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4 'Indigenous' and 'Scientific' Knowledge in Central Cape York Peninsula

Benjamin R. Smith

During my doctoral fieldwork in central Cape York Peninsula I spent a considerable amount of time moving between the township of Coen and a number of 'outstations' in its hinterland. ('Outstations' are small camps established by family groups on land with which they have 'traditional' ties). The men and women with whom I was working also used their frequent journeys between Coen and outstations to visit other important places en route. One such place – visited only by men – was referred to as a '*chemist*['s] *shop*' in local Murri (Aboriginal) English.[1] Traditional plant '*medicines*' were gathered at this place and brought back into town. These '*medicines*' were understood to effect '*luck*' in a series of town-based activities, including gambling at card games and the pursuit of sexual liaisons.[2]

The use of the term '*chemist*['s] *shop*' in relation to such local knowledge suggests a willingness amongst the Peninsula's indigenous population to draw parallels between the artefacts of 'indigenous knowledge' and products of 'scientific knowledge'. In this way, the metaphor of the chemist's shop seems to support the use of the synonym 'local science' for local knowledge. But other events during my fieldwork make it clear that the relationship between local knowledge and science is more ambivalent.

At a public meeting in Coen, for instance, scientists employed by the Queensland Parks and Wildlife Service (QPWS) sought to inform local people about a media scare over the Equine Morbillivirus (now called the Hendra virus), which was thought to be able to cross from flying foxes to humans. Red flying foxes (*minh wuki* in the Mungkanhu language) continue to be harvested from colonies around Coen by local Aborigines, who knock them from trees while they roost. QPWS intended to warn people of the danger of being scratched or

bitten by an infected animal, whilst downplaying possible fears about the disease generated by a media scare (assuring people, for instance, that the meat remained safe to eat). This meeting followed the usual pattern of such events, in which visiting '*whitefellas*' were met with blank looks by the Aboriginal audience, many of whom were alienated by their use of unfamiliar language – '*rich English*' and '*big words*'. But I sensed a particular reaction – a mixture of incredulity and amusement – when one scientist explained that the large colony of fruit bats currently roosting in Coen had flown up to Coen from Ravenshoe, a town several hundred kilometres to the south. My suspicions were confirmed when one of the older men present at the meeting (also one of the family on whose 'traditional land' the 'chemist shop' was situated) came up to me and wryly asked me whether I thought he 'should've told 'em where flying foxes *really* come from'.[3]

For many – if not all – of the Aborigines living in central Cape York Peninsula, flying foxes continue to be associated with a body of local knowledge pertaining to '*rainbow serpents*'. These powerful creator beings are held to remain active across the region, and are particularly associated with watercourses and deep, permanent pools of fresh water ('*lagoons*'). These '*rainbows*' are said to be roused by the '*smell*' of people with no ties to a given area or '*country*', or by actions that contravene local customary rules or '*Murri law*' (see Merlan 2000, 2005). Flying foxes are closely associated with rainbows, which are said to swallow them, carry them in their mouths and then release them elsewhere, the flying foxes bubbling up and bursting from the surface of the water. Locally, this is where 'flying foxes *really* come from', and the reserve of the local Aboriginal attendees at the QPWS meeting, and the amusement of the man who approached me afterwards indicate a reticence to broach a perceived gap between 'scientific knowledge' and 'local knowledge' of this kind.[4] Indeed, the same wry humour that characterised this man's (rhetorical) question to me – and, doubtless, his sense that I was stranded somewhere between the QPWS scientists' 'rational' explanation and local Murri knowledge of flying foxes – underlay the use of a '*white name*' linked with science ('*chemist*['s] *shop*') for the practical use of another aspect of local knowledge.

The aim of this paper is to respond to the ways in which anthropologists and others have encouraged the anthropological recognition of 'local knowledge' as 'local science' (a suggestion that has also built upon the sociological critique of the idea and practice of science). As with anthropological accounts of local knowledge more generally, such claims are most often made in the context of knowledge pertaining to local environments and their use and management. These claims also commonly relate to 'development', its subjects and its 'victims'. But whilst the concept of local science provides a powerful metaphor, ensuring greater attention to and respect for local knowledge, I want to suggest that glossing local knowledge as 'local science' may (in some instances) obscure important particularities of local knowledge systems and the broader social and cultural contexts within which they have developed.

The basis for my argument is akin to Lévi-Strauss's observation that 'thought, and the world which encompasses it, are two correlative manifestations of the same reality' (Lévi-Strauss 1981: 678).[5] Examining the interaction of local knowledge and 'global' science in a contemporary indigenous life-world, I argue that the term 'local science' may be more problematic than it initially seems precisely because of this correlative relationship between thought – or knowledge – and world. Nonetheless, disjunctures between local knowledge and science do not necessarily hinder mutually beneficial interactions between Aborigines and scientists, or the bodies of knowledge on which they draw. Indeed, relationships of this kind have formed the basis for a number of successful 'development' projects at 'outstations' and on the indigenous homelands that surround them; these projects have been based on 'conversations' between local knowledge and scientific research. Such projects nonetheless raise questions about the ways in which '(global) science' constructs knowledge, the forms of authority tied to knowledge, and the effects of such 'authority' on local forms of cultural production.

If I am hesitant about the term 'local science', I also want to express some reservations about the term 'indigenous knowledge'. In central Cape York Peninsula, the interactions between 'local knowledge' and 'global science' increasingly demonstrate forms of local knowledge that are profoundly 'intercultural'. (I should add that I use the term 'intercultural' here *not* in the sense of a field composed of relations between distinct entities, despite possible presumptions of social actors to the contrary, but rather to designate a field of interaction in which culturally inflected meanings and practices are (re)defined through processual interrelationships between such actors.[6]) There is little doubt that the interactions constitutive of knowledge-based development projects further intensify 'intercultural' forms of local cultural production; in doing so, these projects produce increasingly 'globalised' forms of knowledge not only about the local environment, but also about 'indigenous people' themselves.

'Local knowledge' vs. 'local science'

An extensive debate has continued amongst anthropologists and in related disciplines over the scope of the term 'science', particularly regarding its extension to include 'indigenous', 'traditional' or 'local' knowledge. Both within anthropology and in the sociology of scientific knowledge there has been a growing consensus that the limitation of the term 'science' to Western, professional science has primarily served to perpetuate a worldview that privileges Western science over other, excluded ways of knowing (see Haraway 1988; Harding 1994; Franklin 1995; Nader 1996; Harris 1998; Turnbull 2000). Much of the impetus for these critiques can be located in the influence of the work of Michel Foucault, whose work on the history of systems of thought (or 'epistemology', the analysis of the grounds of knowledge) continues to be influential. Foucault's lectures given at the Collège de France in 1975–76 open with a lengthy critique

of dominant knowledges from the position of 'subjugated' knowledges (which include those knowledges now labelled 'local' or 'indigenous'). For Foucault, such knowledges include all of those disqualified as naïve, hierarchically inferior, and 'knowledges that are below the required level of erudition or scientificity' (Foucault 2004: 7).

The principal aim of much of the work undertaken within the field of cultural or sociological studies of scientific knowledge – to unsettle or critique the hierarchical relationship of what might be termed 'global' or 'Western' science with 'local knowledge' (see also Dove et al., this volume) – is one with which I have much sympathy. The immeasurably beneficial result has been that it is now 'increasingly acknowledged beyond anthropology that other people have their own effective "science" and resource use practices' (Sillitoe 1998: 223). Doubtless such a critique was not only long overdue, but also necessary in order to counteract the exploitation of local knowledges in an increasingly globalised world, for example through 'bio-prospecting' (see Brush 1993; also Clift and Bodeker, both this volume). It has also been important in helping to limit the disasters caused by the emplacement of exogenous practices, in the name of 'development', in local contexts in which a more equitable dialogue between 'local' and 'global' knowledges would almost certainly have produced far better results (see Scott 1998; Sillitoe et al. 2002; Pottier et al. 2003; Bicker et al. 2004).[7]

Whilst positive arguments for broadening the use of the term 'science' to encompass indigenous or local knowledge systems have been clearly stated, exponents of the extension of 'science' to include indigenous knowledge have paid less attention to some potential pitfalls. There are undoubtedly many 'human societies doing science or accumulating knowledge by verifying observation' and employing 'a self-conscious attitude toward knowledge and knowing that embodies curiosity with empiricism' (Nader 1996: 11, 1) beyond the institutional settings of Western science. In such instances, the notion of 'local science' – or, indeed, of science per se – might be usefully deployed. But as Nader rightly notes, drawing on Bielawski's comparison of Inuit indigenous knowledge and Arctic (global) science, regions like the Arctic reveal a radical divide between 'modern science' and 'indigenous knowledge' (Nader 1996: 21; also Sable et al., this volume). In such regions, calling local knowledge '(local) science' may prove to be a mistranslation. Further, such mistranslation may obscure important aspects of local knowledge systems that may again be compounded by the implementation of inappropriate development projects in the region. As I hope to demonstrate below, the same concerns raised by Bielawski's analysis are pertinent – although not without qualification – in central Cape York Peninsula.

A key aspect of the 'dominant' distinction between science and local knowledge is the presumption (both by scientists and by members of 'modern' publics more generally) of the particular authority of 'Western' or 'modern' science. Such presumptions are often expressed through claims that 'science' has a unique capacity for absolute or universal explanation. This notion has continued to displace local knowledge and effect considerable harm to the environments where scientific-technical interventions have occurred. Here the term 'global science' seems apposite, and it is this 'global' presumption that sociological critiques of scientific knowledge has sought to problematise. Scientists have tended to elide the gap between their 'universalist' presumptions and the set of particular, internally complex and disparate knowledges (with their roots in the European Scientific Revolution) that constitute 'science-as-it-is practised'. This elision has masked the fact that 'Western technoscience', like all other knowledge traditions, is itself a form – or assemblage of forms – of local knowledge (Turnbull 2000: 4–5). As Turnbull argues, it is this masking of the locality of the forms of scientific knowledge that has allowed scientists and others to view science as a body of 'mimetic totalising theory' (that is, as a cohesive body of theory reflecting a 'real world'), producing its 'globality'. The effect of such claims is 'simultaneously to promote and reinforce' a sense of (Western) cultural stability and to effect dominance and 'to justify the dispossession of other peoples' (Turnbull 2000: 11; also Rowse 2005).[8]

This presumption of science's general authority is tied to another problem with 'global' science, the assumption of the translatability of scientific knowledge or the appropriateness of the application of knowledge drawn from one location in another location. As Nader argues, drawing on the work of Paul Richards, 'science as universally applicable knowledge is supposed to override ecological particularism and site-specific knowledge. Science derives its power precisely because it is not confined to particularities' (Nader 1996: 12). Indeed, Nader cites White's suggestion that ecological approaches are 'on principle anti-scientific, as science at present is usually conceived and practiced', given their emphasis on the specificities of particular locales, and localised forms of knowledge relating to them (Nader 1996: 12, after White 1979: 76; also Ellen, this volume).

The problem of translatability raises questions not only for the use of the term '[local] science' as a gloss for indigenous knowledge systems, but also in relation to presumptions about the ease of 'fit' between Western or 'global' science and indigenous knowledge systems even after presumptions of hierarchical inferiority have (apparently) been dealt with. Suggestions of a potential resolution between Western science and local knowledge, based on the assumption that both sets of practice and knowledge 'relate … to the same natural world "out there," albeit expressed in quite different idioms revealing concerns for somewhat different issues' (Sillitoe 1998: 226), might be more problematic than they might first appear – particularly where Sillitoe's inverted commas and attention to the 'symbolic associations' of local knowledge are not maintained. Suggestions of this kind seem to rest on suppositions of the universal, fundamental existence of nature, and subsequent presumptions of the availability of objective forms of knowledge that may, in fact, be situated within particular, albeit globalising, ways of understanding the world. They can obscure the fact that the 'symbolic' is a constitutive aspect of all forms of knowing (and all 'environments'), rather

than a separable set of 'associations' supplementing 'real' or 'pragmatic' knowledge. What is revealed by the engagement of this kind of knowledge and practice are not simply 'concerns' in the standard meaning of the term. Rather, environmental relations involve the *constitutive* revelation of particular kinds of phenomena. In Lévi-Strauss's terms, the world is not simply 'out there', but rather, is a correlate of the form of thought brought to bear on it.

This 'correlation' of world and knowledge has been dealt with at length (and with considerably more nuance and depth of analysis than is possible here) in the work of Roy Wagner. Wagner, drawing on his fieldwork in Melanesia, provides a useful account of the differing ordering effects of Western and indigenous knowledge systems in his comparison of 'scientific' and 'Indigenous Papuan' environmental knowledge.[9] For Wagner, Western scientific approaches to human–environmental relations are founded on the separation of that which lies in the world of human artifice, and the 'natural' realm, understood as the innate component of the human–environmental totality (see also Latour 1993 [1991]). Such an approach reveals 'natural phenomena' as having 'the spontaneous and self-contained character of standing for themselves' (Wagner 1977: 394), that is, as an object world 'out there' and subject to our intervention (or distanced understanding). From this (scientific) perspective, the natural thus emerges through 'a flow of seemingly innate, differentiating transformation that is precipitated by our systematic and literal efforts at harnessing or understanding it' (Wagner 1977: 394).[10] (Here we are back to Lévi-Strauss, and the correlative interrelationship of 'thought, and the world which encompasses it').

In Wagner's 'Indigenous' knowledge system – a system that demonstrates substantial similarities to the knowledge system that seems to have been extant in central Cape York Peninsula prior to the impacts of white settlement[11] – human existence is positioned quite differently in relation to the 'environment'. The resulting perspective compels the recognition of 'a kind of immanent human essence as the object and sustaining force' of local understanding and action. This immanent essence appears both as the 'moral soul' of each person and the 'tradition' of local groups, and it provides 'the binding force of the cosmos' (Wagner 1977: 404). Here the nature/culture dualism does not hold. Rather, in the 'dwelling' perspective (Ingold 2000) that inheres within such knowledge systems, particular people and 'environments' are revealed (to those peoples who have come to know the world and themselves within the horizon of such knowledge systems) as deeply interconnected, sharing of the same substance. Here agency or subjectivity is seen as extending beyond the human; what Westerners are compelled to regard as 'objects', or as 'nature', is understood as an expression of 'immanent essence' (shaped, in central Cape York, by the originary actions of the *Stories*), and thus as both of the same kind, and fundamentally inseparable from the humans who belong to a particular locale (Smith forthcoming). In such life-worlds, any presumption of the ability to treat the natural world as 'standing reserve',[12] 'object' or 'resource', open to intervention by human agents, is deeply problematic. Rather,

environmental interventions must negotiate particular and substantial interrelationships between people and other aspects of local life-worlds.

Franklin (1995: 170) similarly argues that it is the effect of 'objectification' produced within Western epistemologies that reveals 'the self-evident real' of nature. She also notes that it is this 'self-evident real' that allows for the sense of the superiority involved in the distinction between (merely) 'local' and 'global' orders of knowledge. Approaching local indigenous knowledge systems on the basis of a universal relation to a nature 'out there' is thus likely to reinforce the hegemony of 'global science' in relation to local knowledge, given the foundation of these distinct knowledge systems on particular epistemological bases (that is, within particular ways of knowing), despite attempts to engage a positively valued body of local knowledge at the level of 'content'. Such an approach also leaves open the risk of generating a sense of 'knowing better' among particular practitioners of global science (and here I would not exclude anthropologists), even within attempts to respectfully engage local knowledge (and local 'knowers') through collaborations between 'local knowledge' and 'global science'. Certainly it is this kind of hegemonic effect that leads (in part) to Aboriginal people in central Cape York holding their own knowledge of their life-worlds in reserve when engaging with those, like the QPWS scientists, who they (not unjustifiably) expect will engage with claims about rainbow serpents and flying foxes in a dismissive or patronising manner.

How then might this hegemonic character of interaction be avoided in projects which involve both 'local knowledge' and 'Western science'? One possible basis for more equitable articulations between 'science' and 'local knowledge' is outlined by Donna Haraway in her work on 'situated knowledges'. For Haraway (1988: 592), these are akin to those knowledges that have been discussed here as 'local' (including the forms of scientific knowledge that Turnbull and others have argued are just as local as indigenous knowledge systems). Haraway uses the term 'situated knowledges' to advance her argument that all forms of knowledge – in particular, those associated with 'global' scientific practice – should be cognisant of their own (necessarily local) epistemological foundations. It may be useful to add that anthropological accounts of 'indigenous' knowledge systems suggest that knowledge is already commonly self-consciously localised in this manner within these systems. In such cases, the citation and use of knowledge is commonly subject to a set of place-based rules, beliefs and practices – a strongly localised *ethics* of knowledge – that governs both environmental and interpersonal interactions. Within the indigenous knowledge systems of Cape York Peninsula, for example, one's ability to properly act (indeed, to publicly *know*) has classically been constrained within one's own relation to a particular, localised corpus of knowledge, language, subjectivity and relations to people, flora, fauna and other aspects of '*country*'. In this system, as one man put it, 'you can't just cut any tree … got to think about [the tree's] age, right time, and right person'.

Despite her critique of its globalising thrust, Haraway nonetheless sees science as an important and beneficial (set of) way(s) of knowing. The call for situated knowledges is not a call for an absolute relativism of knowledge itself. Like many anthropologists who advocate the recognition of local knowledge, Haraway does not demand the abandonment or downplaying of scientific explanations. Rather, she suggests a more ethical deployment of knowledge, and a more careful interaction of knowledges. Scientific knowledge is not to be abandoned; rather, those practising science and relying on the knowledge it generates need to recognise what Franklin (1995: 173) calls science's 'isomorphism between representation and ontology' – its elision of (and simultaneous dependence on) a particular 'correlative' relation between thought and world.[13] This isomorphism leads to science representing both 'knowledge of the natural world expressed in naturalistic terms' and 'the procedures for obtaining that knowledge', resulting in the 'conflation of instrumental technique with the "real" it describes'. For Haraway, such self-recognition would then present the possibility of 'partial, locatable, critical knowledges [including 'science'] sustaining the possibility of webs of connections called solidarity in politics and shared conversations in epistemology' (Haraway 1988: 584). 'Shared conversations' of this kind would help to avoid the displacement of local forms of knowledge through the actions of bio-prospectors, or others who have undertaken scientific research on indigenous homelands without regard for indigenous connections to '*country*'. Perhaps more importantly, such conversations would also avoid the globalising spread and unquestioned authority of particular ways of knowing that can obscure critically important, foundational aspects of 'local knowledge' systems – including the importance of *locale* or localisation within their constitution of knowledge and its relation to social life, 'environments', and particular kinds of selves.

'Indigenous knowledge' and Science in Development: Transformation at the 'knowledge interface'?

'Shared conversations' of the kind outlined by Haraway have, in fact, already been undertaken in central Cape York Peninsula in an attempt to develop socially and environmentally sustainable economic activities. One such project is based on the distillation of oils and other plant products from a number of the traditional '*medicines*' that grow on local indigenous homelands.[14] The development of this project has involved collaborative work between local indigenous people, a regional development organisation and natural scientists.

The project, instigated by the local indigenous people on whose homelands it is based, draws on particular forms of local knowledge in conjunction with Western science. The aim of this collaboration is to develop an environmentally and socially sustainable local enterprise.[15] It demonstrates the indigenous group's success in generating what Tsing calls a 'field of attraction', within which relationships are produced between a rural community and outside experts that

'keep [the] experts coming back' (Tsing 1999, cited from Dove et al., this volume). Beyond its aim of realising a socially and environmentally sustainable source of income, the oils project is also intended to advance other local indigenous aspirations, including the cross-generational maintenance and transmission of local plant knowledge through experiential involvement with important species on traditional homelands (see Heckler, this volume; also Sable et al., this volume for another 'conversational' or 'situated' interaction between local knowledge and Western science).

The strength of the oils project is the way in which it has brokered a particular, 'situated' relationship between two fields of knowledge and practice (albeit fields that are not as 'culturally distinct' as either the indigenous or non-indigenous participants in the project presume). Within this relationship 'local knowledge' and 'Western science' have articulated productively within a particular environment to the mutual satisfaction of those involved. For Aboriginal participants this has meant that their emphasis on locality has been respected, and indeed reproduced, within an 'intercultural' field. For scientists, it has meant access to a body of local knowledge, as well as a local environment and its flora, benefiting their own scientific knowledge and practice.

There is little doubt, given the increasing interpenetration of Aboriginal and 'mainstream' Australian life-worlds, even in a supposedly 'remote' region like Cape York Peninsula, that such projects are now necessary to the reproduction of certain kinds of local knowledge (for example, the '*language names*' and 'traditional uses' of local plant '*medicines*'). However, it is also the case that the distinctions of 'indigenous' and 'Western' knowledge and practice have been overstated and reified within such interactions (see also Heckler, this volume; Smith 2005a). This is also a situation in which the overtly hegemonic relationship between 'global science' and 'local knowledge' has shifted somewhat. In this instance, the local imbrication of science and local knowledge has created a relationship in which a sense of authority is mutually established through the interplay of knowledges. It should be noted, however, that whilst scientific and local knowledge increasingly exist – in Cape York Peninsula, as elsewhere – in what others have called 'hybrid' relationships (see Sillitoe 1998: 226), scientific knowledge has proved far more resistant than local knowledge to epistemological transformation. The result is that local 'indigenous' fields of knowledge are now complex and multiform, whilst the knowledge produced within scientific practice has maintained epistemological continuity (and, doubtless, some sense of its own broader authority) despite changing forms of scientific practice (in particular, local collaboration).

The uptake of the term 'indigenous knowledge', and the commoditisation of local knowledge now sought by many Aboriginal people as part of their 'intellectual property rights', mark the effects of the transformative imbrication of knowledge systems. The cost of the reproduction of local knowledge via the 'knowledge interface' (Sillitoe 1998: 226) appears to be a partial transformation of the 'dwelling perspective' (in which knowledge is figured as an innate part of

local 'environments') to a perspective in which knowledge becomes refigured as a commodity or object. In such circumstances, the notion of a 'knowledge interface' is misleading (at least as regards the local Aboriginal perspective) – although it is nonetheless essential in order to perpetuate a sense of interaction between 'distinct systems'. This idea of separate knowledge systems is a key 'social imaginary' in the field of development. It acts to shape particular relationships within 'indigenous' locales where originally distinct forms of knowledge (and their associated social fields) are now deeply interwoven; within these relationships local people and development professionals remain impelled to imagine their interactions as occurring between distinct 'societies' (see also Smith 2005a, 2005b).

Even the selection of the medicinal properties of plants as the focus of the oils project suggests that this project, like many others of its ilk, has arisen within a strongly intercultural field. As Dove et al. (this volume; also Bodeker, this volume) note, the idea of medicinal plants circulates as a particularly operable form of traditional environmental knowledge within the 'development industry'. The 'field of attraction' that now encompasses both 'locals' and 'experts' in Cape York Peninsula, as elsewhere, has developed on the basis of the operability of ideas of this kind, and every interaction within this field acts to deepen the intercultural nature of 'indigenous knowledge'.

Despite these transformative aspects, the deepening interculturalism associated with such projects[16] is not necessarily leading towards a (total) homogenisation of knowledge, either at the level of reified identification of knowledges, or at the level of practice and meaning. Rather, the situated interactions between local indigenous people and scientists provides one means of (partially) reproducing both local knowledge and local ways of knowing that are otherwise increasingly overwhelmed even in interactions between indigenous people. However, these items and ways of knowing are increasingly aspects of 'hybrid' or multivalent knowledges held by particular persons, and circulated through the ever-more-complex social fields in which we are all now situated.

Changes in local knowledge systems are also evident in the greater willingness of a number of Aborigines to deal with their homelands in a manner that Haraway (1988) calls 'resourcing'. This is the ability to engage with a 'natural' world or environment as a set of objects or resources available for use, for example in the extraction of timber (a relation that a number of scholars, starting with Heidegger, have argued is closely connected to modern 'global' science and technology).[17] This relation of resourcing is foreign to classical indigenous modes of reckoning relationships to homelands, which are deeply relational in character, and in which extraction is impelled to be far more limited in scope – not least through restricting who can use what and when. But recent years have seen a number of Aborigines strike deals with logging companies to extract timber from their homelands in return for cash payments (although in one recent case such a venture was successfully opposed by other Aborigines on the basis that such extraction contravened local Aboriginal '*law*').[18]

Even in the case of the oils project, there are indications of a shift towards a different kind of relationship to homelands. In the description of the oils project on the website of a local indigenous organisation, the Aboriginal group involved in the project affirms that they:

> possess a broad and detailed knowledge of the ecology of our environment. Our knowledge of forest and forest products, in particular the oils and resins derived from the leaves, bark, fruit, seeds and roots of woody plants, is detailed and these resources play an important role in our health and well-being at the local level. This knowledge has been accumulated by [our] people via 'diachronic' observations of the environment and passed down from generation to generation.

The language is noteworthy: 'environment' and 'resources' for instance. If Wagner is correct in his analysis (and if I am correct in suggesting that much of Wagner's analysis is pertinent to the 'classical' indigenous knowledge system of central Cape York Peninsula), these are originally exogenous concepts. And the description of the accumulation of knowledge that follows, which speaks of '"diachronic" observations of the environment', matches Nader's (1996: 11) account of the 'scientific' accumulation of knowledge 'by verifying observation'. This is a world away from Thomson's (1933: 460) earlier observation that the 'traditional stock of knowledge' of the group involved in the oils project was held to have been 'invented' by their culture heroes or '*Stories*' (see footnote 4). Yet, despite this apparent shift in local exegesis on the sources of knowledge, many local Aborigines continue to associate '*Stories*' (including the '*rainbow serpent*') with an 'immanent essence' that binds people, place, flora and fauna together. This essence is still understood as providing 'the object and sustaining force' of local understanding and action, inhering also in the 'moral soul' of each person and providing 'the binding force of the cosmos' (Wagner 1977: 404). Indeed, members of the group who describe their accumulation of knowledge through '"diachronic" observations' also commonly cite these '*Stories*' and their '*law*' as the foundation of the oils project.

This kind of hybridity makes it impossible to speak (analytically) of distinct knowledge systems in central Cape York Peninsula, despite many Aborigines desiring to understand the world in these terms (impelled, in part, by forms of imaginary which are part of the shared, intercultural field of regional development). Within the complex intercultural field in which they are now situated, a number of Aborigines – particularly older men and women – seek to navigate relationships with 'outsiders' by keeping much of their knowledge separate from their interactions with non-indigenes (knowledge about flying foxes and '*rainbows*', for instance). Others (mostly younger men and women) actively seek to foreground similar knowledge in projects aimed at generating what they understand as opportunities both for cultural renewal and economic development. It remains to be seen what effects the resulting refiguration of local knowledge as 'indigenous knowledge', and even as 'local science', have on the local field of knowledge and practice. But it seems likely that – as has become increasingly

apparent regarding the effects of 'globalisation' elsewhere – the result will be no more homogenous than 'global science'. Rather, particular localised formations of knowledge and practice will continue to proliferate. The hope remains that the Aboriginal people situated within this complex sociocultural field will find ways to effect more equitable exchanges of knowledge – as well as more satisfactory social, economic and political relationships – with the non-indigenes with whom they interact.

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Notes

1. Here and elsewhere in this paper, terms and phrases drawn from the local variety of Aboriginal English (see Nathan 1998; Rigsby 1998) are denoted by italics within inverted commas. Terms from (other) indigenous language varieties are simply italicised, with the language from which they are drawn identified in the text.
2. Anthropologists have described such '*medicine cut for woman*' (and similar substances and associated rituals employed by women) as 'love magic'. Other '*medicines*' were gathered by both men and women, and used to treat a variety of common ailments (hence the name), and for other purposes.
3. I have also discussed this meeting elsewhere (Smith 2005a). Indigenous knowledge pertaining to flying foxes – and their relationship to the rainbow serpent – is also discussed in McKnight (1975) and Wagner (2001: 132-35).
4. Across Cape York Peninsula, much of the knowledge that might be glossed as 'local science' is considered by many indigenous people as originating in the '*Story-time*' (elsewhere 'dream-time'). During the *Story-time*, a set of figures whom Thomson calls 'culture heroes' or 'big men' (*yilamo* or *wulmpamo* in the Kuuku Ya'u language) are held to have 'invented the ... culture and traditional stock of knowledge' (Thomson 1933: 460; also McConnel 1936; Rigsby 1999), which was then handed down to the region's contemporary Aboriginal population via their forebears. Aborigines now usually refer to these figures, as well as the accounts of their actions, as '*Stories*'; the body of culture and local knowledge associated with these '*Stories*' is referred to as '*law*'. A core purpose of these accounts is to transmit knowledge about the local environment. Traditionally much of this knowledge was passed on to succeeding generations as part of the process of male initiation, often transmitted 'in the form of "sings" and legends' (Thomson 1933: 462). The local knowledge system in the Peninsula, like others of its kind, thus remains inseparable from local cosmology (Thomson 1933: 492). This knowledge system, like other knowledge systems across the globe, produces particular ordering effects, originally distinct to those that inhere in Western or 'global' science. However – as I discuss below – the interplay between 'Western' knowledge and 'local' knowledge in central Cape York Peninsula has led to a particular (albeit complex and 'internally' heterogeneous) contemporary knowledge system distinct from both the 'classical' indigenous knowledge system of the region, and the 'Western knowledge system' with which it has come to interact.
5. A related point is made by Margolis, who suggests that the modes of human existence are 'constituted and reconstituted' by cultural forces 'in the same instant in which the "world" is constituted and reconstituted by our changing inquiries and interventions' (cited in Turnbull 2000: 3).
6. See the papers in Hinkson and Smith (2005), especially Merlan (2005).
7. As Nader (1996: 23) notes, '[local] knowledges are rapidly being overshadowed, replaced, and pushed aside by the introduction of a science and technology that assumes primacy. The recognition of lost knowledge, all but ubiquitously lost, is made all the more real by failed development projects.'
8. As Sillitoe (1998: 227) notes, such assumptions of superiority can create 'a considerable barrier to development'.
9. I acknowledge the critique made by Dove et al. (this volume) that debates around Traditional Environmental Knowledge have tended to reify both the difference between, and content of, 'indigenous' and 'Western' knowledge. But Wagner's analysis nonetheless remains pertinent in its illumination of often significant differences between the knowledge systems (and life-worlds more generally) apparent within modern, cosmopolitan sociocultural milieux and other fields of knowledge and practice. Moreover, such differences often remain vital to the character and outcomes of 'development' projects. Whilst we must take care not to exoticise and reify the 'Indigenous', we must also remain cognisant of the potentially radical (and often subtle) differences between the forms of cultural production that run through development practice and 'global science', and the local life-worlds with(in) which they engage.
10. See also Descola and Pálsson (1996) for other anthropological engagements with the nature/culture dichotomy (and a discussion of previous anthropological positions on this issue, particularly in the introductory essay).
11. The central Peninsula was settled by white miners and pastoralists in the late nineteenth century. Following a rapid process of dispossession, decimation and removal, the remnants of the region's indigenous population were incorporated into the region's new pastoral industry as an indentured labour force. Encapsulation led to considerable social and cultural disruption and a range of adaptive responses among Aborigines in the colonial era and in the postcolonial era of 'self-determination' that followed it. Both of these eras involved transformations of the local indigenous knowledge system, particularly through its 'intercultural' interplay with the originally exogenous knowledge system of the white settlers. I have discussed this history and its role in shaping contemporary indigenous life-worlds elsewhere (e.g., Smith 2003). Whilst it is difficult to say with any certainty what the nature of the local knowledge system was 'at the threshold of colonization' (Keen 2004), the work of early anthropologists in the region and elsewhere in northern Australia (much of which is summarised in Keen's monograph) – as well as aspects of the complex or 'hybrid' knowledge system of the contemporary region – suggest that the comparison made here with Wagner's 'indigenous Papuan' system is not inaccurate.

12. The term 'standing reserve' (Bestand in the original German – also glossed as 'commodity', 'raw-material' or 'resource') is associated with Heidegger (Young 1997: 176; also Smith forthcoming). In his discussion of Heidegger's work, Young (1997: 210-11, fn.31) notes the similarity between Heidegger's thinking of more 'reverential' relationships to *physis* (or 'nature'), and the 'guardianship' relations of Maori and other 'non- or pre-Western cultures'. The distinction between 'natural environment' and 'indigenous life-world' discussed here is closely related to the Heideggerian distinction between 'things' and 'equipment' (Haraway's 'resources'),

    > a difference between an entity whose being is understood in terms of ... [a] purely instrumental, power-directed set of categories, and one in which is understood in terms of a ... multi-dimensional world, a world in which human beings can discover a 'home' [i.e., through what Ingold (2000) calls 'dwelling'] through discovering, simultaneously, their limitedness and their relatedness to everything that is (Young 1997: 203).

13. Weiner (2001) calls this relationship of dependence and elision 'nescience'.
14. Another, better documented project – the Traditional Knowledge Recording Project on 'Kuku Thaypan' (Awu Laya) homelands – has seen collaborative research undertaken by two senior Aboriginal men and researchers from James Cook University, aiming to 'provide sustainable solutions to current shortfalls in land management and water conservation strategies' (ISX 2005).
15. Whilst there is little doubt that many indigenous groups have a strong interest in protecting 'biodiversity', I think that there is a need for more critical attention to the use of the term 'sustainability' (which is linked to the culturally specific discourses about 'nature' and 'resources' discussed here) in intercultural contexts. This is particularly true when the context moves beyond 'environmental' questions to various forms of 'social' sustainability (e.g., that of governance arrangements) in milieux in which the collapse of various social arrangements has been a core aspect of 'social reproduction'. Such an enquiry is, however, beyond the scope of this paper.
16. Not to mention 'mainstream' Australian education, television, music, involvement in local corporations, waged employment etc.
17. See footnote 12.
18. See Smith (forthcoming).

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5 On Knowing and Not Knowing: the Many Valuations of Piaroa Local Knowledge

Serena Heckler

In 1999, Slikkerveer wrote that local knowledge (LK) had developed 'almost parallel to Western "scientific", ... or "global" disciplinarity' (1999: 169), thereby imbuing local knowledge with the prestige often attributed to science. This claim that LK is rational and empirical is at the root of the participatory development approach championed by the likes of Chambers et al. (1989) and Warren et al. (1995). However, Agrawal (1995, 1999) points out that this claim is intensely value-laden and contributes to the assumption that a local system of knowledge can be accurately 'translated' into terms that are acceptable to scientists. In fact, Agrawal argues that this translation, which he calls 'scientization' (1999: 179), changes LK beyond recognition and makes it a tool of those who seek to exert control over marginalised peoples. He thereby suggests that the claim that local knowledge is somehow like science is, in itself, a dangerous misrepresentation. It can lead to an expectation on the part of scientists that 'knowledge' takes a form dictated by their particular disciplinary and theoretical paradigms.[1]

This paper tells of how I sought to set aside the preconceptions that had been inculcated in me through my training in the social and natural sciences to understand what the Piaroa of Amazonas State, Venezuela consider to be knowledge. In so doing, I uncovered five 'global' and 'local' knowledge paradigms, each of which are validated through their own designated authorities and each of which carry their own assumptions of value. I challenge the perception that there is a holism or objectivity to any of them. In fact, by placing the paradigms side by side, I demonstrate their dependence upon cultural validity and hence their tendency to select only certain types of information as valid, ignoring or discarding other types of information. Most importantly, I find, like Dove et al. (this volume), that the valuation of particular types of knowledge by global scientists

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