



“Natural cycles” in lay understandings of climate change



Linda H. Connor^{a,*}, Nick Higginbotham^b

^a Department of Anthropology, School of Social and Political Sciences, The University of Sydney, NSW, Australia

^b Centre for Clinical Epidemiology and Biostatistics, Faculty of Health, The University of Newcastle, NSW, Australia

ARTICLE INFO

Article history:

Received 23 November 2011

Received in revised form 28 June 2013

Accepted 2 July 2013

Keywords:

Australia

Climate sceptics

Uncertainty

Public attitudes

Weather

Longitudinal study

ABSTRACT

This article analyses lay understandings of climate change elicited through a longitudinal population-based survey of climate change, place and community among 1162 residents in the Hunter Valley, Southeast Australia. We explore how older residents in contrasting rural and coastal geographic areas perceive climate change information in terms of culturally relevant meanings and values, lived experiences and emotional responses to seasonal cycles, temperature fluctuations and altered landscapes. Thematic analysis of comments given by 467 interviewees to an open-ended question identified a significant subset for whom the concepts of “nature” and “science” express competing views about changing climatic conditions. For them, the idea of “natural cycles” is a significant cultural construct that links nature and humans through time in a way that structures stable and resilient understandings of environmental change, drawing on established cosmological frameworks for contemplating the future in relation to the past. In contrast to other studies that postulate scepticism and denial as individuals’ fear management strategies in the face of climate change threat, we found that the natural cycles view is founded on a reassuring deeper conviction about how nature works, and is linked to other pro-environmental values not commonly found in sceptical groups. It is a paradox of natural cycles thinking that it rejects the anthropocentrism that is at the heart of science-based environmentalism. By contrast, it places humans as deeply integrated with nature, rather than operating outside it and attempting with uncertain science to control something that is ultimately uncontrollable.

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1. Introduction

1.1. Background

Climate change is a planetary phenomenon that has diverse local effects on people and places. These effects will increase over time, and require planning and policy solutions far beyond the future that is usually imagined in the human lifespan and the world of politics (World Bank, 2012). The need for action towards a low carbon future at all scales of social organisation highlights the importance of understanding local cultural specificities in relation to scientific knowledge of geophysical models and large scale processes of environmental change (Wolf and Moser, 2011; Crate and Nuttall, 2009). Humans live in and as part of nature; environmental changes are experienced as cultural changes. Anthropologist Tim Ingold criticises the representation of the environment as an object of human manipulation, and thus the opposite of human culture, saying:

An environment . . . can exist only in relation to the forms of life that inhabit it. It is a world that exists not in and of itself, but as the ambience of its inhabitants. Though no less real than the physical world, the environment is not a reality of objects or bodies in space but reality for the beings that make a living there (Ingold, 2007; italics in original).

This phenomenological approach to the environment is in sharp contrast to climate science, which focuses on the measurement and modelling of environmental changes related to the enhanced greenhouse effect caused by human activity (Anderegg et al., 2010). Scientific understandings of anthropogenic climate change now inform government policies and are brought into public discourse (Whitmarsh et al., 2011; Cleugh et al., 2011). However, scientific knowledge never flows smoothly into the non-specialist domain (Stermann, 2011; Whitmarsh, 2011). New knowledge is evaluated and transformed in the light of laypersons’ pre-existing understandings and experiences (Weber, 2010). Climate change presents particular problems of acceptance because of its insidious, long term nature, often distant effects, the numerous and powerful special interests involved, and the necessity for short term actions to solve problems that will only become evident in the longer term (Garnaut, 2008; Reser et al., 2012; APA, 2009; Wolf and Moser, 2011).

* Corresponding author. Tel.: +61 2 93516678; fax: +61 2 90369380.
E-mail address: linda.connor@sydney.edu.au (L.H. Connor).

Despite scientists' stark predictions of its impacts, climate change may be intertwined with many other forms of environmental change so that both causality and effects are difficult for laypersons to determine or interpret (Bickerstaff et al., 2004; Lorenzoni and Pidgeon, 2006; Weber, 2010). Moreover, the many scales of climate change impacts, from neighbourhood to planetary, present difficult problems of interpretation for laypersons, and the effects of global warming – colder, wetter weather in some places, for example – may be counter-intuitive, especially for those with low trust in climate scientists (Krosnick, 2010). Effective communication about climate change requires interpretive social science approaches that yield more nuanced understandings of how prior lay knowledge is brought to bear on this issue, prejudging, shaping and directing people's climate perceptions, beliefs and actions (Wolf and Moser, 2011). Ethnographic and qualitative research with local communities provides an open-ended way of investigating the modes of lay knowledge and experience that bear upon people's interpretations of climate, weather and changes to the landscapes in which they dwell (Milton, 1996; Crate and Nuttall, 2009; Crate, 2011).

1.2. Lay understandings of climate change

Community views about anthropogenic climate change are formulated by particular groups of people in specific places and times, drawing on collective and individual histories, relationships with each other and nature, environmental perceptions and cosmologies that guide thinking about stability and change in human relationships to nature (Milton, 2008; Leiserowitz, 2005; Wolf and Moser, 2011). It is particularly important to understand how these processes influence laypeople's stances on the causes and impact of climate change, as they account for acceptance or resistance to carbon reduction policy initiatives, both at the electoral and the behavioural level (Poortinga et al., 2011a).

People's values and worldviews influence which phenomena and risks they attend to and which they ignore or deny (Weber, 2010, p. 335). Kempton et al.'s study of environmental values in the USA in the 1990s identified three cultural models that 'Americans use to understand nature and humanity's interaction with it' (1996, p. 39). Whitmarsh's surveys of UK residents found that 'beliefs about climate change are fundamentally linked to existing values and worldviews' (2011, p. 697). Similarly, Australian studies of climate change attitudes have shown a diversity of views, with some strong linkages of beliefs to political preferences, policy, age, education and gender (The Climate Institute, 2010; Reser et al., 2012). However, little work has been done on regional differences as a variable (c.f. Higginbotham et al., 2013), although Fleming and Vanclay (2010) observed rural residents' views are based on the premise that nature has "dominion" over humans and therefore there is little that humans can do to address climatic changes (p. 15).

Science historian Matthias Heymann describes how the advent of satellites and subsequent collection of global atmospheric data since the 1960s resulted in a change of focus in climate science from localised understandings of weather, to simulated computer modelling of global changes, notably, increasing greenhouse gases. In effect, for climate scientists, interest in the effects of weather on humans (health, culture and environment), evolved into concern about the impact of humans on climate (Heymann, 2010). But the priorities of climate science are not well-developed in the lay population. A recent USA survey of "educated laypeople" found that many do not understand "exactly what climate is", with many citing 'natural processes and historical climatic cycles as key causes' (Reynolds et al., 2010).

Sherratt et al. (2005) document the interaction and discrepancies between climate science and popular understandings of

weather in the Australian context. On this continent, traditional knowledge of weather can be used to contest climate science among some population groups (Buys et al., 2011; Evans et al., 2009). Minnegal and Dwyer found that commercial fishers in East Gippsland, Victoria were sceptical about anthropogenic climate change and view "Mother Nature" as a protective force that transcends the vagaries of the weather (Minnegal and Dwyer, 2008, p. 78). Evans et al.'s (2009) exploration of rural Western Australian's attitudes indicated a prevailing cynicism among farmers about government motives and the use of climate change science for personal and political agendas.

Studies elsewhere of traditional knowledge and climate science have found complementarities, especially in interpretation of weather (Wolf and Moser, 2011; Lefale, 2009; Cruikshank, 2001). Kempton et al.'s research of American cultural models of global warming found their respondents believed that 'the climate has already changed' (1996, p. 80). The authors attribute this to people's 'historical propensity to perceive weather change, whether or not it is occurring, and to attribute it to human perturbations' (1996, p. 83). Various studies have shown that the public's concern about climate change escalates when there is extreme hot weather (Leiserowitz, 2005) and Australian surveys of climate change concern during the severe drought that affected much of the nation in 2006–2008 reflect this trend (see Leviston et al., 2011; Reser et al., 2012).

A proposition in social psychology is that denial of climate change threat helps people cope with the debilitating anxiety, guilt and existential angst that it arouses (Crompton and Kasser, 2009; Reser and Swim, 2011). Norgaard's (2006) ethnographic work among small-town Norwegians found that people used three "emotion-management" strategies to distract themselves when thoughts of climate warming aroused fear or helplessness. These included limiting their exposure to anxiety arousing information, keeping one's thoughts in the present (vs imagining future impacts) and doing something, however small. While Norgaard's findings are intriguing, there remains limited evidence to show how and whether they apply cross culturally.

1.3. Aims of the study

The divergence of findings about lay/traditional understandings of climate and scientific knowledge indicates the need for further investigation. This paper aims to contribute to existing research using an interpretive social science analysis of environmental change, drawing on qualitative and longitudinal survey data in the context of a long-term regional study based in the Hunter Valley, Southeast Australia.

Specific study aims are to: describe how a population of Australians draw on pre-existing cultural frameworks to distinguish between natural (i.e., cyclical) and anthropogenic climate change; identify the dominant sources of ongoing public uncertainty about climate change causes and impact; explain lay understandings of climate change in terms of people's attempts to synthesise personal observations of "nature" with "scientific" narratives that are familiar and available to them; and, explore the ways lay understandings of climate change are related to moral, religious and environmental values.

2. Methods

2.1. Design and participants

The data analysed in this article are from a larger study of climate change, place and community in the Hunter Valley region of New South Wales, Australia (Connor et al., 2009; Connor, 2010, 2012; Higginbotham et al., 2013; McManus and Connor, 2013). The

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