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The Changing Climate of Climate Change Research

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THE CHANGING CLIMATE OF CLIMATE CHANGE RESEARCH

Introduction

Throughout the world people are experiencing increased climate variability – here climate indicates "the statistical distribution of weather patterns over time" (Government of RSA 2011:8). Whilst climate variability is part of the natural processes on earth, human-induced climate change is understood as the natural climate changes which are "attributed directly or indirectly to human activity" and that alter "the composition of the global atmosphere…in addition to natural climate variability over comparable time periods" (Mukheibir & Sparks 2005:i).

In the summary section for policy makers of the Contribution of Working Group I to the fourth assessment report of climate change, the Intergovernmental Panel on Climate Change (IPCC 2007:5) states that the "warming of the climate system is unequivocal" and is visible in the "increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level". Furthermore, Stern (2006:2) argues that the scientific evidence for accelerated change due to anthropogenic forcing is "more serious than had first appeared" and is "*very likely*" due to anthropogenic (human-induced) forces (IPCC 2007:10). In the hesitant language of climate science, and all the politics around climate change, this is a bold statement to make. Moreover, failure to reduce current greenhouse gas emissions will result in continued warming and cause changes in the planet's climate system in the 21st century that will, "very likely", be larger than those observed in the 20th century (IPCC 2007:13; Stern 2006).

Changes in the climate system are already visible and have been predicted and measured, where possible, by the natural and economic sciences – the social sciences have been largely absent on the study of climate change. However, this is shifting with the recent call from physical and social scientists alike to engage in an investigation of the social aspects of climate change (Hulme 2011; Hulme 2013; Crate 2011; Barnes et al 2013).

This paper answers this call in attempting to understand what people in two communities in Johannesburg understand by the term 'climate change', what they take as evidence of its existence, how they foresee climate change impacting them, and who they believe to be responsible for leading the implementation of solutions to 'fix' climate change. Understanding local narratives in this way allow for more accurate policy development and are a departure point for understanding the social dimensions of a physical phenomenon.

Climate change: space for social scientists

Since the changes associated with climate change are observable over a time scale of decades and centuries (Mukheibir & Sparks 2005:i),'climate change' becomes a tricky 'reality' for social scientists interested in people's understandings, stories and experiences to study. Part of this difficulty relates to the phrase 'climate change'. Brace and Geoghegan (2010) argue that this phrase biases researchers toward understanding this phenomenon in purely physical science terms. Instead, the authors suggest a shift in how social researchers speak of this phenomenon in order to avoid carrying the burdens of bias associated with this term:

> Using 'climate and the ways it may change' in preference to 'climate change' enables a relational approach to emerge which: (1) does not insist on research participants being able to disentangle anthropogenic causes from natural causes of climate change; (2) acknowledges the way an understanding of climate change is conjoined with other kinds of knowledge about the local environment; and (3) allows different ways of knowing to play a legitimate part in framing a culture of climate change
> (Brace & Geoghegan 2010:287).

In a sense, rephrasing the phenomenon in its social investigation allows space for people's interpretations to emerge. It is important to understand the changing climate from a social perspective as opposed to a purely physical science one (Brace & Geoghegan 2010). The social sciences are able to frame 'climate change' as something to be needing explanation, instead of something already understood, bearing down on humanity that will only yield to the defences of physical science (Brace & Geoghegan 2010: 285). Framing climate change this way allows for non-scientific ways of understanding and interpreting the phenomenon which in turn makes it more personal to people (Brace & Geoghegan 2010; Lonrenzoni, Nicholson-Cole, Whitmarsh 2007). This in turn recognises that 'climate change' is a phenonmenon that is not only affected by society, but is also that it is represented on a local scale by local understandings (Brace & Geoghegan 2010). Further to this, unclear definitions of 'climate change', used respectively by the United Nations Framework Convention on Climate Change create problems for policy-makers in trying to communicate the science to the public and institute an effective response (Brace & Geoghegan 2010). Lastly, 'climate change' is not only an issue that will impact society and thus must be addressed on a global scale – it is also impacted by changes in society and social practices (Hulme 2011). Understanding people's beliefs about climate change on a local scale thus becomes essential in understanding their relationships to nature, and the possible ways

people may further impact the climate (Brace & Geoghegan 2010). The knock-on social effects that a changed climate has will include health impacts, damage to infrastructure, environmental degradation, and threats to citizens' livelihoods (SAEO 2012) as well as cultural, economic and spiritual changes (Byg & Salick 2009:156; Crate 2009; Jacka 2009; Naustdalslid 2011:246).

The social study of climate change also investigates "why people accept of reject scientific evidence, analysis and conclusions" (Hoffman 2012:12). As an "ideologically charged phrase" (Brace & Geoghegan 2010), climate change elicits a response from people that is in line with their multiple referent groups (Hoffman 2012). In other words, people hear the words 'climate change' and any information related to these and interpret them in the context of their cultural worldviews (Hoffman 2012). In order to educate, engage and debate with the public, these cultural worldviews need to be understood and worked with (Hoffman 2012; Hulme 2013). The deeper ideological dimensions of an issue like climate change need to be appreciated and understood in order for an effective debate to enter the public sphere (Hoffman 2012). The narratives that people have of climate change will impact their ability adapt to and mitigate climate change (Artur & Hilhorst 2012). This is because these narratives are made up of the cosmologies that people use to navigate the world around them (Hulme 2013:2).The humanities are perfectly placed to investigate these cosmologies and narratives used by people to make sense of the world (Hulme 2013: 5-6). Understanding these allows for them to be incorporated into climate change research, which does something that science alone cannot – it engages people at a deep level which allows environmental policies to take root and affect real change (Hulme 2013: 6). The humanities are central in negotiating the role of people in the world in the context of global change (Hulme 2013:4). This is a central role since social scientists will have to work out how to implement the large social and economic changes needed to adapt to a changing climate (Schellnhuber in Barnett 2009).

Climate change: space for anthropologists

The growing necessity to understand how humans and their changing climate interact means that anthropology specifically has a contribution to make, as can be seen in the growing literature on the subject (Brown 1999; Broad & Orlove 2007; Crate & Nutall 2009; Crate 2011; Orlove 2005; Strauss & Orlove 2003). There are a number of ways in which anthropologists are particulary suited to studying the various social elements of climate change.

Firstly, anthropologists are well placed to study the deeper dimensions of climate change because of the discipline's "tradition of in-depth fieldwork" (Barnes, Dove, Lahsen, Mathews, McElwee, McIntosh, Moore, O'Reilly, Orlove, Puri, Weiss & Yager 2013). The ethnographic method is, in some ways, definitive of the discipline. Working closely with local communities means that anthropologists have a thorough understanding the heterogeneous nature of local climate-related knowledge, how it is produced, and how it is used (Barnes *et al* 2013). This contributes to what Crate (2011:179) refers to as place-based community studies. That is, work that investigates how people "observe, perceive, and respond to the local effects of global climate change". This serves in exploring physical and cultural resilience of communities (discussed later) (Crate 2011). Work with these communities becomes a potential space for collaboration on adaptation strategy for local communities and decision makers (Barnes *et al* 2013). Another space of collaboration in which anthropologists become involved is the ways in which climate science is created and framed by researchers. Here, specific emphasis is placed on how the meanings of the science change as it comes into contact with varying social contexts (Barnes *et al* 2013). This is possible through the discipline's sensitivity towards the impact of context (Barnes *et al* 2013). These all serve in anthropologists' involvement with global negotiations and discourses on climate change (Crate 2011; Barnes *et al* 2013). Anthropologists have increasingly acted as a point of connection between "local realities and decision makers" (Crate 2011: 183).

Secondly, anthropologists are knowledgeable about and sensitive to the historical contexts that have informed much of the anthropological enquiry into environment-society relations (Barnes *et al* 2013). For instance, archaeology's study of past cultures can reveal how ancient humans responded and adapted to a changing environment (Barnes *et al* 2013). Likewise, environmental anthropology has long been interested in the relations between societies and their environments (Barnes *et al* 2013). This has prompted the study of local ways of conceptualizing environmental phenomena through folklore, myth and art, and how populations have responded to such changes through various social processes (Barnes *et al* 2013). Both scales of temporal investigation can provide valuable lessons for how to mitigate and adapt to climate change in present times (Barnes *et al* 2013).

Furthermore, anthropologists are able to play a key role in avoiding what Hulme (2011b) refers to as 'climate reductionism' – assigning climate change as the cause of all environmental and social changes. This is possible through anthropologists' tendency to approach issues of research from a holistic perspective (Barnes *et al* 2013). This holistic perspective has also been posited as

potential way in which to link the global with the local in global change research (Magistro & Roncoli 2001). This could be potentially achieved through the supplementation of climate models with local experience and observation, thus linking local weather patterns with global climate changes (Crate 2011; Magistro & Roncoli 2001). This, however, would be the discipline's major contribution to long-term environmental monitoring; such models could only be validated after a certain number of years, typically a few decades.

Understanding how people interact with and view their landscapes is important because these hold value for people and impact on their daily realities (Brace & Geoghegan 2010; Byg & Salick 2009). For instance, Hitchcock (2009) examined San resilience to the changing environments of the Kalahari. His participants informed him of how their once successful agricultural practices were proving useless in the face of environmental changes (Hitchcock 2009). Their physical resilience to survive in one of the largest deserts in the world (?) was significantly jeopardized by the shifting weather patterns (Hitchcock 2009). However, as mentioned earlier, resilience to the changing climate is not just physical; it also relates to the survival of communities' ways of life.

Landscapes also often hold cultural significance for people. Any change to these landscapes thus threatens the very existence of the symbols and rituals that are fundamental to the identity of a group of people. For example, Crate (2009) investigated the impact of the changing climate on a generations-old myth from northeastern Siberia, Russia. The story explains how the destruction of the bull of winter brings in the spring. The changing climate is rendering this myth redundant because of the way that the shifting temperatures are affecting the timing of when the ice melts. Crate's (2009:143) participants believed that the changing climate they were experiencing would be the eventual breakdown of the social fabric of their society.

Understanding the value that people attach to their landscapes is also important because these views hold the key to the success or failure of adaptation efforts (Byg & Salick 2009; Artur & Hilhorst 2012). Byg and Salick (2009) investigated the local perspectives of people in eastern Tibet on climate change and found that people believed climate change is punishment for the wrongdoings of others (Byg & Salick 2009:165). Such a cosmology would certainly prevent the people who believe it from understanding the role they can play in affecting changes in the climate. Such a view poses a potential threat to the success of any adaptation or mitigation policies.

Methods and research sites

The research presented here was a place-based community study that looked at the local narratives of people about climate change and water. A multi-sited ethnography was conducted in two very different communities near Lanseria, in Johannesburg (Marcus 1995). Multi-sited ethnographies have been espoused as the ideal way for anthropologists to study climate change (Crate 2011). It is a methodology that allows for the cross-cutting of dichotomies such as 'local' and 'global', and it allows anthropologists to get a holistic sense of issues as they cross-cut and manifest between different groups of people and in different locations (Crate 2011; Marcus 1995). In-depth, semi-structured interviews were used to collect data on people's narratives on climate change.

The two communities that this research was based in are slightly different in structure – while one is a physical community that shares a single space, the other constitutes mostly a community of interest rather than a single, shared physical space. The Rhenosterspruit Nature Conservancy is a 'community' of conservation minded landowners that live in various parts of the Magliesburg and surrounding areas. Their properties range from riverside plots to mountainous properties. Their shared sense of community stems from the desire to establish and maintain their collective land as a nature reserve. The second community was an informal settlement called Malaji, near the Lanseria airport in Johannesburg. This community is placed bound – shacks are very close to one another and all people are aware of the river that flows to the south of the community. The two study areas are in stark contrast – people living in the RNC had spacious homes on large properties with many trees and a lot of privacy. Malaji by contrast was very crowded, with eroded dirt roads strew with litter and hardly any vegetation. Although these two 'communities' were very different, some of the community members' beliefs around climate change were quite similar.

Findings

Residents in the RNC were able to explain climate change more accurately. They were aware that it involved large scale weather patterns and that it could be a cyclical thing. Jake* commented that climate change is "the sort of broad scale weather patterns in an area and how they fluctuate and whether it's natural or manmade, as the cause". Most people knew about the debate about the cause of climate change, and usually agreed that anthropogenic climate change is real and problematic. Ryan added that:

> The large body of scientists accept now – there are some who don't – that it [climate change] is man-made; it's not a cyclical thing. Although I think the cycles also enter into it. And it's caused by polluting the ozone…layer. And that's causing the climate to change.

Similarly, some people in Malaji had a somewhat accurate knowledge of climate change in that they differentiated between weather and the climate:

> The weather's not going to be the same as like it used to be before. It's going to be hot, very hot. And when it gets cold, it's going to be very cold. So obviously if the climate changes then the weather changes.

However, there was another perspective in the community. There were some who believed that climate change – and nature in general – belongs to God. This rendered the phenomenon unknowable for humans.

When I asked what people believed was proof of climate change, people in the RNC stated that the changes in animals' behaviours was evidence that the climate is changing. In two separate interviews, women shared with me there observations. One woman had this to share:

> We're almost at the winter solstice now and only two weeks ago we had an absolute feast happening on our back door when flying ants came out of their nest and we had bats eating on them. Now bats at this time of the year… ought to have been sleeping, but they were out and they were hunting.

Alterations to 'normal' weather patterns were also seen as signs that climate change is real. One woman commented that the timing of Johannesburg thunderstorms had changed, while another stated that the entire nature of the thundershowers was now different. In Malaji, the amount of change in regular weather patterns and the number of disasters convinced people of the changing climate.

I asked people what they believed the impact of climate change will be on their lives. Although residents in the RNC anticipated a largely financial impact there were some people who felt that they would not experience the impacts of climate change in their lifetimes. In Malaji, people believed that they were already experiencing the impacts of climate change in the form of decreased rainfall that prevented the successful growing of vegetable gardens. Others in the community did not know how climate change would impact their lives. There seemed to be a lack of awareness of how something as distant as climate change could directly impact the everyday lives of people because Mr Tibbs said "the thing is, as long as we got water, we're fine".

I asked people about who they thought should be responsible for 'fixing' climate change. Although people in the RNC generally felt that everyone was responsible for implementing solutions to climate change, there was a sense that wealthy people should lead by example. In Malaji, there were generally three views on the implementation of climate change solutions. First, most people believed that the government was responsible for addressing the issue. Some participants stated that if the government provided them with proper housing, they would be protected from the effects of climate change. The second dominant belief was that everyone needed to help implement solutions to climate change. Bob had the following to say on that matter:

> I think the whole world has – not individual – the whole world have to combine and maybe discuss this matter because it's not one man's problem.

This quote reflects the recognition of climate change as a global issue; one that will require global, individual action. Finally, there were a few residents who felt that there is nothing anyone can to about climate change because such issues are the matter of God. Mark stated that we "can't do anything about it [climate change]. God know what's happening."

Discussion

Hulme (2011) argues that when it comes to climate change "the role of story-telling needs elevating alongside that of fact-finding". Local stories, though not necessarily scientific accounts

of changing climate, “can affect how we react to scientific accounts of change” (Hulme 2011:PAGE). Focusing on the everyday value people attach to their landscape enables us to “ask how a variety of publics make sense of climate change” and their relationships with nature (Brace & Geoghegan 2010:289; Jacka 2009; Marino & Schweitzer 2009). Making sense of this relationship is important because, as Artur and Hilhorst (2012:529) argue, the political and cultural realms of societal perceptions of a changing climate are crucial in the success and failures of climate change adaptation. Local understandings of how climates change can benefit environmental, economic and social policy formulation as these reflect local concerns and the actual perceptions of people which mitigation and adaptation policies should take into account (Byg & Salick 2009). Without a commitment from local residents to address climate change, any environmental policy will prove unsuccessful. This makes it essential for anthropologists to investigate climate change. To quote one of my participants:

> …everyone’s got enough reason to fight for [the environment]. Because we’re all on this planet, we all live here and we all need the same services the environment provides for us. So, ja, it’s everyone’s responsibility.