 2010; Boykoff & Smith, 2010; Whitmarsh et al., 2011). In this “softer” interpretation, the cognitive-psychological drivers amount to dispositional influences on individual behavior, somewhat like “invisible hands” that guide the debate (Kahan & Braman, 2006, p. 155). Interestingly, the “hard” interpretation is most frequently applied to “elite” sceptics, whose leaders are often accused of cynical bad faith, whereas the “softer” or indirect interpretation is reserved for “lay” sceptics, who are seen as more naïve and less capable of negotiating the complexities of climate change knowledge. It is to this dichotomy that we will turn next.

Elite/Lay Distinctions

Survey research has demonstrated some commonalities among lay sceptics in terms of their cultural and value dispositions. Surveys in Australia (Tranter, 2011, 2014), the United States (Borick & Rabe, 2010; Dunlap, Xiao, & McCright, 2001), Canada (Heath & Gifford, 2006), and the United Kingdom (Poortinga et al., 2011; Whitmarsh,

2011) showed strong associations between several clusters of ideas: conservatism, support for the free market, anthropocentrism, low concern about climate change, high scepticism about climate science, and opposition to climate change mitigation policies. Surveys that focus on political party identification established the same pattern. An Australian survey showed that, even under circumstances of wide public concern about the climate during 2007, political party identifications were strongly correlated with climate change beliefs. Labor and Green supporters were almost 3 times as likely as conservative party supporters to believe that global warming would pose a serious threat in their own lifetime (Tranter, 2011, p. 89). Surveys in later years reaffirmed the partisan divide on the climate issue (Tranter, 2013, 2014). A major study of Australian public opinion on the climate issue (Reser, Bradley, Glendon, Ellul, & Callaghan, 2012) found that 87.9% of Green supporters and 73.6% of Labor supporters indicated concerns about climate change, whereas only half the conservative supporters felt the same.

The links between climate scepticism and political conservatism are also evident at the level of political elites. For example, conservative think tanks in the United States have produced most of the “environmental sceptical” commentaries (Jacques, Dunlap, & Freeman, 2008; Union of Concerned Scientists, 2016), and have strongly influenced the content of the printed media (Dunlap, 2009). A similar trend was found in Australia, where conservative front groups and think tanks have played leading roles in the climate-sceptic campaigns (Hodder, 2010; McKewon, 2012), buttressed by the role of the conservative Murdoch media outlets in promoting climate-sceptic positions (Bacon, 2011; McKnight, 2010). Leaders of conservative parties in the United States and Australia have also been more sceptical of the climate risks than their center-left and progressive counterparts (Dunlap & McCright, 2008; Fielding, Head, Laffan, Western, & Hoegh-Guldberg, 2012). Fielding et al. (2012, p. 712) found that in Australia, “political ideology (left–right) emerged as the most important predictor of politicians’ climate change beliefs.” They found that

politicians from more left-leaning or politically progressive parties (Greens, Labor) had beliefs that more closely endorse scientists’ beliefs about the causes and impacts of climate change and gave greater priority to climate change in their political work. In contrast, conservative politicians were more uncertain and more sceptical about climate change and gave lower priority to climate change. (Fielding et al., 2012, p. 728)

Tranter (2013) found the same pattern: strong majorities of Green and Labor politicians believed (in a 2010 poll) that “global warming will pose a serious threat to your way of life in your lifetime,” in contrast to only a third of conservative

politicians (pp. 405–406). Interestingly, both Fielding et al. (2012, p. 728) and Tranter (2013, p. 412) found that on climate issues the politicians were even more polarized along ideological lines than the voting public.

The similarity of correlations between personal biases and climate opinions at lay and elite levels, however, can obscure important differences in how scepticism is maintained at these two levels. It is reasonable to suspect that laypersons are more passive in both forming and maintaining their climate views, by comparison with elite actors who would be more active in assessing information and reviewing and revising their opinions. Marshall (2009) pointed out that “having neither the time nor skills to weigh up each piece of evidence” the lay person “fall(s) back on decision-making shortcuts formed by our education, politics and class.”

Elites or intellectuals who actively tackle these issues in some depth might be assumed to engage in careful analysis and assessment, rather than simply produce ideological conclusions. We argue that many (though not all) sceptics could be expected to consider their arguments carefully, to be self-aware about their own biases, and argue within “normal” levels of intellectual integrity (Van Rensburg & Head, 2017). Sceptics often claim that their queries and counterarguments are scientifically grounded, and that that they could change their positions if more conclusive evidence, in their estimation, emerged that could dispel their doubts and concerns.

As a background to analyzing one selection of texts in some depth, we first describe the political context of the period in which the views were expressed.

Time Period

Australia has been a hotbed of debate over climate change policy and climate scepticism for a long time. Contestation over the climate issue reached a peak during the period of a Labor national government from 2010 to 2013. Labor introduced a new carbon-pricing scheme (Department of the Environment, 2011) as a result of policy negotiations to secure the formation of a minority government after the 2010 election (Crowley, 2013). Labor gained the support of the Greens for the introduction of carbon pricing, despite substantial business opposition (Christoff, 2013). Public opinion polls in 2011–2012 demonstrated declining support for carbon pricing and lower levels of public concern about the need for decisive climate action (Lowy, 2012, pp. 6–7). The conservative opposition, the Liberal-National coalition, was determined to “scrap the carbon tax.” In September 2013, the conservatives won the election and they abolished the carbon-pricing scheme in mid-2014.

In the following year, the climate issue subsided as an electoral and legislative issue. It did resurface at intervals in the context of two prominent international events—the

G20 summit in Brisbane in November 2014, whose communique included reference to climate policy, and the relatively successful Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) held in Paris in November–December, 2015. But in general, the period from August 2014 to December 2015 in Australia represented a much less heated period in terms of climate policy debates. In other words, it was not complicated by election politics or legislative posturing. Politicians themselves made few forays into the issue, leaving public commentary largely to individuals (sceptics and nonsceptics) who had an enduring interest in the issue.

The issue remained important, despite it subsiding in public prominence. A major survey on the climate change opinions among Australians found that a substantial proportion of the Australian public (38.6%) did not believe humans were responsible for observed climate changes. A small group (7.9%) denied that the climate is changing at all. Combined, these two groups of climate change sceptics outnumbered the people who believe both that the climate is changing and that humans are largely responsible (Leviston, Greenhill, & Walker, 2015).

Sample Composition and Text Analysis

Sole-authored opinion pieces by Andrew Bolt—a prolific and well-known Australian climate change sceptic, journalist, newspaper columnist, radio commentator, blogger, and television host—were collected from the Factiva Database for the period August 1, 2014, to December 2, 2015. A total of 17 unique articles were found in which the words “climate change” or “global warming” occurred either in the title or in the lead paragraph. The list of these 17 items is provided in the appendix. Bolt is regarded as a significant opinion leader for the lay sceptics in Australia. His work mobilizes a range of claims linked to science, political ideology, economic growth, and global competition.

The data set was subjected to a computerized text analysis to highlight the most significant words and concepts. The proprietary text processing software Leximancer was used for this purpose. Leximancer exploits the quantifiable characteristics of a text corpus. Quantifying the semantics of text has the advantage of grounded research, namely, that the data drive the explanation of the phenomenon and potential researcher bias is minimized. Leximancer is specifically designed to “learn(s) in a grounded fashion what the main concepts in a corpus are and how they relate to each other” (McKenna & Rooney, 2005, p. 6).

Leximancer produces a concept map that provides a visual illustration of the main concepts in the text sample and their connectedness. Proximity on the map indicates that concepts appear in similar textual contexts, and vice versa. When concepts appear in polarized positions, it is indicative

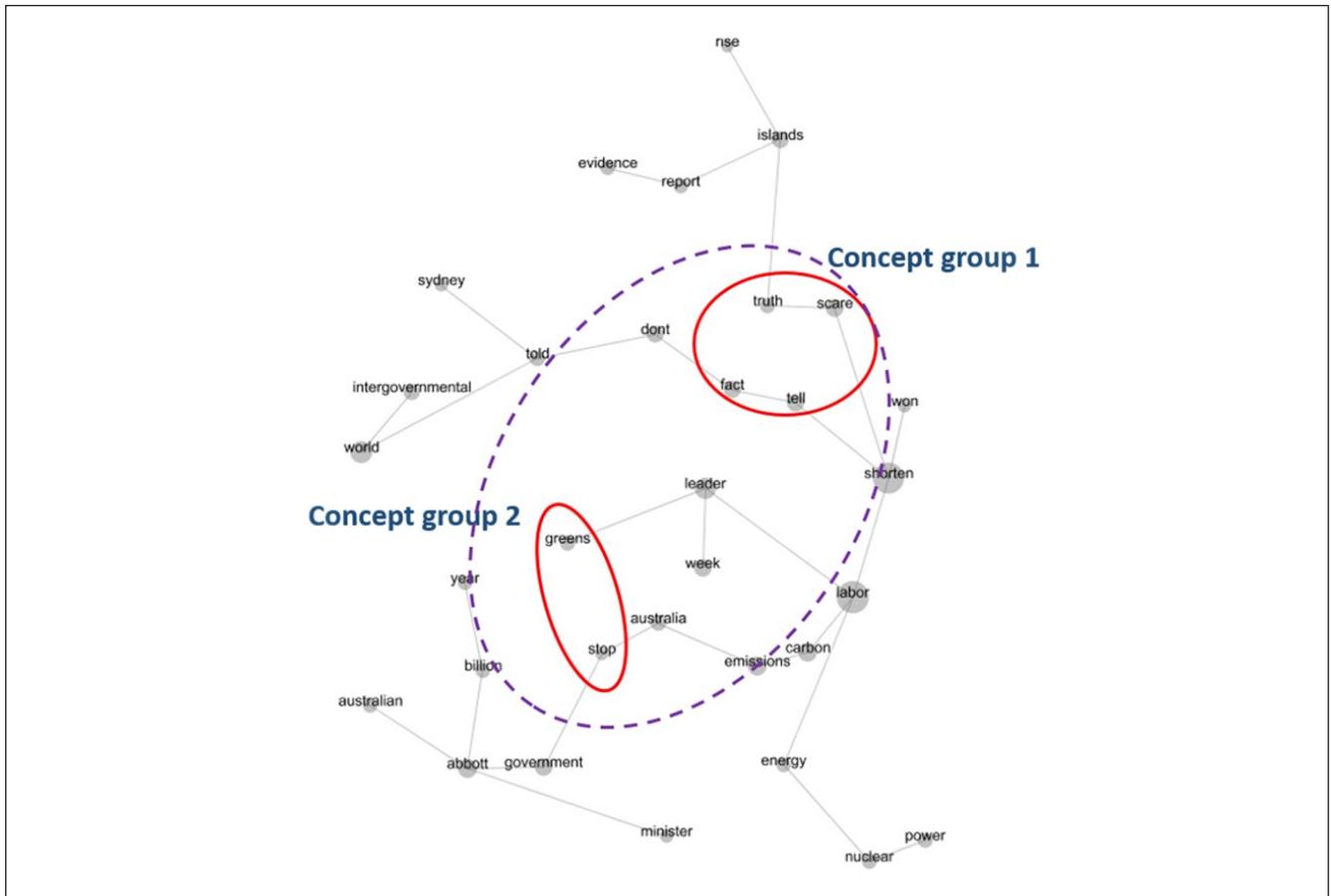


Figure 1. Concept map of the Bolt text sample.

of weak relationships and mutually exclusive contexts, which usually occurs when the author offers multiple distinct, relatively freestanding arguments. The concepts in the center of the map are well connected to most other concepts and are either important grammatical terms (which can be set aside), or point to themes that are important to all (or most) of the distinct arguments in the text.

Findings

Figure 1 shows the concept map of the text sample after being processed by the Leximancer software. The central area of the concept map is encircled by the dotted oval. These concepts are well connected to most other concepts on the map, hence their central location. Some concepts in this area simply reflect the topic of the text as predetermined by the search strategy. The terms “Australia,” “emissions,” and “carbon” would naturally be prominent and central to the views of an Australian about climate change or global warming. Some other concepts in the central area serve generic grammatical purposes, such as “told,” “don’t,” “leader,” “week,” and “year,” and would have low value for understanding argumentative themes.

Table 1. Frequency of Interesting Central Concepts.

Concept	No of occurrences
Scare	20
Fact	18
Tell	14
Truth	11
Greens	11
Stop	11

Remaining in the central area, then, are six concepts (two groups) that potentially add meaning to the general argumentative thrust of the text sample. Table 1 shows their relative frequency of use in the sample.

Concept Group 1 consists of the terms “fact,” “tell,” “truth,” and “scare.” Following are summaries of the contextual use of these four terms:

“Fact”

(The term is often used as a rhetorical device to indicate perceived factual and logical inconsistencies.)

Meaning in use	Typical use
Perceived inconsistencies in the evidence of global warming	<p>“ . . . there’s still been no warming of the atmosphere for 16 years, contrary to almost every prediction . . . ”</p> <p>“ . . . global warming has paused or stopped, with no real rise in atmospheric temperature for some 18 years, according to satellite data from both the Remote Sensing Systems and the University of Alabama at Huntsville . . . ”</p> <p>“ . . . catastrophes predicted by global warming scientists have not occurred . . . ”</p> <p>“ . . . the Brisbane and Sydney dams that former Chief Climate Commissioner Tim Flannery warned could be emptied by global warming by 2010, are today 98 per cent and 92 per cent full respectively . . . ”</p> <p>“ . . . global warming might actually not be that bad after all . . . ”</p> <p>“ . . . researchers at Northumbria University last week predicted that by 2030 we’d suffer not from global warming but a mini ice age, thanks to a fall in solar activity . . . ”</p>
Perceived inconsistencies in the logic of climate change measures	<p>“ . . . will Shorten’s policy cut the temperature by more than 0.002 degrees or in fact less?”</p> <p>“ . . . climate alarmism will actually destroy the economic hopes of the poor and is often a cynical device to enrich the wealthy . . . ”</p> <p>“ . . . this tax, like Labor’s last carbon tax, will make no measurable difference to global warming . . . ”</p> <p>“ . . . current Labor and Liberal plans to cut emissions would lower the world’s temperature by no more than 0.0037 °C . . . ”</p>
Perceived inconsistencies in supportive arguments	<p>“ . . . Syria suffered a serious five-year drought, but that ended four years ago, before the Islamic State became a force . . . ” (In response to arguments that the rise of the Islamic State of Iraq and Syria [ISIS] threat is related to environmental problems in the Middle East brought about by climate change.)</p>

“Tell”

(The term is most often used to indicate that important information has been withheld or selectively presented.)

Meaning in use	Typical use
Relevant contextual information is being withheld	<p>“ . . . Nor did the <i>Herald</i> or <i>Age</i> tell you Yeo and Deben both actually make big bucks from the warming scare and from coal’s competitors . . . ”</p>

(continued)

Meaning in use	Typical use
Selective presentation of relevant facts	<p>“ . . . Shorten refused to tell us what such cuts would cost us in new carbon taxes or inevitably much higher power bills. Nor would he say how he’d cut our emissions by such a huge amount . . . ”</p> <p>“ . . . Labor’s cuts would make such an unmeasurably tiny difference to the temperature that Shorten does not dare tell you for fear you’d realise the gain is not worth the pain . . . ”</p> <p>“ . . . will they dare report that most of islands are in fact growing or stable? Or will they again prove they cannot be trusted to tell the truth about the global warming scare? . . . ”</p> <p>“ . . . what else won’t they tell you about their global warming scare? It’s a miracle. Most Australians are now global warming sceptics, despite years of being misled by the media . . . ” (In response to a Commonwealth Scientific and Industrial Research Organization [CSIRO] survey that showed considerable indeterminateness among the Australian public about the primary cause of current global warming.)</p>

“Truth”

(The term is often used diversely as a rhetorical device. In the underneath instances the term points to a thematic thread.)

Meaning in use	Typical use
Incomplete representation of climate change evidence	<p>“ . . . The islands also remain exposed to cyclones, a threat that warming alarmists from Al Gore to Tim Flannery predictably claim is getting worse. But, again, the truth is different, and rarely reported . . . ”</p> <p>“ . . . It is one of the great scandals of modern journalism that such warming scares are repeated so often with barely any attempt to report the truth . . . ”</p> <p>“ . . . will the media trailing Shorten report the truth that the vast majority of Pacific Islands are growing or stable? . . . ”</p>

“Scare”

Meaning in use	Typical use
One-sided mind-set of fear prevailing and promoted	<p>“ . . . The scare must be maintained and not even Nobel prize winners will question it . . . ”</p>

(continued)

Meaning in use	Typical use
Climate claims are exaggerated to induce fear	"... Every claim is false, fake or overblown, as so often with the global warming scare ..."
	"... But that wouldn't suit a newspaper determined to push its warming scare, would it? ..."
	"... Facts no longer count in pushing the warming scare ..."
	"... many in Labor fervently believe in the global warming scare ..."
	"... you'll hear a lot of similar scaremongering in the two weeks of the Paris talks ..."
	"... here comes Shorten with yet more wild scares, trying to panic you ..."
	"... This drowning island scare has been a favourite of warmists ..."

Concept Group 2 consists of the terms "greens" and "stop." Following are summaries of the contextual use of these terms:

"Greens"

Meaning in use	Typical use
Greens apply double standards to Australia	"... the Greens and Labor don't actually want us to follow the lead of the US and China ..."
Exaggerated claims by the Greens	"... the Greens vehemently oppose fracking ..."
	"... the Greens oppose nuclear power and fight new dams ..."
Greens promote supra-national governance	"... Greens leader Bob Brown in 2006 warned of a permanent drought ..."
	"... Greens leader Bob Brown proposed an Earth Parliament under the grand idea of one planet, one person, one vote ..."
	"... the Global Greens Congress then backed a United Nations Parliamentary Assembly directly elected by the world's citizens to be involved in all important intergovernmental treaty negotiations ..."

"Stop"

Meaning in use	Typical use
People are trying to stop a nonevent.	"... they exploited it and even forced you to pay billions for fake schemes and taxes to stop a warming that actually halted or dramatically slowed ..."
	"... a new carbon tax that would hurt consumers yet do nothing to stop global warming, which actually stopped nearly two decades ago anyway ..."
	"... trying to panic you into signing up for a massively expensive plan that won't actually stop what possibly isn't a problem anyway ..."

Discussion

The concept "scare" is the most prominent "connecting" concept in the text sample. In other words, it is used in multiple argumentative contexts and can be considered a recurring theme in the text. It is used to indicate that a mind-set prevails in important government, scientific, and public sectors that climate change is something to be feared. Sceptics perceive this mind-set as a distortive influence on the public and that there is a need for a more "realistic" picture of the phenomenon. Sceptics are also convinced that some individuals and institutions exploit this mind-set to artificially maintain momentum behind the call for urgent and comprehensive climate change action.

Sceptics' perception of climate change as a massive unwarranted "scare" is primarily underpinned by arguments represented in the "fact," "tell," and "truth" concepts. These concepts are all related to the notion that the mainstream position lacks rigor in one respect or the other. The "fact" concept links to perceived inconsistencies in the scientific evidence (e.g., the claimed hiatus in land surface and warming), the logic of climate change measures (e.g., Australian emission cuts would represent only a miniscule proportion of what is needed globally to contain climate change), and the logic in supportive arguments (e.g., containing climate change will not resolve or prevent indirectly related problems such as human conflicts over increasingly scarce natural resources). The "tell" concept equally links to a perceived lack of rigor in the mainstream position. Here the sceptical perception is that mainstream exponents regularly withhold important contextual information (e.g., not disclosing the full costs of emission cuts), and that they do not openly acknowledge uncertainties or contradictory scientific evidence. The "truth" concept also conveys the sceptic notion that mainstream exponents present an incomplete picture of the scientific evidence (e.g., that some coral islands might in fact be growing instead of shrinking).

The concept "greens" adds two quite different argumentative themes. First, it contains the notion that those supporting the climate change "scare" are doing so for the motive of leading the world to a radically alternative socioeconomic order. Sceptics suspect such an ideological agenda on the part of the far left (who they see as antagonistic to the politico-economic status quo and as seeking ambitious social and economic transformation), and that center-left parties such as the Labor Party are complicit, albeit somewhat naïvely, in this agenda. A second theme emanating from the "greens" concept is a perception that the political left is willing to support disproportional sacrifices and costs on their own host country (Australia in this case) to combat climate change (e.g., that Australia should not only abandon the coal industry but also forego the benefits of fracking, nuclear power, or new hydro-electric dams, while other nations such as the United States and China maintain a wide range of options).

The "stop" concept is related to the concepts in Concept Group 1, which argue that the portrayal of climate science is

not entirely truthful or realistic. The sceptic argument here is that the mitigation measures endorsed by mainstream climate science would not “stop” the global warming that scientists so alarmingly predict. More realistically, the sceptic argument continues, efforts to “stop” climate change constitute a futile exercise against an unproven risk.

The concepts in Concept Group 1 (“fact,” “tell,” and “truth”) overwhelmingly construct the sceptic notion that the mainstream climate position lacks rigor and is overblown, in comparison with the concepts in Concept Group 2 (“greens” and “stop”). The “green” concept is the only concept that introduces new argumentative lines (i.e., Bolt’s specter of world government and the claim that Greens and the left undermine local economic well-being).

Thus, the sceptical position as revealed in the text samples investigated here shows that sceptics emphasize a perceived lack of rigor in the mainstream position in relation to the scientific evidence behind climate change, as well as the logic and outcomes of climate mitigation measures. The main argumentative lines are built around perceived conflicts in the evidence and partial or exaggerated presentation of the “facts.” These sceptic text samples seem to center their criticism on the substance of mainstream exponents’ claims, with criticism of the motivations of left wing players as an interesting but secondary source of concern for sceptics.

This is a significant finding for those concerned with communicating the mainstream view and those policy practitioners who need to devise climate measures that would enjoy public support. It means that climate sceptical beliefs are potentially vulnerable to convincing arguments built around the scientific evidence and the need and benefits of mitigation measures. More importantly, it shows that climate sceptical criticisms are often built around a small number of examples of perceived inconsistencies and exaggerations. It would not be necessary to “convince” sceptics of *every* aspect of the science and every aspect of the case for early and effective climate intervention. The sceptical position can be met by persistently responding to a relatively small number of specific criticisms (Van Rensburg & Head, 2017).

Understanding the political and sociopsychological drivers of scepticism can be helpful in devising sophisticated communication strategies that might appeal to sceptical audiences. However, the sceptic discourse as outlined here, demonstrates that it is equally important to engage sceptics’ substantive criticisms and concerns. Sceptics rely on perceived inconsistencies and improbabilities in the evidentiary claims of mainstream opponents to justify their continued criticisms. From a sceptical point of view, the mainstream position will continue to lack credibility as long as these perceived inconsistencies and improbabilities have not been tackled head-on by mainstream protagonists. In fact, sceptics interpret the lack of attention to their concerns as proof of what they perceive as scientific fiefdoms, closed circuit thinking, and professional and political manipulation of the climate issue.

Conclusion

We argue that examining the specific objections of sceptics is important for devising more effective responses. We argue that climate communicators and practitioners should constructively, patiently, and persistently respond to sceptical criticisms, instead of trying to starve sceptics of public exposure by refusing to engage them. Ranalli (2012) cautioned against probing the underlying intentions of sceptics, suggesting that a more open-minded approach might open up “opportunities for improved understanding” (p. 202). The argument for greater openness and public debate rests on a positive conception of the public (including the sceptic elements) as relatively intelligent and scientifically capable (Tøsse, 2013, p. 35). Such an approach favors engagement with sceptics over disengagement. This aligns with scholarly work indicating the importance of “social robustness” in scientific deliberations (Gibbons, 1994).

In practical terms, we recommend climate communicators and policy practitioners adopt five axioms for dealing with the sceptic challenge:

Accept Debate

Mainstream exponents of climate science and policy should use every opportunity to convincingly put their case. It is a fallacy to believe that the sceptic challenge could be neutralized by denying it public attention. Given the complexity, uncertainties, and vast array of climate-related scientific fields, sceptics have many stories about anomalous or contradictory evidence. Only by consistently winning the evidence-informed debate can the science experts ensure the public is turned away from cynical scepticism. Mainstream climate exponents can avoid much suspicion and derision from sceptic quarters, if they are willing to engage with the sceptic arguments.

Anticipate and Preempt Debate

Climate science and policy communications tend to emphasize the affirmative case. This may assist the sceptics in their claim that key uncertainties are underplayed. If climate communications included responses to anticipated critiques (such as constructing answers to Frequently Asked Questions), it would create a stronger impression of even-handedness. It would also help communicators to prepare themselves for the inevitable challenges and debates.

Acknowledge the Uncertainties in the Science and the Risks in the Policies

Transparency is an essential quality of good science. The uncertainties in climate science occur in the context of strong agreement about the core trends, causality, and impacts. Avoiding public engagement with sceptics has allowed them to elevate some scientific uncertainties to undeserved prominence, and

maintain that the science is not settled. Similarly, in regard to policy tools such as carbon pricing, communicators need not be overly defensive about such measures, as the case for carbon pricing is strong. By acknowledging potential risks from poor design, communicators have the opportunity to explain how those risks can be managed.

Correct Any Overstatements

Climate science typically presents its assessments in terms of probabilities. When the worst scenarios are dramatically highlighted, sceptics can claim this represents premature scare-mongering. Science communicators should carefully qualify their claims, and demonstrate how policy measures are proportionate to the challenges faced. In rare cases where mainstream exponents misrepresent the scientific evidence, communicators should enhance the legitimacy of science by publicly correcting misrepresentations.

Maintain a Respectful Tone

Complaints by both sides about the acrimonious tone of some exchanges need to be taken seriously. The label “climate denier,” to name just one example, evokes deep resentment among sceptics and merely distracts the debate from the science issues. It is the derogatory opposite of “climate alarmist.” Sceptics range from the entrenched ideologists to the seriously uncertain. It is the last group who would be most responsive to patient and respectful engagement.

Appendix

List of 17 media pieces by Andrew Bolt in 2014-2015, which were analyzed in this article. Note that the pieces written by this author are typically syndicated through a number of news outlets and thus, may also appear in other newspapers.

- Bolt, A. (2014, December 16). Hard markers hammering Abbott. *Cairns Post*.
- Bolt, A. (2014, November 17). Obama’s great climate con is just so much G20 hot air. *Daily Telegraph*.
- Bolt, A. (2014, November 20). Truly, Australians have global warming on the brain. *The Advertiser*.
- Bolt, A. (2014, November 24). Warming to a task of conning their readers. *Daily Telegraph*.
- Bolt, A. (2014, October 20). And for every drop of rain, we pay more. *Daily Telegraph*.
- Bolt, A. (2014, September 18). Warmist scare is simply academic. *Herald-Sun*.
- Bolt, A. (2015, December 1). Cult allows no room for reason. *Cairns Post*.
- Bolt, A. (2015, February 13). Scaremongers now going nuclear. *Cairns Post*.
- Bolt, A. (2015, July 17). Labor carbon tax idiocy still festers. *Cairns Post*.
- Bolt, A. (2015, June 18). Warm and fuzzy, but won’t get my vote. *The Advertiser*.

- Bolt, A. (2015, May 25). Shorten going down with the boats. *Daily Telegraph*.
- Bolt, A. (2015, November 12). Climate Tribunal: A step too far. *Herald-Sun*.
- Bolt, A. (2015, November 27). Climate talks cloud Islamist threat. *Cairns Post*.
- Bolt, A. (2015, November 3). Journos sink truth in ocean warming scare. *Northern Territory News*.
- Bolt, A. (2015, November 30). Shorten show swallowed by gullible media. *Daily Telegraph*.
- Bolt, A. (2015, November 6). Not taking bait on climate of fear. *Cairns Post*.
- Bolt, A. (2015, October 29). Climate science still out there. *Townsville Bulletin*.

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Notes

1. The terms “scepticism” and “sceptics” are widely used to denote those unconvinced about the core claims of the mainstream climate science thesis, namely, that human activities have significantly affected the global climate owing to higher levels of atmospheric greenhouse gases (GHGs), leading to such impacts as sea level rise, higher temperatures, severe weather events, ocean acidification, and so on. This form of scepticism is different from the general norms and practices of scientific scepticism—that is scholars undertaking close scrutiny and critical review of each other’s research (Van Rensburg, 2015). The label climate change “sceptic” is widely used in media discourse and academic analysis, and several prominent writers happily describe themselves as climate change “sceptics” (Painter, 2013; Painter & Ashe, 2012). However, there is significant variation among sceptics in terms of the grounds for their scepticism and the degrees of conviction with which they hold their views (Dunlap, 2013, p. 693). They constitute a distinct category, because they remain unconvinced of core scientific claims that are extremely well established and about which high levels of certainty exist (Painter, 2013, p. 15). In that sense, they have been described as scientific “outliers” (Boykoff, 2013; Boykoff & Olson, 2013, p. 278).
2. The website skepticalscience.com goes to great lengths to expose and debunk so-called sceptical myths. It has been at the center of investigations into the level of “consensus” among climate-related scholars about the climate issue. It also has a free online e-learning resource aimed at educating people in the origins and biases of “climate science denial.”

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