

One blood

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We be of one blood, ye and I
–Rudyard Kipling,
The Jungle Book

ABRUPT social and environmental change is usually explored in popular culture as apocalyptic, and increasingly framed around ideas of the Anthropocene in other current research. In this paper I explore these ideas in a

*This essay was inspired by many sources, including work by ecologists Richard Hobbs, Abi Vanak, Brad Purcell and Vidya Athreya; and social scientists Deborah Rose, Lesley Head, George Monbiot, Bill Gammage and Val Plumwood.

long-term context, and bring together threads of recent thinking about conservation and biodiversity on one hand and social risk and preparedness on the other. Though based in Australia, I was born in India (the fifth generation of my family there), so my analysis touches on both countries.

It is often said that Australian Aboriginal people have the longest continuous cultural tradition on earth: there is around 50,000 years of archaeological evidence of Aboriginal presence. Human ancestral remains found in south eastern Australia dubbed

'Mungo Lady' and 'Mungo Man' are respectively the oldest known human cremation in the world and the oldest human remains in Australia: a ritual burial and an ancient presence. During the long period of Aboriginal occupation, the island continent transformed repeatedly. It dried out, became more flammable, and most of the megafauna became extinct. At the peak of the last glacial maximum 20,000 years ago the sea was 120 metres lower than now, and the coastline stabilized at current levels only 6,000 years ago. Aboriginal people occupied all Australian environments, with components of these landscapes continuing to evolve over this long time frame, most notably with the use of fire. Sophisticated and localized practices developed to enable human and non-human communities to flourish and sustain themselves.¹

About 5,000 years ago, ancestors of Aboriginal people from South East Asia brought the dingo (*Canis lupus dingo* in Latin, and with many Aboriginal names) to Australia (this made wolves and their relatives the most widespread mammals on the planet). After the continent-wide establishment of the dingo, both the thylacine and the Tasmanian devil became extinct on the mainland, making the dingo the largest non-human terrestrial predator. Dingoes lived both as companion species to Aboriginal people and in free-ranging wild populations in all Australian habitats. Dingoes and mythological dingo-people ancestors have a prominent place in Aboriginal cosmologies.

When British colonizers arrived in 1788, they also brought companion dogs with them, part of a new group of species introduced to the country. The common suite of temperate Old

World domestic and culturally associated animals began to spread across Australia, including cattle, sheep, goats, pigs, horses, dogs, cats, rats and mice, rabbits and foxes. But a colony founded on sheep pastoralism had very different attitudes to the presence of wild dogs, and worked to eliminate the dingo, building (and maintaining into the present) the longest fence on earth – the 5,400 kilometre dingo fence. Having extirpated the wolf in Britain 200 years previously, the colonizers commenced a campaign against dingoes that continues today. In many parts of Australia landholders are required by law to kill dingoes on their properties.

Outside of hunted species, the human-canine relationship is likely the oldest close animal relationship we have in our evolutionary history, and a complex one. The point of separation of 'dog' from its ancestor 'wolf' is extensively debated. Domestic dogs and wolves, dogs and dingoes, dogs and coyotes, wolves and coyotes, all can interbreed, reflecting the persistent failure of the species concept to establish a clear and accepted definition, and demonstrating the ongoing rationalist obsession with accuracy and order. Dogs are the world's most common mammal carnivore: there are possibly a billion dogs on the planet.

In a common paradox, the dingo is also classed as a native animal and, consequently, protected under environmental legislation in many places. Research over the last decade has consistently shown that dingoes as top predators play an important role in ecosystem processes, and in fact suppress the impacts of other introduced predators (such as cats and foxes) on biodiversity. In another paradox, there is strong evidence that poison-baiting programmes, commonly used to kill dingoes, actually increase levels of predation on domestic stock, by destroy-

ing pack social and age structures that would control hunting and dispersal behaviour by juveniles.

Dingoes today occupy a range of complex ecological and symbolic roles in Australia's social and environmental mosaic. Depending on tenure and legislation, they are: companion animals cared for in Aboriginal and settler human families; purebred wild native predators with keystone positions in maintaining healthy ecosystems; crossbred dangerous, destructive and wanton killers of sheep (and sometimes humans). A re-visioning of their place in Australian agricultural and bushland environments could result in simultaneous better outcomes for biodiversity and pastoralism, and a redefining of relationships with humans that does not have killing as the focus.²

Many of the animals brought by the colonizers have established free ranging populations, with most of these now being considered agricultural or conservation threats. Colonial and post-colonial presence is less than 0.5% of Australia's human history, but in that short window Australia has experienced the highest number of mammal extinctions of any country in modern times. The key causes of these extinctions are debated, and range through agricultural clearing, changed fire regimes, predation by introduced animals and persecution of dingoes. While these extinctions are on the one hand unusual, they also reflect the fact that globally most extinctions of recent times have occurred on isolated islands, of which Australia, though large, is one. A recent estimate suggests that while oceanic islands comprise 3% of the land area of the planet, they are where 90% of bird and reptile extinctions and 60% of mammal extinc-

1. B. Gammage, *The Biggest Estate on Earth: How Aborigines Made Australia*. Allen and Unwin, Sydney, 2011.

2. B. Purcell, *Dingo*. CSIRO Publishing, Canberra, 2010.

tions have occurred in the last 400 years.

But while it is true that 24 mammals have become extinct in Australia in the last 200 years, many new species have been successfully established, occupying the habitats of those extinct species and interacting with the new combinations of species and ecosystems. Australian ecologist Richard Hobbs has led thinking in this area of 'novel ecosystems'. There are probably more kangaroos in Australia now than before colonization (because of the provision of permanent water for stock); dingoes have interbred with domestic dogs since colonization; and our largest raptor, the wedge-tailed eagle, depends for survival in many places on rabbits. This is a much-debated issue, with one broad camp arguing that this is a conservation catastrophe, and another arguing that these 'no analogue ecosystems' and hybridizing populations are the new form of biological diversity, more fit to flourish in a climate-changing world.³

As the colonizers struggled to understand the new continent, the agricultural and pastoral project both expanded and contracted, and that pattern continues. Australia's climate is dominated by multi-year fluctuations rather than clear annual cycles. In 'good' years agriculture expanded, only to contract in response to subsequent drought. Urban expansion and conservation land uses have also replaced agriculture and pastoralism in many places. New assessments of climate change indicate that increased extreme weather events and increased extreme fire events are also reshaping Australian environments.

Globally, there is an old but increasing trend in agricultural aban-

donment (cessation of land use for agriculture), as well as land abandonment from humanitarian disasters with consequent depopulation. By 2015, there are many interactions between extinctions, introductions and hybridization, and agricultural abandonment and rewilding. In a changing environmental and social context, the outcomes of these continuing processes are emergent and unpredictable.

Returning to a human focus, indigenous Australians are now living in the post-apocalypse of colonization—massive death from genocide and disease; violent displacement from ancestral homelands; forced erasure of culture and language. The colonial impact in Australia not only violently displaced indigenous peoples but displaced the intellectual structures of the continent, structures that evolved with the Australian environment in all its age and variability. This colonial history underlies the persistent pathologies that now position Aboriginal people on the lowest socio-economic rung in modern Australia. That displacement and the rationalist colonial modes of thought also underlie the dramatic environmental transformation of the country: Aboriginal sacred practices of 'caring for country' were forcibly eliminated.

But parallel to that history of colonial devastation is a story of strength and resilience. People who are forced (or sometimes choose) to live on the margins have unique strengths.⁴ Aboriginal people have in the deep past adapted to rapid and significant environmental changes, responses that were likely mirrored all over the world. The prevailing view has identified the paradox that while they may contri-

bute the least to climate change, indigenous communities globally are amongst the most vulnerable to its impacts. Low socio-economic status, dependence on natural resources, residence in vulnerable geographic regions, and histories of inadequate policy response, all create increased vulnerabilities.

However, some cultural characteristics may mean that indigenous communities can be well placed to develop effective adaptive responses to climate threats, and indigenous knowledge systems may contribute significantly to understanding environmental change. Intimate and detailed knowledge of biophysical environments over long time frames means that changes are often observed and noted. Indigenous knowledge systems are typically adaptive, so responses such as adjusting times for carrying out traditional burning (in response to changed humidity and rainfall for example) are already occurring.

Extended kinship networks may generate significant social capital and broader exchange networks that can offset decreased access to appropriate food and other resources. The highly mobile nature of many indigenous families can increase possibilities for relocation due to, for example, extreme coastal weather events. Indigenous communities typically exist at the peripheries of government and civil support, both geographically and in policy terms. While this obviously increases some vulnerabilities, it also means that communities are often used to being self-sufficient and may respond more effectively to breakdowns in civil services.

While indigenous and local communities have particular cultural characteristics adapted to conditions of risk and uncertainty, modern and modernizing societies have quite different cultural characteristics that might

3. R. Hobbs, E. Higgs, and C. Hall, *Novel Ecosystems: Intervening in the New Ecological World Order*. Wiley Blackwell, 2013.

4. L. Head, M. Adams, H. V. McGregor and S. Toole, 'Climate Change and Australia', *Wiley Interdisciplinary Reviews: WIREs Climate Change* 5(2), 2014, pp. 175-197.

make them particularly vulnerable to rapid and unwanted change. These societies attempt to control change, to maintain stability, to impose a form of order that facilitates predictable outcomes. But these norms are surprisingly recent: only a couple of generations ago in developed world contexts, frugality, stoicism, preparedness for hardship were not only normal attitudes but celebrated as strengths. The massive rise of consumer capitalism, with its attendant foci on individualism, accumulation, and conspicuous excess and waste, is largely a post-World War II event. So modern societies now carry with them not only the technologies and knowledge for control, but also the forms of thought that make the assumption of control inevitable.

Madhav Gadgil wrote of the contrast in intellectual systems between tribal and small-scale local societies and industrial scale societies in 1998, which he differentiated as societies that see themselves and nature as a 'community of beings' versus those structured around 'dominion over nature'. Key aspects contrast egalitarian societies based on sharing and with deeply moral human-nature reciprocity, with hierarchical societies based on individual accumulation and amoral utilitarian resource management.

In India, with its long history of invasions and resettlements, many different systems of thought have developed and flourished. Conquerors famously converted, and India is so geographically complex that many societies persisted in all kinds of landscapes marginal to the conquering cultures. Intellectual systems that are structured around intimate knowledge and on respect and not control persisted. As in Australia, Adivasi (Scheduled Tribe) communities suffer many disadvantages but continue to hold unique

knowledge traditions intimately linked to engagement with place.

While Australia is a continent with a small population of twenty five million with many extinctions, India has a very large population with almost no mammal extinctions. India covers 2.4% of the world's land area and houses 17% of the world's human population. It simultaneously contains 8% of the world's mammals and 12% of its birds, and is considered one of the world's biologically 'mega-diverse' countries. The persistence of those species and their habitats in the world's second most populous nation creates an extraordinary opportunity to understand cultural relationships with wildlife and ecosystems. India has a deep history of reverence for animals, with numerous animal *avatars* of gods, a wide range of animals respected as sacred, and extensive vernacular knowledge in Adivasi and other communities about animals and their habitats and behaviour.

Ecologist Vidya Athreya has coined the term 'tolerance habitat' to describe potential spaces of interaction between people and wildlife outside national parks.⁵ Hers and other research has examined relationships with leopards, wolves and other large predators in Indian rural and urban environments. In many places where native predators hunt domestic animals, pastoralists consider this positive: the lost stock are offerings to the gods, and the consequent increased vigilance means better care. This idea of tolerance habitat describes places where there is a cultural disposition to sharing space with other species, even when doing so is inconvenient or even

5. V. Athreya, M. Odden, J. Linnell, J. Krishnaswamy and U. Karanth, 'Big Cats in our Backyards: Persistence of Large Carnivores in a Human Dominated Landscape in India', *PLoS ONE* 8(3), 2013.

dangerous because, of course, convenience and safety are assumed conditions of modern societies. As in Australia, in contemporary India large predators and other animals occupy contradictory positions. The Wildlife Protection Act and the rise of the animal rights movement overlies ancient traditions of both reverence and interaction, including hunting, and distinctions between wild and domestic are less clear, and perhaps less relevant.

India has several wild canid species, including wolves, hyenas, jackals and dhole, and large village and urban dog populations. Free ranging dog populations function as: predators (of native species and sometimes human children); as carrion consumers (particularly after the abrupt decline in vultures); as prey for rising leopard populations near urban areas; as loved companion animals; and as diseased pariah packs of increasing concern to health and urban authorities. India has not had a focus on lethal control of problem species, and killing animals is often only done for food and other resources, whether through pastoral and farming activities, or Adivasi and other local hunting.

Acceptance of risk and uncertainty, including that posed by strange others, and being prepared culturally, physically and intellectually to respond to those risks, is both an ancient cultural capacity and a very necessary current one for our collective uncertain futures. As a geographer, I don't see evidence of abrupt social and environmental change as something structured temporally (that is, looming in the future), but structured spatially and socially. Aboriginal people recently lived through this, and for many individuals and societies all over the world, including both developed and developing nations, risk and uncertainty are part of daily life. It is affluent modern

communities who position apocalyptic change as being in the (distant) future.

Considering ecological and social histories through a lens that accentuates adaptation and capacity rather than pathology reveals different landscapes of hope. These are landscapes of hope not only for human societies but also for all the other beings with whom we share the planet. Acknowledging the potentials in ancient and vernacular knowledge systems, close ties to regional landscapes, and propensities to accept uncertainty and change as fundamentals of the everyday, might be the basis for recognition and revival of critical practical and cultural skills. The continuity of older, more environmentally and socially benign relationships between people, animals and landscapes holds potential for responding to unfolding uncertainty.

The skills and qualities necessary to creatively respond to unpredictable futures will need to embrace old tech and low tech, as well as new tech. Humans have historically demonstrated almost endless ingenuity, and we will need to have the imagination to uncover characteristics and knowledge we already possess, hidden in deep cultural pockets. In Australia we still essentially eat the foods brought by the colonizing First Fleet in 1788, despite living on a continent where Aboriginal people have long demonstrated that there are thousands of flourishing edible species.

Some ecologists write of 'landscapes of fear' in describing interactions between predators and prey and the influence this has on ecosystems. Much popular representation of abrupt social and environmental change also focuses on fear. For both of these situations, I think 'attention' is a better word, and a better idea. Fear can be an emotional response to perceived or anticipated danger or hurt, while atten-

tion is a mode of being alert to the context of ones surroundings in all their dimensions, from enabling to dangerous. Attention is to attend, a fundamental of spiritual or mindful practice. India, home to several world religions, nevertheless has strong secular traditions. Australia is home to the oldest cultural (and spiritual?) tradition on the planet, and also deeply secular. Time spent in village temples, time with indigenous communities, time with animals in changing landscapes, raise for me the importance of thinking and feeling beyond that secular. Attending closely when we encounter strange others – whether individuals, cultures or species – helps focus awareness of the larger dimensions of understanding our place in the world.

The global spatial inequities of the early 21st century demonstrate the extravagance of the developed world built on the depletion, suffering and frugality of other peoples and places. Abrupt and unwanted social transformations may invert that relationship: those who are not living on the edge may find they have taken up too much room, and those on the edge may discover that they are strongly positioned for creative responses.

Much current rationalist prediction of Earth futures under the rubric of the Anthropocene is deeply negative. Having the capacity to move beyond the limitations of rationality may be key to embracing positive uncertainty. Learning from cultures where change is normalized and acknowledged might help us move beyond ideas of grief and loss, and an obsession with control, to a cultural disposition towards attentiveness, care and respect. And extending those qualities to what Val Plumwood calls 'our Earth others' might re-engage us to accept our place in the cycles of life and death in which we are always, everywhere enmeshed.