



# Procedural vulnerability: Understanding environmental change in a remote indigenous community

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## ABSTRACT

The challenge of reaching common understanding of the processes and significance of environmental change amounts to a procedural vulnerability in climate change research that hinders successfully translating knowledge into equitable and effective adaptation policy. This article presents findings from research with Indigenous participants in West Arnhem, Australia, and identifies a procedural vulnerability to climate change research, where perceptions of change and their meaning have their context in Dreaming that supersedes and parallels Western scientific discourses of hazard and risk, but that are marginalised in studies and policies on climate change. This paper argues that moves to adapt remote Indigenous Australian communities to climate change risk missing the mark if they (a) assume that a strong reliance on particular ecosystem configurations makes Indigenous cultures universally vulnerable to environmental change, (b) do not recognise cosmologically embedded risks that are determined by Indigenous capacity to take care of country, and (c) do not recognise colonisation as an ongoing disaster in Indigenous Nations, and therefore treat secondary disasters such as poverty, ill health and welfare dependence as primary contributors to high climate change vulnerability. Procedural vulnerabilities contribute to policy failure, and in Australian contexts pose a risk of conceiving solutions to climate change vulnerability that involve moving people out of the way of environmental risks as they are conceived within colonial traditions, while moving them into the way of risks as conceived through the eyes of remote Indigenous communities. This research joins recent publications that encourage researchers and policy-makers to epistemologically ground proof risk assessments and to listen and engage in conversations that create ways of 'seeing with both eyes', while not being blind to the hazards of colonisation.

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## 1. Introduction

It is quite simply forgotten that man and life and nature are none of them domains that present themselves to the curiosity of knowledge spontaneously and passively.

Michel Foucault (1970)

The confluence of colonial and Indigenous claims to space in studies of environmental change pose significant challenges to forming successful climate change adaptation policies, and amounts to a procedural vulnerability where stakeholders in research and policy fail to accommodate alternative research questions, methods of inquiry, modes of presentation, conclusions

or policy outcomes. Procedural vulnerability can be seen as a third 'leg' in O'Brien et al.'s (2007) diagnostic tool for vulnerability research, where the propensity to harm lies not simply in the end-point or context of particular hazards, but in the processes and assumptions that inform research questions, methods and outcomes in hazards research. Vulnerability studies indicate necessary directions for policy and planning, but have received some important criticisms for blanketing diverse and complex settings with this definition (e.g. Bankoff, 2001, 2004; Ellemor, 2005). Brunner (1991) and Clark (2002, p. 2) warn that "conventional approaches [to policy] tend to simplify policy problems, misconstrue some vital part of the context, or overlook the context altogether". O'Brien et al. (2007), Schipper and Burton (2009) and Kelly and Adger (2000) stress the need to consider contextual vulnerabilities in order to ensure adaptation to global environmental change occurs in accord with broader goals of human development, while end-point climate change vulnerability studies risk re-emphasising Indigenous absences in research and policy by precluding the capacity to reach non-climate-related

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conclusions. Pressing the need to consider context in policy, Lasswell et al. (1952, p. 11) argue, “The significance of any detail depends upon its linkages with the context of which it is part”. The procedural aspect of vulnerability advocated in this paper inverts Lasswell’s statement and puts focus on the *processes* that permit us to describe such contexts in the first place. How do policy processes arrive at a definition of relevant context? How can alternative epistemologies be accommodated in vulnerability analyses? Procedural vulnerability is not a particular challenge for research with Indigenous peoples, but a general limitation in research and policy. This has been pointed out by many commentators in hazards research (Bankoff, 2004; Cashman and Cronin, 2008; Hewitt, 1995) policy research (Clark et al., 2000; Lasswell, 1971; Lasswell and McDougal, 1992; Lynch and Brunner, 2007), in decolonising literature (Howitt and Stevens, 2005; Rose, 1996a,b; Smith, 1999) and in methods (Haraway, 1988; Law, 2004; Nagar, 2003).

Examples of procedural vulnerabilities abound in the literature, apparent where the methods of inquiry prevent participation or mask important issues. Cameron (2012) identifies a kind of procedural vulnerability when she argues that the two principle types of investigation into environmental change in the Canadian Arctic, –which either seek to use Indigenous knowledge to improve Western climate change science (equivalent to ‘end point’ approaches in O’Brien et al., 2007), or to grow local capacity to integrate different knowledges for decision-making (equivalent to ‘start point’ approaches in O’Brien et al., 2007)– both fail to “mention, let alone contend with, the importance of colonialism in shaping research objects, subjects, findings and research relations” (Cameron, 2012, p. 104). Cameron (2012) explains that underpinning this vulnerability are Indigenous claims to space framed as local, and therefore analytical end-points in research, preventing cross-sectoral investigations of risks to Indigenous lives. She argues that this prevents climate change studies in the Canadian Arctic from addressing contextual vulnerabilities such as shipping and resource extraction as significant human dimensions of climate change. Identifying a similar procedural vulnerability, Haalboom and Natcher (2012) “consider vulnerability as a power-laden concept whose application could hold very real consequences for the populations who are bestowed such a label” and advocate critical attention to the blanket definition of Arctic Indigenous communities as being vulnerable. Pethram et al. (2010) report Indigenous participants in East Arnhem, Australia are concerned that climate change policy will over-shadow existing efforts to improve Indigenous rights by focusing efforts on narrow and externally conceived intervention without building on local capacity. A further example is provided by Bankoff (2001), who describes a methodological bias where regions currently considered underdeveloped correlate with regions previously studied through tropicity, which equated racial and environmental characteristics as mutually related, and framed tropical regions as inherently extreme and dangerous for ‘White’ settlement. In Australia, where the empirical focus of this paper is trained, the influential early geographer Taylor constructed a strongly racialised and environmentally determinist discourse around the concept of carrying capacity in tropical regions, in which the rights and concerns of Indigenous Australians were rendered invisible, for example in his graphic depiction of vast areas of central and northern Australia as ‘empty’ and ‘useless’ (see e.g., Head, 2000, pp. 44–54). In Rose’s (1996) words, such epistemological bias amounts to ‘deep colonising’ where processes of Indigenous erasure persist within apparently liberating research and policy ideals.

In light of emergent concerns with the political mobilisation of vulnerability in Indigenous settings, the considerable attention given to the hazards and risks of climate change for Indigenous

peoples over recent years needs to be approached with some care. The Intergovernmental Panel of Climate Change (IPCC) Fourth Assessment Report (WGII 2007) lists Indigenous people as particularly vulnerable to climate change, based on the irreversibility of changes, the distribution of impacts and the fast and early onset of change to traditional lands, and on their low adaptive capacity (IPCC WGII 2007). These findings are based in large part on research from the Arctic and Small Island States, where the impacts of climate change have been most visible. Setting the stage for research elsewhere, findings from the Arctic warn that significant changes to Inuit cultural livelihoods are already in motion due to glacial melt, with considerable implications for health (e.g. Berkes and Jolly, 2001; Ford, 2007; Ford et al., 2008). Research on Indigenous climate change vulnerability in Australia has a shorter history, but existing work has followed a similar crisis discourse. Green (2006) confirms heightened vulnerability in the Torres Strait, where sea level rise is reported to be posing significant challenges to island settlements, while her similar study (Green, 2006) suggests climate change poses considerable risks to Aboriginal health, culture and livelihoods. Providing scoping data on the needs of Indigenous settlements in the Top End, the government report on *Risks from Climate Change to Indigenous Communities in the Tropical North of Australia* (DCCEE, 2009) identifies significant knowledge gaps that prevent specific advice on adaptation policy beyond strengthening existing efforts to improve infrastructure and service delivery to boost adaptive capacity, and encouraging more research. The National Climate Change Adaptation Research Facility (NCCARF) is targeting funds for research for 2012, which will create the basis for adaptation policy. In the call for proposals, they highlight that

Research on climate change and Indigenous communities, including the impacts, factors affecting vulnerability and adaptive capacity, and adaptation for Indigenous communities has been limited. Most existing research has focused on identifying the biophysical impacts of climate change. Few studies have explored the vulnerability and adaptive capacity of Indigenous individuals, households, communities, businesses and institutions. Accordingly there is a need for research that expands knowledge about these and other dimensions of Indigenous adaptation to climate change.

We present findings from a pilot study (Macquarie University Ethics Approval #HE28MAR2008-D05722) conducted with Indigenous research participants from the Indigenous community of Waruwi on Goulburn Island in West Arnhem, Australia (Fig. 1), from 2007 to 2009. We identify a procedural vulnerability to climate change research, where non-climate change-related issues pose greater threats to Indigenous livelihoods than the biogeophysical processes, and where Indigenous perceptions of processes of change and their meaning are contextualised in Dreaming—a culturally referenced cosmology that predates, supersedes and parallels modern scientific discourse of hazard and risk.

This paper first reviews literature concerning Indigenous peoples and modern research on climate change. It then presents the methods and findings of our pilot study, showing how environmental change is currently experienced as a lived reality, and as a projected future condition, in a remote Indigenous Australian community. Drawing on the case study and the wider literature, the paper then presents an analysis of procedural vulnerability, arguing that studies of climate change adaptation risk missing the mark if they:

- (a) assume that a strong reliance on particular ecosystem configurations makes Indigenous cultures universally vulnerable to environmental change,

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