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Keywords

agency, boats, australia, inland, colonial, bores, post, bottles, assemblages, water

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**Bottles, bores and boats: agency of water assemblages in
post/colonial inland Australia**

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Key words: agency; assemblage; materiality; separation; postcolonialism;
knowledge; water; politics; Australia

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Abstract

Australian water politics is marked by conceptual and bureaucratic separation of water as discrete matter. The source of this politics of separation is colonial relations with water and the Australian continent. Yet analysis of the materiality of water illuminates the agency of water as part of an assemblage. This paper seeks to unsettle the treatment of water as separate, discrete matter. It asks (*sensu* Bennett, 2010) how political responses to the public problem of water would change were we to take seriously the vitality of nonhuman bodies. In order to investigate this question, the paper presents an analysis of six objects from the inland deserts of eastern central Australia – two bottles, two bores and two boats – derived from field and archival research. The analysis draws on recent material approaches and a broadly postcolonial literature to argue that ‘taking seriously’ the matter of water might provide a productive means of reframing the politics of water, by using the concept of the ‘agency of assemblages’ to replace the notion of water as separate. Further, paying greater attention to local Indigenous knowledge provides an alternate epistemology upon which to base decision-making, which both unsettles the separation of water and contributes to an ongoing process of decolonisation.

Introduction

‘How would political responses to public problems change were we to take seriously the vitality of (nonhuman) bodies?’ (Bennett, 2010, page viii)

Trawling through the National Library of Australia’s Picture Collection, I came upon a photograph of a man standing between two camels in a flat, arid landscape. Strapped to the backs of the camels were a boat and poles. The juxtaposition was striking; I was intrigued. Little information accompanied the photograph, simply ‘Australian Inland Mission. Two camels carrying boat and long poles. 1 negative; 10.6 x 8cm. John Flynn collection MS5574, Box 49, folder 8. National Library of Australia’ (Figure 1). The annotation did not include information about the location of the shot; no date; nothing of the identity of the man. Handling the photograph, both it and the boat provoked me. On one hand, this was an image recording a colonial expedition into inland Australia. It immediately spoke of the hopes and expectations of Australia’s colonisers, and of the all too familiar history of hopes dashed in the search for water and arable land. At the same time the boat and the photograph were material things, and I couldn’t help wonder what ‘taking seriously’ their materiality would reveal about the politics of water in colonial and postcolonial Australia.

Figure 1: Camels carrying boat on a central Australian expedition. National Library of Australia.

Contemporary Australian water politics is marked by conceptual and bureaucratic separation of water as discrete matter; a separation that leads to much misinformation and conflict. Water is bureaucratically separated from land, and conceptually separated from social, cultural and ecological processes, through water reforms, management agendas and strategies. This false divide between water and its constituent parts and processes both frames and limits water policy and governance.

The source of this politics of separation is colonial relations with water and the Australian continent; relations that were themselves shaped by notions of separation and hierarchy that characterised Western dualistic philosophy and Eurocentric thought (Anderson, 1995; Suchet, 2002). Colonial expectations of inland fresh water and hopes for development of the new nation were combined with physical tools of development including bores, irrigation and river

diversion (Gibbs, 2009a). Today these physical tools continue to be used, in partner with new forms of conceptual and bureaucratic separation. Yet analysis of the materiality of water demonstrates that water has agency as part of an assemblage.

Drawing on a broadly postcolonial conceptual framing and recent workings of materiality and nature within geography and cognate fields, this paper argues that conceptualising water as part of an agentic assemblage provides a productive alternative to the notion of 'water as separate' so prominent in contemporary water politics. The paper presents an analysis of six objects from the deserts of eastern central Australia – two bottles, two bores and two boats – each of which differently reveals the agency of water assemblages.

Through this analysis the paper makes two sets of arguments. First, water was constructed as separate and discrete through the colonial process. However, material analysis demonstrates water as agent and part of an assemblage. Second, a material analysis shows that colonial relations prioritised imported (European) knowledge of water and landscape, and marginalised local (Indigenous) knowledge. This politics of environmental knowledge continues to shape Australian water politics.

The following section presents a brief introduction to the problem of separation in contemporary Australian water politics. The paper then moves on to discuss material and postcolonial approaches that enable a different conceptualisation of water; in particular, the possibility of applying Bennett's notion of 'agency of

assemblages' to reconceptualise Australian water. The next section discusses six water-related 'things'/objects from the inland, taken from field and archival research. This analysis investigates the suggestion that 'agency of assemblages' might provide a productive conceptual framework for water in Australia. The paper concludes with two points: first reconceptualising water through the framework of agentic assemblage (*sensu* Bennett, 2010) would present a distinct approach to water politics. Second, local Indigenous understandings of water may provide an alternate epistemology upon which to base decision-making, which both unsettles the separation of water and contributes to an ongoing process of decolonisation.

Contemporary Australian water politics and the problem of separation

Australian water politics and decision-making processes are highly contested. Contemporary water politics is characterised by conceptual and bureaucratic separation of water – from land, and from social processes. Notably, in 1994 the Council of Australian Governments committed to a process of reforms that separated water property rights from land title, and institutionally separated the roles of water resource management, standard setting and regulatory enforcement, and service provision. This separation facilitated transferable water entitlements and water trading¹ (CoAG, 1994; Connell et al., 2005; Gibbs, 2009a; Young and McColl, 2002); key processes in water governance in Australia,

¹ In many regions water allocations are rarely met due to inadequate supply, partly a function of the variability of Australia's water regimes, and an argument for the failure of the allocation system.

as elsewhere. The compartmentalisation of water continued with the popularisation of the ‘triple bottom line’ as a means of operationalising the aims of sustainability outlined in the Brundtland Report (WCED, 1987). The triple bottom line has done vital work in highlighting economic, social and environmental issues, but has not done well to recognise the inherent interconnections between these categories. As such, it has served to separate water into three distinct components within water management.

The most recent illustration of ‘separate’ water is the 2010 release of the Murray Darling Basin Authority’s (MDBA) *Guide to the proposed Basin Plan* (MDBA, 2010). The MDBA is the prime statutory authority charged with managing the water resources of the Murray Darling Basin – the region incorporating the majority of Australia’s food production and irrigation areas. The Basin is widely recognised as severely over-allocated and in poor ecological condition. The MDBA is required under the *Water Act 2007* (Cwlth)² to ‘determine the volume of water required to maintain and restore environmental assets, using best available science and the principles of ecologically sustainable development’ (MDBA, 2010, page iii). Since the release of the *Guide*, these goals have been interpreted – by various politicians, industry representatives, community members, and the media – as prioritising ‘the environment’ over communities and local economies; prioritisation that has ignited heated public debate and animosity towards the MDBA. Section 2 of the *Guide* – ‘The Basin and its importance to Australia’ – is framed around the triple bottom line. It makes

² See http://www.austlii.edu.au/techlib/standards/style_guide.html

explicit efforts to take into account social, environmental and economic issues; for example, it recognises a need 'to change the balance between water for the environment and water for economic benefit in order to restore the environmental health of the Basin and preserve and enhance its long-term productivity' (MDBA, 2010, page 25). In some respects this is a laudable goal. However, the framing of this phrase is characteristic and instructive: water for the environment is separated from economic benefit; environmental health from economic productivity.

The current MDBA controversy is characterised by separation of water and society; an erroneous and unhelpful divide. Much contemporary water conflict in Australia is arguably caused by pitting 'society' against 'nature'. Water is conceptually framed and then managed as discrete matter, rather than being understood as part of a network or assemblage of biophysical matter, people, decision-making processes and institutions, infrastructure and other mediating technologies, and cultures of daily practice. Water is positioned as inert matter upon which humans act. There is no doubt that the current controversy over the MDBA is highly significant; however, it is also but the latest development in a tradition that frames water as a discrete entity. It is a high profile example, representative of a nation's approach to water management.

Agency of assemblages and postcolonial materiality

Moving beyond an idea of separate water demands unsettling the model of separation, and reconceptualising water. This task has been approached in a variety of ways. There is a strong tradition of poststructural scholarship that

challenges the nature/culture binary, blurring boundaries between categories. Productive intellectual advances have been made in the name of socialnature (Castree and Braun, 2001), hybridity (Whatmore, 2002), networks and assemblages (Bennett, 2010; Braun, 2006), the hydrosocial cycle (Bakker, 2003; Kaika, 2005; Swyngedouw, 2007), and the Australian indigenous notion of 'Country'³ (Jackson, 2006; Rose, 2004; Weir, 2009), among others. Consistent with the 'material turn' in geography, research on nature, environment and resources has come to engage with the concept of 'materiality'. This research forms a broad corpus; it is beyond the scope of this paper to provide a thorough review. Instead, I focus here on two ideas: some key ways in which materiality, agency and assemblage have been applied to nature; and approaches to postcolonial materiality, particularly as applied to water. I take guidance from Bakker and Bridge's (2006) call for further work on the materiality of resources, and draw on Bennett's (2010) analysis of 'vibrant matter' and the 'agency of assemblages'.

Nature: materiality, agency, assemblage

A growing body of research in geography and cognate fields is concerned with the implications of 'taking seriously' the materiality of nature, resources and environments. This work is characterised by multiple treatments of the notion of 'materiality', stemming from diverse theoretical traditions. Materiality is, for instance, associated with the concrete, the 'bump-into-able' (Philo, 2000),

³ The concept of 'Country' in Indigenous Australia refers to human and non-human, sentient and non-sentient beings, spirits and Dreamings that comprise a place. It signals a distinct ontology and epistemology involving rights and responsibilities. Common usage of the term refers to landscapes, and often suggests an element of connection.

‘relations between the material and immaterial ... the need to see the one in the other ... to the point where the binary opposition has been dissolved’ (Philo, 2000, page 34). Materiality also refers to material culture; relationships between people and things. How, for example, identity, citizenship and nationalism emerge from daily engagements with cultural forms (Jackson, 2000). Since these two key early papers ‘materiality’ has been taken in numerous directions. But in much of this work what is important is ‘what matter does rather than what matter is’; matter is not ‘an undifferentiated externality standing apart from the social or cultural’ (Anderson and Tolia-Kelly 2004, page 672). However, according to Bakker and Bridge (2006, page 8), in the field of resource geographies the material ‘has often been treated unproblematically as a category external to society’.

It may be argued that this is no longer true of scholarship, due to the enormous attention devoted to the topic since Bakker and Bridge’s paper. But despite rich empirical and conceptual research on the materiality of nature, and specifically water (eg. Head and Muir, 2007; Kaika, 2006; Kooy and Bakker, 2008; Swyngedouw, 2004), the practice and conceptualisation of water in resource and environmental management remain characterised by separation.

In her recent work, Jane Bennett (2010) asks how political responses to public problems would change were we to take seriously the vitality of nonhuman bodies. This paper draws on Bennett’s work, applying this line of analysis to the ‘public problem’ of water in Australia. Bennett attempts ‘to give voice to a thing-power’ (2010, page 2): ‘the curious ability of inanimate things to animate, to act,

to produce effects dramatic and subtle' (page 6). However, 'thing-power', she argues, over-emphasises the 'thinginess' of matter. Instead, Bennett wants to 'theorize a materiality that is as much force as entity, as much energy as matter' (page 20). The figure of the 'thing' lends itself to an atomistic rather than congregational understanding of agency. Hence, Bennett argues for a distributive agency, and specifically agency of 'assemblages', following Deleuze and Guattari.

The agency of matter is approached from a variety of theoretical positions. Assemblage thinking focuses on the materiality of things themselves *and* on the coming together of things; on the forming and reforming of 'confederations' of 'diverse elements' (Bennett 2010). Work in this tradition negotiates a tension between the materiality of the object and the structure of the assemblage. A relational analytic, for example, tends to prioritise relations within an assemblage, whereas constructionist work focuses on the agency of matter itself. While assemblage thinking is diverse, a number of coherent themes emerge. Of particular interest to the present study is a concern with distributive agency, and with both the spatial and temporal (see Anderson and McFarlane 2011). Bennett's take on these two themes is particularly helpful.

For Bennett (2010, pages 23-24) 'Assemblages are not governed by any central head: no one materiality or type of material has sufficient competence to determine consistently the trajectory or impact of the group'. Each member of the assemblage has its own vital force, but there is also an 'agency of the assemblage'. Because both exist, an assemblage has a finite life span, meaning that assemblages are temporally specific, and shift over time. Such distributive

agency doesn't deny the existence of human intention, but sees it as less definitive of outcomes. In politics, a theory of 'vibrant matter' presents individuals (human or nonhuman) as incapable of bearing *full* responsibility, and therefore 'broadens the range of places to look for sources' of harmful events (page 37). In a practical and political sense, conceptualising water – or other resource – through a framework of agentic assemblage makes it possible to include 'nonhumans in the demos' (page 30).

The notion of a distributive agency, and specifically an agency of assemblages, is particularly pertinent to the present study. As discussed above Australian water is largely managed as a discrete 'resource'; certainly one that is required for social, economic and ecological functions, but which is acted upon and shaped by human agency. This paper seeks to extend empirical and conceptual understanding of the distributive agency of Australian water by illuminating water assemblages and demonstrating their agency.

Water: postcolonial materiality

As discussed above, materiality involves concern for space *and* time. Spatiality and temporality are intricately interwoven, and the nature of these relations is explored from a range of conceptual traditions (Anderson and McFarlane, 2011; Braun and Whatmore, 2010). The question of time is important in the context of colonial and postcolonial water governance, in the sense that colonial relations set the historical context for, and continue to manifest in, postcolonial and contemporary water governance in Australia and elsewhere. This section

explores the generative possibilities of bringing into conversation postcolonial theory and a material approach to understanding water.

Postcolonial analysis provides an historical context, and theoretical framework, for understanding Australian water. Nature and natural resources are enlisted in the physical, economic and discursive development of the nation and national identity (Ginn, 2008; Jazeel, 2005; Powell, 2000; Swyngedouw, 2007). Water plays a key role in such development. The specific experience of colonial and postcolonial relations with Australia's highly variable climate and water regimes is the topic of extensive research (eg. Gibbs, 2010; Jackson, 2006; Weir, 2009); due in part to the centrality of water to the development of the nation and the contemporary context of fresh water shortages. Tools of irrigation, river diversion and bore drilling were crucial to the colonisation and development of the Australian landscape and nation. They physically transformed landscapes, and were influenced by, and in turn shaped, thinking and practice towards water (Gibbs, 2009a). Postcolonial theory provides a conceptual tool for understanding the materiality and agency of water.

Postcolonial scholarship considers the spatially and temporally diverse material effects of colonialism (Cook and Harrison, 2003; Huggan and Tiffin, 2007; Tolia-Kelly, 2004), and points to the connections between colonial discourse and practice. It shows the discursive-material legacies of colonialism, including (among others) irrigation channels, bores, hydro-electric power generators, policies of separation, urban distribution systems, drainage systems, and the more mundane pipes, taps and toilets (Gandy, 2003; Gibbs, 2009a; Head and

Muir, 2007; Kaika, 2006; Powell, 2000; Swyngedouw, 2004; Worster, 1992).

Relations between people, water and 'things' (infrastructure, legislation, other living and non-living entities) are shaped by knowledge systems and practices imported from the imperial centre, often marginalising or supplanting existing local knowledge and practice, and in turn shaping new expectations and practices.

Further, postcolonial scholarship reveals the specific ways in which colonial power has been exerted through connected discourse and practice. For example, Cook and Harrison (2003, page 298) argue that European empires exerted power through the ways in which discourses

'were produced, transported, understood, interpreted, reinterpreted and so on *alongside and bound up with* other technologies, knowledges and practices (e.g. ships, navigation, insurance, money, weapons, labour, slavery, commodities, consumption, etc.) in specific ways, in/between specific places, and with locally specific results' (italics in original).

It is through close attention to empirical case studies that specific relations in particular post/colonial contexts are revealed (e.g. Cook and Harrison, 2003; Jacobs, 1996; Saldanha, 2007; Tolia-Kelly, 2004).

A significant aim of postcolonial theory is to decentre European knowledge; to 'provincialize Europe' (Chakrabarty, 2000). This project includes illuminating the role and power of Enlightenment thinking, and revealing the often taken-for-granted binaries of nature/culture and structure/agency that shape thinking and practice. Histories, geographies and identities may then be put together in ways

that ‘do not need to be anchored to Europe to be worthy of attention’ (Cook and Harrison, 2003, page 298). In this way, postcolonialism is ‘not just critical but also celebratory’; it is in part a utopian discourse ‘aimed at providing *conceptual* possibilities for a *material* transformation of the world’ (Huggan and Tiffin, 2007, page 10, emphasis in original).

The project of postcolonialism then, should be helpful for understanding how post/colonial materiality shapes contemporary water management, water governance and other human-water interactions. Some recent work explicitly brings together postcolonial analysis and material approaches, but much focuses on urban contexts, and the majority (developing/Third) world (for example, in the context of water see Gandy, 2008; Kooy and Bakker, 2008; McFarlane, 2008). Less attention has been paid to rural and remote settings and the minority world. This paper seeks to address this gap by bringing a postcolonial material analysis to water in inland Australia.

Water assemblages in the Australian inland

Six ‘things’ from inland Australia, found in the archive and *in situ*, illuminate relations between water, people, landscapes, ideas, objects, climate, expectations, actions. Paying close attention to the matter of water assemblages reveals that water is not a separate entity, discrete and inert, as imagined in the realm of water management. Rather, it is part of an agentic assemblage. The analysis presented here demonstrates the agency of water assemblages in this landscape, at the time of colonisation and into the present. Further, it illuminates something of the politics of environmental knowledge. The case studies reveal how through

colonisation Indigenous environmental knowledge is marginalised, and colonial knowledge privileged. Yet through the empirical work, we see that Indigenous knowledge systems recognise the agency of water assemblages. From this analysis I suggest that contemporary water governance would do well to pay greater attention to local knowledges as a way towards reconceptualising water.

Before moving on to the object narrative and analysis, a few words about water in the inland. Much of the Australian inland is characterised by highly variable rainfall and river flow. For a large proportion of the time desert rivers and lakes exist as dry surfaces or ‘chains of ponds’. But the landscape is marked by episodic flooding, often fed by large monsoon events in the northern reaches of inland catchments. With the monsoon, some of these rivers, including Cooper Creek and the Georgina and Diamantina Rivers, flow south towards the driest and lowest part of the continent – Lake Eyre / Kati Thanda – transforming the landscape as they flow. This variability has shaped the exploration, settlement, and historical and continuing development of the continent, the nation, and the national imaginary (Gibbs, 2009a). The six ‘things’ derive from field and archival research in the Lake Eyre Basin focusing on this context of variability. Together these things highlight key aspects of human relationships with the inland, and illuminate the central concern of this paper: the agency of water assemblages.

Bottles: agency of water assemblages

The Simpson Desert, in the most arid part of Australia, lacks permanent surface water. Despite this, it was permanent home for Aboriginal people prior to 1900. For generations the Wangkangurru *mikiri-nganha* – the Wangkangurru people

from the wells – lived and died in the Simpson. Linguist Luise Hercus describes how the Wangkangurru ‘had total occupation of the area, they made use of every possible resource, there was no wasteland, no empty country, no “desert”, everything “belonged” both in practical terms and in mythology’ (Hercus, 1990, page 149).

Mikiri were the only permanent water sources in the Simpson Desert. The mikiri were deep wells dug and maintained by the Wangkangurru. Some were very deep, requiring a person to clamber down through a long narrow tunnel, as much as seven metres into the ground. They were often located in inter-dune swales, which would collect water in times of heavy local rainfall, attracting animal and plant life. Hercus and Clarke (1986) regard them as ‘resource nodes’ where people could obtain water and animal and plant foods in an arid landscape. Archaeological and ethnographic evidence shows that the wells were centres of habitation, and facilitated movement and trade throughout the Desert.

In times of rain the Wangkangurru moved away from the mikiri across a broad area of desert, making use of *irpi* (claypans) and *ikara* (swamps). In dry times, when *irpi* and *ikara* no longer held water, the Wangkangurru would return to make camp at the mikiri. Mick McLean *Irinjili* was one of the last Wangkangurru men born and raised in the Simpson (c.1888 to 1977). According to Hercus, he had ‘an immense store of traditional knowledge’, and her research draws strongly on what she learnt from him.

‘One of the traditional song cycles of Wangkangurru literature deals with the theme of the poor taste of the water of one of the soaks

Pulupudnundha ... people longed for rain so that they could go out to the swamps, but the soaks were always there when the surface water had dried out: there was no reason to leave the desert' (Hercus, 1985, page 25).

Figure 2: Kangaroo-skin water bag taken from Glenormiston Gorge on the Georgina River in far west Queensland, and brought to museum collections in the late 19th century. National Museum of Australia.

When travelling, Wangkangurru, like other desert peoples, carried water in bags made from the skins of hare-wallaby (*Lagorchestes*), rat-kangaroo (*Caloprymnus*) and other smaller mammals (Figure 2). Auntie⁴ Linda Crombie, a Wangkangurru woman born in the Simpson Desert, lived all her life on cattle stations and towns

⁴ 'Auntie' and 'Uncle' are commonly used in Indigenous Australia to refer to Elders, and to connote respect and recognition of knowledge and seniority.

in the region. Mick McLean was her father. On the banks of the Diamantina River she told me about her father making water-bags from cat skin: 'Dad had to skin a cat to make a water-bag ... just gotta give a little bit drink. We was used to it, you know, out in the desert' (Crombie, April 2003⁵). Collection and use of water was based on intimate knowledge and care for water sources. Caring for Country was essential to survival.

From earliest European contact, Aboriginal people throughout Australia began to move off their Country. People were forced from traditional lands onto missions and pastoral stations, or attracted to rations offered by those places. Many people were murdered by Europeans, and many more were killed by small-pox and other introduced diseases. In the 1880s Aboriginal peoples displaced from other places moved into the Simpson Desert. The mikiri couldn't support the larger population, and the Wangkangurru finally left the desert in 1900 carrying skin water bags with them, and leaving the mikiri country uninhabited. In an interview conducted by Hercus (1985), Mick McLean recalls people taking water from the soak at Balcoora when they finally left the Desert. For the Wangkangurru *mikiri-nganha* leaving the Simpson severed daily practice and lived connections with Country, and signalled a break in local knowledge.

To suggest that the Wangkanguru left the desert because of colonial policy, or the draw of rations, or pressure from other displaced peoples, would be to simplify the matter. Agency cannot be attributed to one of these factors alone. Rather, the

⁵ Interviews were conducted in 2002 and 2003. Named interviewees gave permission for their words and names to be used in publications emerging from the research.

Wangakangurru interacted with other people, colonial policy, climate regimes, landscape, and water. Assemblages comprised of these things and processes had agency in their movement off Country. Likewise, lives in the desert were determined by the coming together of people, dunes, seasonal change, tools, claypans, local rain, mikiri, animals and their skins, knowledge of Country, migration, water. In both cases – in the desert and in the act of moving from the desert – water has agency, and acts as part of an assemblage, which changes over time.

Colonial relations with Australian inland water were shaped by an imperative to explore and expand into the inland, for settlement and agricultural production. Early expeditions were driven by a belief in an inland sea or great river (Cumpston, 1964; Stokes, 1986). Several sources of evidence fed this popular conviction; in particular, rivers running and birds migrating towards the centre (Beale, 1979). In Europe, this could mean only one thing: an inland body of fresh water. Numerous expeditions began with the aim of finding the inland sea. One important journey was Charles Sturt's Central Australian Expedition of 1844-1845.

Figure 3: Water bottle used by Captain Charles Sturt. National Library of Australia.

In contrast to the skin bag (Figure 2), the bottle pictured in Figure 3 is identified as belonging to one man; the photograph is catalogued ‘Water bottle used by Captain Charles Sturt’. We cannot know if Sturt was the only person to use this bottle, but both the use of the object, and the stories we tell, point towards the agency of an individual⁶; the agency of one man to explore, discover, and shape the future of the continent.

But Sturt could only travel with so little water with the help of others: others carrying water and most importantly, showing him where to find it. Australian landscapes were vastly different to the temperate ones known to the explorers, and water couldn’t be found using the same knowledge. So Sturt (like many

⁶ It may also suggest the Western notion of water as property, and foreshadow concepts of privatisation and commodification of water.

others) relied on local Aboriginal people for his survival. The need to source water in an unknown landscape shaped relations between Sturt's party and Aboriginal peoples. Sturt alone was not responsible for his expedition, nor was a group of humans, making decisions and labouring through the landscape. Rather, we must look to an assemblage in which people play a part (have agency) alongside and tied up with, river water, sand, wells, knowledge of Country, communication across language divides, water bottles, human bodies experiencing thirst, weighty kit lugged through the desert, animals that point to water sources, and so on.

Histories of Indigenous-settler relations in Australia are marked by devastating dispossession and violence, but at times and in places relations were reputedly good. Records suggest that Sturt maintained good rapport with the Aboriginal people he met on his expedition (Stokes, 1986). Sturt's water bottle and these narratives combine to illustrate some of the complexity and subtlety of settler relations with Aboriginal peoples; relations in which people at times listened and learned. Such narratives can reveal 'more complex stories of recovery, change and accommodation than simply dramatic and immediate colonial environmental destruction' (Nash, 2002, page 223). At first glance, 'Sturt's bottle' tells of the agency of an individual; but through closer examination, it is possible to develop a more nuanced understanding of the agency of water assemblages in determining this expedition, patterns of exploration and settlement, and histories of Indigenous-settler relations.

Bores: shifting water assemblages

Availability of fresh water shaped settlement and development of the inland as it had Indigenous occupation and colonial exploration. Development was not determined by human will and ingenuity alone. Rather, humans act as part of assemblages of diverse elements, which change over time. Bores, boredrains and boredrain wetlands illustrate the shifting assemblage.

Surface and shallow ground water sources in the inland – including wells dug by Aboriginal people and enlarged by colonists (MacFarlane, 2005) – soon failed to provide adequate water for settlers and their planned land uses. By the 1870s bore drilling struck the Great Artesian Basin, the continent's largest aquifer underlying 1.7 million km² of central and north-eastern Australia (Cox and Barron, 1998). The Great Artesian Basin became instrumental in the colonisation and development of the arid and semi-arid inland and the nation (Cox and Barron, 1998; Gibbs, 2009a; 2009b).

Figure 4: Bore at Bedourie, southwest Queensland. Photograph taken on a survey trip in 1927 by Rev. J.A. Barber and Dr George Simpson for the Flying Doctor Scheme. National Library of Australia.

Adding water to the landscape through artesian bores went some way to overcoming barriers set by aridity (Figure 4). Ground water made possible human settlement and establishment of cattle stations. But when bores were first drilled, little was known of their source. Their waters were imagined to be endless (Powell, 2000), and this belief led to the construction of 'free-flowing' bores. In a free-flowing bore, when water reaches the surface it flows out across the landscape, following a creek-line or drainage ditch dug for the purpose. The resulting 'boredrain' provides a low maintenance means of distributing water and allowing hot ground water – sometimes at boiling point – to cool sufficiently for stock to drink. In some places artesian water reaches the surface under high pressure. Where pressure is comparatively low, additional infrastructure is required to pump it to the surface. Infrastructure added new maintenance, financial and administrative dimensions to the provision of water (Yelland, 2002).

Since about 1883 artesian bores have provided a constant supply of water to pastoral properties and townships (Yelland, 2002). In so doing they have largely enabled people to overcome the effects of the variable rainfall and river flow that characterise inland Australia. By bringing permanent water to places marked by variability, bores transformed landscapes and interactions with place. They enabled pastoralists to spread stock away from rivers and waterholes to stony plains where perennial grasses grow, and allowed relatively safe transport of stock from floodplain pastures of the Georgina-Diamantina Rivers and Cooper Creek to the railhead at Marree and to distant markets beyond, securing

economies of the pastoral industry. In towns, a bore put an end to practices of carting water from the river, shifting people's relationships with the river, now mediated by pipes and taps instead of buckets and legs.

Figure 5: The bore-fed 'spa' beside Mungerannie pub, northeast South Australia, and boredrain wetland beyond. Photo L.Gibbs.

Boredrains were initially established to facilitate viable grazing. But over time, they have become much more than stock watering points. New plant and animal life – including humans – are attracted to water in the desert. Boredrains have physically and conceptually become 'boredrain wetlands'. Bore water physically transforms landscapes, and in turn this transformation changes meanings of place. No longer is a boredrain simply a place where a bore drains. It now has the positive connotations associated with the wetland, brought about through international agreements such as the Ramsar Convention on Wetlands. Along old stock routes boredrains like the one at Mungerannie on the Birdsville Track (Figure 5) attract local people and tourists, who stop to camp, picnic, bird-watch, or hold swimming lessons (Oldfield, April 2003). At Mungerannie a black

polypropylene pipe delivers hot water from the bore to a 'spa' beside the wetland.

Through growing scientific understanding of the Great Artesian Basin, the finite nature of its waters has become accepted. Groundwater scientists have found that free-flowing bores lose up to 90% of their discharge to evaporation and seepage (Cox and Barron, 1998), and the massive flow of water from thousands of bores across the Basin is directly responsible for dropping pressure. This results in numerous bores failing to reach the surface and springs drying out. Increased concern for conservation of artesian waters, coupled with technological development, has led to a Basin-wide project to cap free-flowing bores. This is a long and difficult process: there are several thousand bores in the Basin, and at many water emerges under high pressure and temperature (three at a property in the deepest part of the Basin have been recorded between 99°C and 102°C [Weston, April 2003]). At most bores, capping involves channelling water into tanks and dispersing it through polypropylene pipes.

But people living and working in the region are debating the ecological and social values of bores drain wetlands (e.g. CERM, 2002), and some are pushing for selected bores to retain their flow (Mitchell, May 2003). In some cases flow is controlled rather than stopped, allowing a reduced quantity of water to continue to flow into established wetlands. Boredrains are beginning to be managed as assemblages of sorts: as a complex mix of ecosystems, infrastructure, social and cultural uses and values. But management must also acknowledge the *shifting* assemblage.

The challenge of the inland may be constructed as lack of water, and therefore addressed by simply adding water. But settlement and development were determined by an assemblage with a distinct history of formation, and thus a finite life span (Bennett 2010). Assemblages comprised of ground water, bore-heads and infrastructure, labouring human bodies, policy, cattle, topography and boredrains, knowledge and beliefs of the day, financial and administrative arrangements. Each element has its own agency in addition to the agency of the assemblage; the assemblage is therefore ‘a “whole that is not given” because its evolution produces *new* members and thus an ever-changing array of effects’ (Bennett, 2010, page 130). Elements of the boredrain are ‘material and meaningful’, and they are also ‘*eventful*’, ‘carry[ing] with them a margin of indeterminacy’ (Braun and Whatmore, 2010, page xxi). This becomes important in politics because change is not predetermined by human actors, and its effects cannot be known in advance. Environmental decision-making must be alert to the shifting assemblage, because as it shifts, so do its effects.

Boats: environmental knowledge

So confident were early explorers, and those who commissioned them, of finding an inland fresh water source that many carried boats on their expeditions (Figure 1). Finding the ‘inland sea’, or a major navigable river or lake upon which settlement could be based, became an important motivation for exploration. Expeditions were driven by social expectations of what the inland, and this vast new continent, would and should provide for the growing colonies (and eventually the nation). But these expectations were based on European

environmental knowledge imported from the British Isles through the process of colonisation, and imposed onto Australian nature. A pattern of expectation and interaction was set in train in the early colonial period, and continues to shape human relationships with water, and the politics of environmental knowledge. Two boats (Figures 1 and 6) cast some light on the links between water and environmental knowledge in colonial and postcolonial Australia.

Among those who carried boats into the inland was Charles Sturt. A belief in the inland sea provided the initial drive for Sturt's Central Australian Expedition. In 1844 he wrote: 'My plan is to go up the Darling to get as soon as I can into the tropics. I have a strange idea that there may be a central sea not far from the Darling in 29°, and I should be prepared for a voyage' (quoted in Langley, 1969, page 194). Sturt was driven as much by societal expectations as by the physical signs of rivers and birds pointing to the inland. He knew that 'only hollow thanks went to the discoverers of sterile country. Eyre⁷ had been virtually shunned despite his exploits in the desert, while Mitchell had been knighted and rewarded financially after stumbling onto the rich pastures of central Victoria' (Stokes, 1986, page 151).

Sturt included in his party two sailors and one boat. He travelled north with his party from Fort Grey on the Darling River, through what came to be named 'Sturt's Stony Desert' and Goyder Lagoon, until he reached the sand sea of the Simpson. At this point he turned back, returning with grave disappointment at

⁷ Explorer, Edward John Eyre, for whom Lake Eyre was named.

having not reached the centre of the continent, nor finding the inland sea (Langley, 1969). But he returned with knowledge of the Murray and Darling Rivers, and evidence of the aridity of Australia's inland (Stokes, 1986).

Figure 6: 'Sturt's Boat'. Sculpture by Anthony Hamilton at Tibooburra Pioneer Park, far northwest NSW. Photo L.Gibbs.

Anthony Hamilton's sculpture 'Sturt's Boat' (Figure 6) is a full-scale replica of the 27-foot long whaleboat that Sturt hauled across the inland. He abandoned it at Depot Glen, close to the site of Hamilton's sculpture in Tibooburra Pioneer Park, far northwest NSW. The sculpture refers to a specific moment in the colonisation of Australia, and evokes attitudes that prevailed at that time: expectations of what the landscape would offer, and confidence that they would be fulfilled. These expectations continue to shape how we think about and govern water.

Water policy continues to be informed by ideas of what the landscape should provide, rather than seeking to understand and adapt to the specificity of place.

Seeing the boat *in situ* is striking; it contrasts starkly with the surrounding arid landscape (only occasionally transformed to wet and green with episodic flooding). It combines historical and contemporary ideas about the inland, and brings a degree of humour to a familiar history. Australians are now so familiar with the idea of a dry and variable inland that it has become possible to mock the notion of an inland sea. The upside-down boat may simply refer to the way boats are often stored. But it might also be interpreted as ‘turning on their head’ ideas held by Australia’s colonisers. Hamilton’s sculpture might be read as a commemoration of Sturt’s journey, and it might be read as an act of resistance to colonisation; resistance to the importation to this landscape of ideas developed elsewhere. The inverted boat also brings to mind the contemporary upside-down boats on rooftops of four-wheel-drive vehicles frequently spotted in the desert. Despite a new understanding of the inland, we continue to relate to the desert in this way: by seeking out the surface water. Irrespective of the reading one makes, the sculpture is part of a postcolonial continuity; reflecting how ‘[t]hough colonial traditions of representation persist, they are also reworked and resisted’ (Nash, 2002, page 222).

Little information accompanies the boat with which we opened this paper (Figure 1). What we do know is that this photograph is part of the National Library of Australia’s John Flynn Collection, and records activities of the Australian Inland Mission (AIM). Commissioned by the Presbyterian Church in

1912 to report on the missionary needs of the Northern Territory, Reverend John Flynn became passionate about ministering to white settlers on the frontier, and took an interest in the lives of the Aboriginal people he met. He condemned the policies of the Commonwealth Government on Aboriginal welfare, criticised both church and state efforts to improve living conditions, and became outspoken in his recognition of European culpability, and the impacts of settlement (Hains, 2002; NAA, n.d.).

Handling this image of a boat in the desert brings to mind other boats carried to the inland, and the associated hopes. But the boat is not before me; rather, the photograph is. Exploring research methods in the context of ‘bodies and materials of interest ... largely dead and gone’, Lorimer and Whatmore (2009, page 675) combine methods of archival, field and embodied research, and explicate an approach of ‘employing ways of reading, viewing and handling historic documents to witness their “more-than-representational” properties’. Here I bring together a number of embodied methods: handling a photograph in the archive – record and remnant of a set of relations I seek to understand; careful reading; talking, listening and interviewing; and some months of fieldwork in the desert, experiencing distance, flat horizons, bright light, dry air. Seeing Hamilton’s scale replica of ‘Sturt’s Boat’ in Tibooburra adds to a visceral understanding of colonial experience, action and knowledge.

The photograph of camels and a boat provides a record of the activities of AIM, but the combination of methods illuminates much more. It tells something of colonial relationships with the inland, and the nature of the frontier – ‘a place of

anxiety and adventure: an arena of masculine heroism, yet also a place to be tamed, domesticated, known and possessed' (Hains, 2002, page 3). It is suggestive of relations between colonisers and Indigenous peoples, which were mediated through frontier and missionary activity, marked by subjugation of knowledge and life ways, and yet contested, even at the time, as they are today.

Together, these two boats show that colonial relations with the inland were shaped by environmental knowledge from elsewhere, and Indigenous knowledge systems were marginalised. European environmental knowledge continues to have a strong influence on decision-making. For example, we continue to separate land and water, and separate water for purposes deemed social, economic and environmental. Separation has implications for the politics of water, such as enabling water trading, already criticised as both ineffective (with inadequate supply to fill allocation) and destructive (of ecosystems and social practice). But the boats also point to resistance and reworking of colonial relationships (cf. Nash, 2002). Environmental knowledge has long been, and remains contested. These boats present possibilities for unsettling colonial knowledge of place and reconceptualising water.

Conclusion: agency of water assemblages, and the politics of environmental knowledge

This paper has sought to respond to the conceptual and practical problem of water as separate. Taking guidance from Bennett's (2010) vital materiality, it has asked how political responses to the public problem of water would change were

we to take seriously the vitality of nonhuman bodies. The paper argues that materiality might productively be used to reframe the politics of water, using the concept of agency of assemblages to replace the notion of water as separate.

Through analysis of Australian inland water, and six water-related 'things' from the inland, the paper demonstrates that water is not separate, but part of an assemblage with agency. Conceptually framing water as part of an agentic assemblage encourages a more nuanced understanding of highly complex systems, and acknowledges the role of and interactions between various human and nonhuman actants. We see that the human is not responsible for all action, but that agency is determined through assemblage interactions; 'the us and it slip-slide into each other' (Bennett, 2010, page 4).

To take seriously the efficacy of the nonhuman is 'not only to shift one's ideas about what counts as an actor but also to focus one's attention away from individuals and onto actants in assemblages' (Bennett, 2010, page 42). We need to move from thinking only of human action as determining outcomes in the inland, but we must also shift from thinking of the agency of water alone. Rather, the things analysed here illuminate the agency of actants *within* assemblages, and the agency *of* the assemblage – of relations between water, animal skin, desert dunes, knowledge of Country, patterns of rainfall, mikiri, humans bodies that maintain wells, and so on. And we must also understand water assemblages as changing over time; water as assemblage and assemblages as temporally *unfixed*.

Recognising the agency of assemblages – not only of human actants (and perhaps water conceived as a separate entity) – provides an interruption in water politics; an interruption to the dominant notion of separate water acted upon by humans. Through a conceptual framing of water as agentic assemblage the demos becomes ‘irreducible to the particular *bodies* involved’ (Bennett, 2010, page 106), and comes to include a broader range of bodies and relations. In this way recognising the water assemblage becomes a political act by challenging and changing how people conceptualise water and what is involved in the decision-making process; by ‘overthrow[ing] the regime of the perceptible’ (Bennett, 2010, page 107, italics in original).

The paper presents a second argument. Through the processes of colonisation, ideas about nature and socio-natural relations in Australia are shaped by knowledge developed elsewhere. That knowledge fed expectations of what the Australian inland should provide, and in turn marginalised Indigenous knowledge, practice and ways of being. Ideas about nature imported through the colonial process continue to influence thinking and practice towards Australian water. Yet Indigenous knowledge recognises the agency of water assemblages, comprising living and non-living things and their interrelations. There is arguably some consistency between Indigenous ontology and assemblage thinking. The colonial pattern of suppression of local knowledge misses opportunities to listen to and learn from other places and experiences. Unsettling dominant ways of thinking can play a role in decolonising the social sciences and practices of environmental governance. Bringing together insights from postcolonialism and vital materiality disrupts hegemonic narratives by

challenging binaries, decentring Europe, and placing European narratives in their social, cultural and political context.

By illuminating the agency of water assemblages, it becomes possible to conceptually reframe water as agentic assemblage, rather than separate – discrete, inert – matter. In this way it unsettles and decentres European knowledge, thereby contributing to a process of decolonising. Paying greater attention to Indigenous and local knowledge unsettles the current construction of water as separate, making possible a reconceptualisation of water as agentic assemblage.

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