TRADITIONAL ABORIGINAL KNOWLEDGE PRACTICES AND NORTH AUSTRALIAN BIOSECURITY

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Abstract

Australia's north coast is extensive, sparsely populated mostly by Aboriginal people, and vulnerable to incursions by pests and diseases from countries to the north. The North Australian Quarantine Service (NAQS), within the Australian Quarantine and Inspection Service (AQIS), works with Indigenous communities to detect and report any incursions to state agencies. This surveillance work is crucial to Australia's agricultural and pastoral sector. Sustainability and expansion of this surveillance by Indigenous groups is dependent on formal recognition of the value of Indigenous knowledge systems, and engagement with Indigenous communities in this endeavour.

Introduction: Biosecurity along the northern coast of Australia

The thousands of kilometres along the northern coast of Australia have only one major urban centre, the city of Darwin, which has a population of 100,000. The rest of the coast is sparsely populated, and it comprises the traditional lands of many different Aboriginal groups. Many of these Aboriginal groups remain on their ancestral land, continue to speak pre-European Australian languages, and continue to practise their traditional religion, art, and music, and traditional hunting and gathering practices in the environment. This paper is about these traditional knowledge practices and the ways in which the Australian Government has tried to enlist those knowledge practices for their work on biosecurity.

Three states share the northern Australian coastline: Western Australia, the Northern Territory, and Queensland. Much of the northern coast is very inaccessible, some of it because it is flat and flooded for up to six months a year, and some because it is mountainous and rugged. It is generally not suitable for agriculture, so it has few roads and little of the history of European development and dispossession which can be found in Australia's southern states.

Because of its proximity to Indonesia and other countries to the north, the risk of plant and animal pests arriving is often considered high. It has been estimated for example, that a single incidence of foot and mouth disease would immediately cost Australia $8 billion and 37,000 jobs would be lost, and eradication would cost another $6 million per day (Munro, 2007). Feral pigs and water buffalo are common along the north coast and if foot and mouth became established in the feral herds, eradication would take a long time if indeed it were possible.

Government responsibility to manage biosecurity in Northern Australia is under the control of a department in the federal Australian Government in Canberra, called the Australian Quarantine and Inspection Service (AQIS) which sits within the Department of Agriculture, Fisheries and Forestry. Within AQIS there is a small department called the Northern Australian Quarantine Service (NAQS) which is involved in border activities, scientific surveys, monitoring, and public awareness, working with Aboriginal people across the Top End of Australia. NAQS is involved in detecting pests through surveys and reporting, but not in community level management of pests. When a plant pest is found, NAQS notifies the Office of the Chief Plant Protection Officer (OCCPO) in Canberra. OCCPO then notifies the states, and the state agencies are responsible for dealing with the incursion.

The risk area could be roughly considered to be a 20 km wide zone running along the coast of Northern Australia including Western Australia and Queensland. The risk is from exotic plants, animals including insects, diseases carried by insects, and other diseases of plants and animals.

Because the task of keeping watch over such a large area of sparsely populated land is impossibly large, AQIS implements *risk assessment* practices, to develop best structures and strategies. Risks are considered in terms of particular species and particular geographical areas.

A list of *high risk species* has been developed[i]. It includes fruit flies, mosquitoes and other insects, various plant diseases, animal pests and diseases, and weeds.

Risk categories are classified according to

- How they arrive – whether by wind, foreign fishing boats, mosquitoes.
- The chance of their establishing themselves in the local environments
- The chance of the pest or disease spreading to affect agricultural land and crops

AQIS has also developed categories of *high risk areas*. For example for plant pests, the Torres Strait, and areas around Darwin are high risk. Darwin has the highest risk of plant pests arriving with air and sea passengers, whereas the Torres Strait are is at high risk of incursions because cyclonic activity may introduce pests from New Guinea. (There are no banana or mango plantations in Cape York because the risks of infection being established in far north Queensland and spreading south are too great.) Other areas like the north Crocodile Islands, the north Wessel Islands and East Groote Eylandt are also considered to be high risk areas because foreign fishing boats often come ashore there.

In all the high risk areas, except for Darwin, there are very small populations of mostly Aboriginal people who live in small communities along the coast and on islands. This means that in most of the area along the northern coast, the Australian government needs to collaborate with Aboriginal people in their biosecurity work. Some coastal areas are cared for by local Aboriginal sea and land ranger groups. These people are involved in land care and sea care, in fire management over the vast areas which burn during the dry season, and they are increasingly involved in working with cultural and environmental tourism groups.

More recently the ranger groups have become involved in biosecurity through:

- The collection of blood samples from pigs and buffaloes, and sending them to AQIS for analysis.
- Debris management, mostly wood washed up on beaches which may harbour pest species. Here they look for termites and send samples to AQIS.
- The collection of mosquitoes, and larvae, particularly those species which could carry dengue fever. The rangers set up traps in the swamps and catch larvae for testing.
- Trapping of fruit flies to be sent to AQIS for identification.
- Reporting unusual ant species, weeds, and plant diseases.

In places where there are ranger groups, the government's work is much easier because, through the rangers, they have access to local knowledge and infrastructure (roads, tracks, boats, 4-wheel-drive vehicles). However, much of the coastline is unpopulated and many of the communities do not have ranger groups, so negotiations for access and support are more difficult in some places.

Aboriginal knowledge and the ecology in northern Australia

The population of Australia is about 20 million, of whom 400,000 are Aboriginal. Most Aboriginal people on the northern coast speak traditional Australian languages and little English[ii]. Each language is seen by its owners to belong to particular areas of land. People who share land and language are said to belong to the same clan or tribe, although the ways in which Aboriginal languages divide people up into groups is very complex. While they speak many different languages, they do share some key aspects of their social, religious, economic and political practices.

Aboriginal creation stories are not stories about how the world was made. They are stories about how the world took on its shape and character as we know it, as the creating ancestors moved across the land and sea singing, crying, dancing, fighting, performing rituals, and leaving signs of their work in the shapes of the land, the hills and rivers, the rocks and waterholes, the species, and the different groups of people and their languages and social, religious and economic practices.

As the ancestors moved across the country, they changed their languages as they came to each new place, so in the Aboriginal world there are many different languages. To be able to speak your traditional language strongly and clearly, and to sing its songs, and tell its stories, is a key part of knowing your environment, and an important sign of your rights and authority to speak on behalf of particular areas of land and their histories and the species they contain.

In Aboriginal philosophy, language, place and identity are always strongly linked. Often noticeable features of an area of land or sea are taken as the identifying totem of a particular group. As with Balinese culture, where not only is it the case that what holds to

be true in one village, may not hold to be true in another, but it is those very differences in situated truth which produce Balinese identity (Lansing 1974).

The situated nature of Aboriginal knowledge give rises to some distinctive understandings of the nature of knowledge which I will outline below. In Aboriginal philosophy, knowledge is seen to come out of the routine practices of everyday life and makes those practices possible. Knowledge is more associated with embodiment than with one's head or brain[iii]. Knowledge is something you *do*, rather than something you *have*. For example the Yolngu word 'to know', carries the meaning of knowing *how to do* something, rather than knowing *about* something.

Knowledge comes from place and relates people to place in their everyday lives in what Karetji (2007) calls a 'bounded rationality'. When it is abstracted and generalized, as in a government database of pest species, it loses some of its connectedness, its accountability and its local usefulness.

Aboriginal knowledge is owned. People with rights to land have rights to tell its stories. The right people must tell the story, it is not free for everyone to tell, but owners can give permission for their stories to be used by others under particular conditions. Traditional laws and acceptable practices that govern knowledge use are local and need to be understood and negotiated at the local level. They often work in quite different ways from Australian laws covering intellectual property.

Aboriginal knowledge is collective. It is owned and performed by groups of people, and embedded in languages, social practices, structures, and performance traditions, as well as in the physical features of their land, its species, and other 'natural' phenomena. Social groupings are constituted through shared knowledge, and Aboriginal identity depends as much upon practices of exclusion – 'I am who I am because I know what you don't know' – as it does upon sharing and inclusion.
Aboriginal knowledge is responsive, active, and constantly reconfigured. Creation stories are constantly renewed, and often refer to introduced species which have not been in North Australia for a long time. For example the island of Milingimbi was visited for hundreds of years by trepangers from the north, from an area known today as Udjung Pandang or Macassar. The Macassans brought the tamarind tree which grows in many places along the north coast, and Aboriginal creation stories refer to the island's beach as created by a totemic barramundi which turned into a giant tamarind tree still standing today.

In the twentieth century, most of the Aboriginal people in Australia, including along the northern coast, were brought in from their traditional lands and settled in communities – mostly Christian missions, cattle stations and government outposts. Still today, most Aboriginal people live in communities which are not on their traditional land, and which are governed by community councils which do not reflect traditional systems and practices of governance. This causes ongoing problems for Aboriginal people trying to keep their traditional cultures alive. For example, a community council may be happy to grant a government department like AQIS access to remote places to do biosecurity surveillance, but the traditional custodians of the land may not be represented on the

council, so under traditional law the council has no right to grant access. These local government structures sit awkwardly between the national and the clan-family levels, and exercise a sort of 'power-oriented' practice mediating between the national/international 'principles' (above them), and the 'purpose orientation' of the traditional owners caring for country on ancestral land (below them). (See Fig 1 in Karetji, 2007)

In places such as Bali, the *subak* represents a traditional administrative structure which can respond effectively and authoritatively to approaches from the state and national governments (Lansing 2006). In other places in Indonesia however, the situation may be more like that in northern Australia where bureaucratic systems have been mapped over traditional governance structures, and marginalized them. The Balinese may therefore be in a better position to engage their traditional knowledge practices in the regional and national work of biosecurity than other Indigenous peoples in other parts of the archipelago.

The coming together of two knowledge traditions for biosecurity work

Much of the knowledge work which Australian Aboriginal people do is invisible to the authorities, and much of the knowledge work which the agencies do is hidden from the traditional owners of the land. Collaborations between traditional knowledge and government knowledge always involves a good deal of misrecognition. However, there continues to be considerable good will between AQIS and Aboriginal groups, some interesting collaborations have emerged, and much work is going on to strengthen those collaborations.

James Scott's book *Seeing like a State* (1998) talks about how the work of nation building depends upon certain practices of making and using knowledge which inevitably involve ignoring other forms of knowledge. In particular, forms of knowledge which can be absorbed into a wider system are valued, and thus receive more recognition and more funding. Knowledge which is local, intuitive, or unable to be expressed in words is relatively devalued. But it is often highly significant.
Scott uses the contrast between the general knowledge of *navigation* with the particular knowledge of *piloting.* Each time a large ship approaches a port anywhere in the world, the controls are handed over to a local knowledge holder known as the pilot. What the pilot knows are the local cycles of winds and tides, throughout the year and throughout the day, the local traffic conditions, hidden rocks and currents—not to mention the local politics and economies of the port. Some of the pilot's knowledge could be abstracted and made useful elsewhere, but generally its value is its complete specificity, its embeddedness in this particular waterway at this particular moment. Some of it could be verbalized, while some of it is incommunicable. This sort of practical, intuitive knowledge is always at work while Aboriginal people are out on their land 'caring for country'. It is a rich and significant knowledge often tied to religious and political practice, expressed through very complex languages, and incomprehensible and irrelevant to most white Australians.

Yet this knowledge is key to the observation of subtle changes to the biota in an expansive environment, for example changes to bird populations and movements,

changes in the marine environment and its resource. The local knowledge of Aboriginal people even make it easier for them to understand and predict the behaviour of foreign fishermen who have their own bounded rationality, their own ancient understandings and practices around the Arafura Sea whose shores they share with their Aboriginal neighbours. So despite the deep impenetrability of their knowledge to a western knowledge practice, Aboriginal people are in a much better position to discover and report threats to biosecurity than the handful of botanists, entomologists and plant pathologists who try to cover the high risk areas with occasional very expensive expeditions.

Aboriginal Sea Rangers are in a better position to find foreign fishing vessels and the plants, mosquitos, and termites they may leave behind, than are the very expensive survey planes which fly the coast looking for foreign boats. The problem is how to get the government agencies to recognise, support, benefit from and pay properly for Aboriginal knowledge. Ranger groups have recently been lobbying the federal government in Canberra unsuccessfully for a greater role in marine surveillance (Munro 2007). It seems that national security reasons may explain part of the government agencies' reluctance to give more responsibility for biosecurity surveillance to ranger groups. It is not only the Aboriginal people, but the government itself who uses secrecy as a political strategy. Karetji's analysis of the Indonesian context points to a similar phenomenon where national stakeholders are sometimes reluctant participants in reforms proposed internationally and embraced locally 'because of the resulting shifts in power structures'.

Lansing (2006) wrote about the traditional ways in which Balinese people organised their water at the local level which allowed its distribution to be equitable from the top of the mountain to the sea. Along rivers in Bali, small groups of farmers meet regularly in water temples to manage their irrigation systems as they have for a thousand years. Over the centuries, water temple networks appear to have expanded to manage the ecology of rice terraces at the scale of whole watersheds. While each group focuses on its own problems, a global solution has nevertheless emerged which optimizes irrigation flows for everyone. Clearly there was no 'top-down' implementation. Bali's water temple networks emerged from a self-organizing process. Furthermore, those informal, organic systems were threatened when international development projects started working at the larger scale, ignoring the sensitive ongoing collaborations which had evolved to succeed at the very local level over many generations.

Similar practices for the intergenerational transmission of Australian Aboriginal ecological knowledge work are also under threat by a national and international bureaucracy which may fail to recognise them. Just as the state agencies are careful about who has access to their information, so do Aboriginal people have quite complex systems of access to land and knowledge which the state agencies need to recognise and access if collaborations are going to work and traditional knowledge practices kept alive. Knowledge is a social as well as a political phenomenon. Often the people in charge of the small local councils on Aboriginal communities are not the owners of the beaches and islands which are biosecurity 'hot spots'. Some Aboriginal people live in very remote areas which don't have government or nongovernment originations to negotiate on their behalf. The work of surveying and reporting plant pests is completely bound up in the

work of negotiating access and permission, and establishing good relationships for ongoing dialogue and communication.

Every location has a different network of ownership and custodianship, a different history of colonization, a different relation to local state and federal government, different configurations of natural, social, political, human, built and financial capital (Flora, 2007), a different configuration of biosecurity risk and different problems of access and surveillance.

Conclusion

It is difficult to imagine two more different settings for biosecurity work. Bali is fertile, intensively farmed, densely populated and enjoys regular rain. Northern Australia is more like West Timor – mostly arid, mostly unfarmable, sparsely populated with an intense wet season and a long dry season each year. In the dry season fires sweep across the land, and Aboriginal people have complex techniques for managing biodiversity through the careful use of fire. So the strategies for biosecurity in Australia and its northern neighbours may well be quite different, however sharing ideas and experiences we may find significant common ground.

In sparsely populated Northern Australia, it is extremely difficult to control an incursion of a serious pest over such vast areas. However NAQS demonstrated ongoing efforts between the government agencies and Aboriginal land owners to improve biosecurity practices and create paid work for remote Aboriginal communities. NAQS has taken seriously the need to build trust and reciprocity (Flora, 2007) as a first step to community level biosecurity work.

The way ahead begins with a more formal recognition of the value of having Aboriginal people on their country, looking after it and keeping it healthy. The potential cost of a biosecurity disaster should motivate governments to provide financial and infrastructure support to people on country, especially in high risk areas.

But it is not quite as simple as that. Aboriginal social and political organization is complex and flexible. Many places don't have ranger groups and where they do, the rangers may not belong to the right groups to be able to get access to land or observations. The second step the government agencies must take after deciding to invest in the engagement of Indigenous knowledge work in biosecurity, is to begin negotiations in each place to find the best most sustainable but most flexible structures for collaboration, which engage and support the traditional governance structures which are still in place, while at the same time fulfilling the information needs of the government in Canberra.

This entails efforts to support the sustainability of ancient knowledge practices and the cultural, economic and political practices which sustain them. As in Indonesia these Australian Aboriginal knowledge resources are 'not yet seen as a significant national asset' (Karetji, 2007).

As Karetji argues, the international, national and local agendas don't need to be aligned for communication to work effectively to maintain biodiversity, and the better the communication works, the better the chance of each group understanding the agendas of the others.

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[1] See http://www.affa.gov.au/content/output.cfm?ObjectID=D2C48F86-BA1A-11A1-A2200060A1B01784

[1] A notable exception is the Larrakia people who are the traditional owners of the land around Darwin and whose experience of colonisation is such that young Larrakia children today grow up speaking Aboriginal English.

[1] For a full description of an Aboriginal philosophy of knowledge see M Christie, 2007 'Yolngu Language Habitat: Ecology, Identity and Law in an Aboriginal Society' in *Australia's Aboriginal Languages Habitat*, G. Leitner and I. Malcolm (Eds) Berlin, New York: Mouton De Gruyter, pp 57-78.