Hearing a Different Drummer: A new paradigm for the "keepers of the forest"

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Cover photos: Left, a Mosuo Daba at Lugu Lake, Yunnan. Right, a Khamba Tibetan man in Nyakchuka rDzong scaling paired forest concepts. All photographs by the author except where stated.

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Boxes, Tables, Figures, Maps, Photos

Note on the author

John Studley is an ethno-forestry consultant, a Fellow of the Royal Geographical Society and a Chartered Geographer. He has a PhD in Geography, an MA in Rural Social Development and Diplomas in Forestry, Cross-cultural Studies and Theology. He has spent most of his working life in High Asia and has worked for the state, the voluntary sector, and since 2001, as a private consultant. He can be contacted at John_Studley@compuserve.com.

Acknowledgements

To assist the reader with any remaining esoteric terms, which are in bold italics, I have included a glossary at the end of the book.

A more nuanced version of this book is available at
http://myweb.tiscali.co.uk/johnfstudley/IIEDrev3.PDF

Acronyms and abbreviations

BLV	Boundary likelihood values
CIRAN	Centre for International Research and Advisory Networks
COMPAS	Comparing and Supporting Endogenous Development
DP	Development professional
ENGO	Environmental non-government organisation
ERA	Endogenous realisation of aspirations
ETFRN	European Tropical Forest Research Network
FAO	Food and Agriculture Organization of the United Nations
FP	Forest products
GEF	Global Environment Facility
GIS	Geographical information system
GPS	Global positioning system
IF	Industrial forestation
IGNCA	Indira Gandhi National Centre for the Arts
IK	Indigenous knowledge
ILO	International Labour Office
IUCN	World Conservation Union
MDS	Multi dimensional scaling
NEF	Natural environmental function
NHF	Natural hydrological function
NUFFIC	Netherlands Organization for International Cooperation in Higher Education
SSDf	Sum of squared differences
SSDs	Sum of squared dissimilarities
TB	Tibetan Buddhism
TEV	Total economic valuation
TNC	The Nature Conservancy (USA)
TP	Transpersonal psychology
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
USDA	United States Department of Agriculture
WCD	World Commission on Dams
WRI	World Resources Institute
WWF	Worldwide Fund for Nature
YAP	YAP is short for Y Alu Polymorphism, and Alu is a contraction of Arthrobacter luteus. It describes a category of mutations found on the Y chromosome.

Executive summary

It is becoming increasingly apparent that virtually all aspects of diversity are in steep decline. Indigenous **knowledge systems**,[1] biodiversity and cultural diversity (three interacting, interdependent systems) are all threatened with extinction because of:

- rapid population growth

- growth of international markets

- westernised educational systems and the mass media

- environmental degradation

- exogenous/imposed development processes

- rapid modernisation

- cultural homogenisation

- language loss

- globalisation

- extreme environmentalism

- and **eco-imperialism**

This book explores the diversity crisis from the perspective of forestry. It introduces an emerging vision, known as the endogenous realisation of aspirations (ERA), that attempts to enhance well-being and **biocultural diversity** by building on local or endogenous ambitions and dreams. Based on research in the Kham region of south-western China, the author offers some practical methods for allowing development professionals to develop an understanding of and empathy for the local cultures within which they work, as well as to identify and understand local forest concepts and values. He also offers some policy recommendations for incorporating this approach more widely into development practice.

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1. See the glossary at the end of the book for definitions of highlighted terms.

The loss of diversity

What are the factors behind the diversity crisis in the forest sector? They include:

1. Narrowly conceived planning processes. Traditional development and natural resource planning processes tend to be science-based, expert-driven and assume a consensus around a particular objective often at odds with local aspirations and needs.

2. The cultural elitism of western science, which makes it difficult for forest development professionals to accept that indigenous people have any knowledge of worth. Much contemporary forest development processes still treat indigenous and local peoples as the ones who are to be "developed" by those doing the developing. As a result, relations of dependency are established and maintained, during which indigenous cultures are crushed.

3. Imposition of a development agenda. Many forest development professionals have co-opted the terms "bottom-up" development, "participation" and "decentralisation". But while these may appear to be endogenous approaches, in reality there is only recognition that local values are a desirable ingredient in the development process. The change agents are still external, the development process is still exogenous, and the focus is on communities rather than individuals, actors or stakeholders, thereby masking inequalities and power relations.

4. Overemphasis on commodity values of forests: national forest management planning has traditionally been framed in terms of forest uses, especially commodity uses such as timber and pulp wood, rather than forest values or perceptions such as intrinsic or spiritual values.

5. Cultural illiteracy: development professionals have often acquired unhelpful cultural baggage which prevents them from understanding forest communities' beliefs and practices, which are often radically different from their own. This baggage includes western ethics and values, western science, western environmental philosophy and western ways of knowing and perceiving.

Restoring diversity through development from within

In 1995, the United Nations Educational, Scientific and Cultural Organization (UNESCO) concluded that mainstream development did not bring peace or harmony, the alleviation of poverty or socio-economic equality. They argued that development processes required serious rethinking and spelled out not only the importance of the cultural dimension to endogenous (from within) development, but also the relevance of linking development with the ethical basis of life and living. This led to the adoption of the Universal Declaration on Cultural Diversity in 2001 whose aim was to:

- integrate the cultural dimension into endogenous development

- address cultural identity and aspirations

- view culture as a fully-fledged resource for "development"

- highlight the links between cultural diversity and biological diversity.

As a result, a new **paradigm** has emerged within natural resource management known as the endogenous realisation of aspirations (ERA). It includes approaches that:

- are based mainly on locally available resources such as water, land, vegetation, local knowledge, culture and the way people have organised themselves

- strive to optimise the use of these local resources and to enhance the capacities of local people to learn from their experiences

- aim at enhancing cultural diversity, human welfare, and ecological stability

- are a response to the current process of global modernisation.

What does ERA mean for the development professional?

Although ERA offers great potential for indigenous people, it requires forest development professionals to learn a new way of working. Probably the most important role for a forest development professional engaging in ERA is as a knowledge-broker or gatekeeper, especially between scientific/institutional communities and indigenous forest communities. In order to become knowledge-brokers, forest development professionals need to learn about the cultures and paradigms of the knowledge holders (**acculturation**).

They also need to learn techniques for exchanging information and views across cultures (cross-cultural bridging). Approaches which offer some potential include:

- Hypertext theory

- Paradigm theory

- Adaptive management

- Ecospirituality

- The post-modern forestry paradigm

A case study from Eastern Kham

Eastern Kham in south-west China is one of the most diverse biological regions on Earth. It is also culturally very rich, being home to 1.2 million ethnic Tibetans, 50,000 Qiangic speakers and 400,000 Nosu (Yi) peoples. The Qiangic speaking peoples are classified by the state as "Tibetan" because of their culture, customs and

beliefs. In common with the Khambas they are animistic/shamanistic as well as Tibetan Buddhist, and burn incense and honour mountain gods at yearly festivals. They may speak Eastern Kham as a second or third language, and are often matrilineal. The Qiangic speaking peoples include the Naxi, Pumi, Minyak, Mosuo, Ergong, Ersu, Zhaba, Xiangcheng, Queyi, Namuyi, Shixing, Manyak, and Luzu. The Nosu of Eastern Kham are not Khamba or Qiangic speakers and are considered a branch of the Yi nationality that resides in Eastern Kham, as defined by the Tibetan government-in-exile.

In 1995 the author was part of a team asked to conduct a feasibility study of a major forestry programme in the region. Realising that no research had been done, at all, on the role and importance of trees and forests to the Tibetan peoples, he began a PhD to:

- explore the interface between knowledge systems and resource stewardship

- find suitable endogenous paradigms to allow the indigenous peoples of Eastern Kham to perpetuate, protect, use and conserve their forest and trees on a sustainable basis without compromising their socio-cultural systems, **cosmovision** or well-being

- examine the impact of external interventions (i.e. **industrial forestation**, state conservation, education, **Hanification** (hanhua), socialism, and modernity) on local people and their forest values.

He drew on a suite of methods in his study, including **cognitive mapping** to explore local perceptions of the forest. Forest perceptions vary from person to person and community to community depending on local phenomenon, but there are general patterns. These patterns can be mapped perceptually as well as spatially and so can be used for forest stewardship. The study revealed a variety of distinct patterns in forest values coinciding with biological, physical, social and cultural phenomena. These included ethnic and language differences in forest concepts, gender differences and differences between age groups, dialects, remoteness, forest cover and watersheds.

These findings are important because they suggest that particular paradigms represent well-defined geographical areas within which forest-related concepts are similar enough to warrant a particular forest or biodiversity stewardship approach. They also:

- reveal how forest concepts relate to one another, to forest values, to objects of value, to forest actors, and to external interventions

- reveal the perceptual impact of any new intervention and can be used to inform extension or advocacy

- inform forest stewardship by providing a means for identifying the paradigms of sub-groups of the population (gender/age/ethnicity/county/catchment)

- provide a means for enhancing **biocultural diversity** by building on the paradigms of sub-groups of the population.

The mapping of forest concepts allows the development professional (DP) to refine the process in order to satisfy the aspirations and values of discrete local communities without compromising local social and cultural systems, gender relations, worldviews or well-being. It also allows the DP to conduct an impact assessment of any interventions with the local people and identify dangers or advocacy strategies.

Policy implications and recommendations

The biological and cultural diversity crisis is largely the result of modern systems of knowledge and globalisation. There is an urgent need to restore the autonomy of local arrangements based on alternative conceptions of reality and multiple sets of values. Plurality of views, values and practices is essential for the full realisation of human capacities, both individually and collectively which, in this case, are reflected in differences in forest values and concepts.

ERA raises people's awareness of local problems, promotes community bonds and fosters local identity. These effects are important because they increase quality of life. Indirectly, they can have an impact on the local economy because they motivate people to stay in their communities and become involved in local activities.

This vision has implicit implications for policy-makers, development organisations and development/training institutions. For policy-makers:

- regional policy should pay more attention to ERA by promoting genuine participation, local initiatives, and social and cultural capital

- ERA and acculturation can be supported by stimulating inter-cultural dialogue and strengthening indigenous institutions so as to enable communities to re-enforce their position locally, regionally and internationally

- policy dialogue with national and international development agencies needs to be strengthened in order to enhance ERA and bio-cultural diversity in policies, funding and implementation

- the concepts and approaches of "development" should be reshaped to include holistic perspectives

- national and international legislation on community rights and patenting, and their relation to customary rights and law should be reviewed

- more supportive policy frameworks are needed across a range of "sectors"—conservation, agriculture, health, education, economy, trade and international property rights. Currently these sectors largely undermine indigenous knowledge and bio-culturally diverse production systems

- policy dialogue with local people is needed, as articulated in international conventions and protocols

- political guidelines and laws should be developed that legitimise, encourage and require local communities' involvement in natural resource management and other programs, plans and policies that affect local communities and their cultures, knowledge systems, languages and societies

- policies, legislation, and ethical guidelines are needed to ensure that local and indigenous communities can protect their traditional resources (including land and territory, as well as knowledge and genetic resources), while benefiting equitably from the wider use and application of their knowledge, innovations, and practices.

Development organisations need to:

- incorporate endogenous development into planning

- provide capacity-building for staff (endogenous development, acculturation, cognitive mapping)

- secure funding for capacity-building

- recruit, in the short-term, ethnoeconomists, environmental economists or green economists to work with development professionals and local cultural mentors

- purchase software for the elicitation, mapping and analysis of forest values and concepts.

Academic/training institutes need to:

- develop curricula on endogenous development for all levels of education (including worldview/paradigm theory, cross-cultural bridging and knowledge-brokerage)

- exchange curricula and learning materials within and between cultures

- support research by local experts

- facilitate the sharing of local innovations and experiences

- reorganise training institutions to allow for incorporation of local experts

- collaborate in research across different continents

- network on endogenous development locally and internationally

- provide training in the elicitation and mapping (cognitive and geospatial) of local values and supporting technologies (such as GIS and geospatial analysis).

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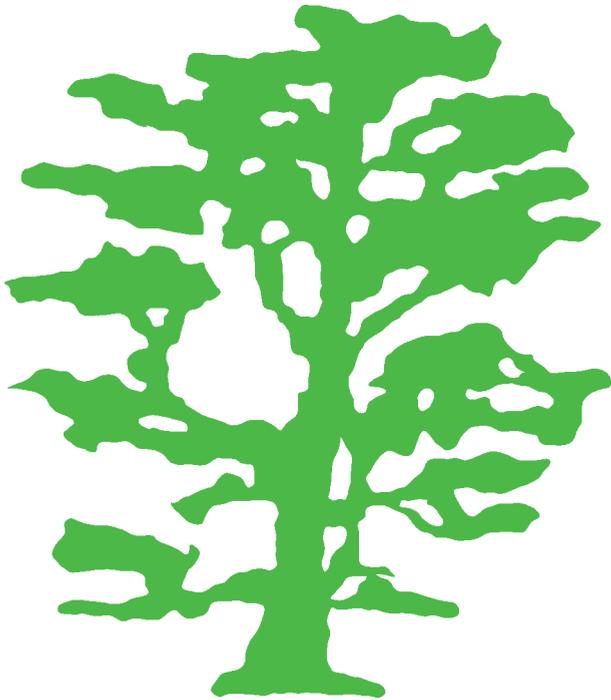
The biological and cultural diversity crisis

Introduction

According to the Living Planet Report (Hails, 2006), the Earth appears to be on the brink of a major biodiversity crisis fuelled by the steady degradation of ecosystems. Destruction of natural habitats and the effects of climate change are causing species to die out 100 to 1,000 times faster than the natural rate. Some scientists are warning that we are facing the next mass extinction. Nearly one-quarter of the world's mammals, one-third of amphibians and more than one-tenth of bird species are threatened with extinction. Climate change alone is expected to force a further 15%-37% of species to the brink of extinction within the next 50 years. According to an international group of experts from 13 nations, "virtually all aspects of diversity are in steep decline. Despite this evidence, biodiversity is still consistently undervalued and given inadequate weight in both private and public decisions" (Loreau et al., 2006: 245).

Related, but less widely known, is the loss of the world's linguistic and cultural diversity through cultural homogenisation and globalisation (Krauss, 1992). At present, there are 6,000 languages on the planet (Posey and Dutfield, 1997), only 105 of which are the official languages of sovereign countries;[2] 96% of the world's languages are spoken by only 4% of the people. Every year, 25 languages disappear, and this loss is combined with an increasing linguistic centralisation both in the means of communication and in the cultural content of that communication (e.g. on the Internet, in written publications, education and the media).

2. http://en.wikipedia.org/wiki/List_of_official_languages#Official_languages_of_sovereign_countries

The loss of linguistic diversity is an indicator of loss of cultural richness and environmental deterioration in its widest sense. Lost languages involve the extinction of a large part of human knowledge, cultural values, artistic diversity and traditions—a way of understanding the world and the environment that has evolved over centuries. Their loss spells the end of particular channels of communication and social cohesion. It also means losing highly valuable information on nature conservation, linguistic ecologies, forest values, and sustainable earth care built on mutually-reinforcing cultures and ecosystems.

Significantly, increasing awareness (Grenier, 1998) of the value of indigenous knowledge has gone hand in hand with awareness that indigenous **knowledge systems**, biodiversity and cultural diversity (three interacting, interdependent systems) are threatened with extinction. Despite increased attention (and allowing for some natural attrition as techniques and tools are modified or fall out of use), the rate of loss is still accelerating because of:

- rapid population growth

- growth of international markets

- westernised[3] educational systems and the mass media[4]

- environmental degradation

- exogenous development processes

- rapid modernisation

- cultural homogenisation

- language loss

- globalisation

- extreme environmentalism (Morano, 2002) and **eco-imperialism** (Driessen, 2003).

The impact on human well-being of the dominant culture and its means of communication is increasingly being questioned (Kasser, 2002; Princen et al., 2002). Bringing "less developed" countries in line with "developed" countries through "development" (as traditionally conceived) seems an increasingly misconstrued aim. By way of contrast, learning how to live in culturally and ecologically sustainable ways seems ever more important.

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3. Western education is orientated to social and vocational goals that ignore *biocultural diversity*. It has recently been reinforced by a managerial and instrumental view and re-structured to address the perceived needs of the market. Language diversity is not enhanced in the face of educational systems that are "centralised, homogenised, standardised, technologised, and industrialised" (Sterling, 2001).

4. http://www.un.org/esa/socdev/unpfii/documents/TK_Paper_VSimIFAD_English.pdf

In 1995, the United Nations Educational, Scientific and Cultural Organization (UNESCO)[5] concluded that mainstream development did not bring peace or harmony, the alleviation of poverty or socio-economic equality. They argued that development processes required serious rethinking and spelled out not only the importance of the cultural dimension to endogenous development, but also the relevance of linking development with the ethical basis of life and living. This led to the adoption of the Universal Declaration on Cultural Diversity in 2001 whose aim was to:

• integrate the cultural dimension into endogenous development

• address cultural identity and aspirations

• view culture as a fully-fledged resource for "development"

• highlight the links between cultural diversity and biological diversity.

In this book I explore an emerging vision that attempts to enhance well-being and biocultural diversity, especially in the realm of forestry, by building on local, or endogenous, ambitions and dreams. Known as the endogenous realisation of aspirations (ERA), this approach requires development professionals to build an understanding and empathy for the local cultures within which they work. Based on research in the Kham region of south-western China, I offer some practical methods that can allow development professionals to identify and understand local forest concepts and values. I also offer some policy recommendations for incorporating this approach more widely into development practice.

Factors behind this crisis

Narrowly-conceived planning processes

Traditional development and natural resource planning processes are failing to restore cultural and ecological diversity. They tend to be "science"-based, expert-driven, and assume a consensus around a particular objective (Forester, 1989). Natural resource agencies do little better. They often cling to **paradigms** that are life-centred (Kitossa, 2000), and attempt to impose a green world order (Darier, 1999; Krug, 1994; Luke, 1999). Many are characterised by elite knowledge (Guha, 1997) and processes of inquiry that view sense perceptions as the only admissible basis for human knowledge. This often results in the transfer of power and natural resources to environmental elites variously described as eco-holding cartels, eco-imperialists, ecological colonialists, and new enclosure movements with extreme ideologies (Wollstein, 1998). Adherents to such **paradigms** remain reluctant to recognise and include the endogenous cultural dimension of local people in a substantive and meaningful way (Abraham, 1990; Abraham & Sanders, 1993; Coffman, 1998;

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5. At a UNESCO sponsored workshop: 19-23 April 1995 at IGNCA, New Delhi.

Krug, 1994; Bonner, 1994; Katz, 1998; McMaken, 2001; Morano, 2002; Poisner, 1996).

Many authors question linear processes or single methods of inquiry that have dominated research, planning and policy-making (Gorard and Taylor, 2004; Burchfield, 2001; Dryzek, 1987). Contemporary approaches which include mixed methods of research are more open to other ways of knowing and are less linear (Fischer, 2000; Johnson and Onwuegbuzie, 2004; Williams and Matheny, 1995). They pay attention to multiple interpretations and types of knowledge. These approaches are distinctive in saying that knowledge is not the exclusive province of experts (Innes, 1990). They therefore offer the possibility of endogenous ("from within") approaches to planning and stewardship based on local forestry **paradigms**.

Cultural elitism of western science

Forest development and its guiding ethics are inevitably linked to development and conservation discourses. Changes within one affect the other. The dominant western culture (Marglin and Marglin, 1990), and associated forest development practice, has treated indigenous cultures as inferior, marginalised and based on devalued forms of knowledge (Studley, 1998).

This treatment of indigenous cultures has its roots in the foundational philosophies of groups such as The Royal Society[6] who controlled and disseminated scientific knowledge (Abendsen, 2000; Hoffman, 2001; Lomas, 2004; Pouzzner, 2001). For example, in the name of progress and evolution, Royal Society fellow John Locke[7] legitimised the exploitation of nature—appropriating where necessary indigenous peoples (as slaves), their territories, common land, and intellectual property (Studley, 2005).

The subsequent cultural elitism of western science made it difficult for forest development professionals to accept that indigenous people have any knowledge of worth. For example, traditional practices of resource extraction (e.g. in shifting cultivation) have been described as wasteful, even delinquent (Dove, 1983), and their negative outcomes a matter of preference rather than an outcome of poverty. Much contemporary forest development still sees indigenous and local peoples as the ones who are to be "developed" by those doing the developing. As a result, relations of dependency are established and maintained, during which indigenous cultures are crushed (Agrawal, 1995a&b; Hobart, 1993).

In countries as diverse as Brazil and India, early colonial models of industrial forestry had negative impacts on the environment and the livelihoods of the poor (Forman,

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6. The independent scientific academy of the UK and the Commonwealth dedicated to promoting excellence in science http://www.royalsoc.ac.uk/ (accessed 2nd Feb 2007).

7. Who invested in the slave trade through the Royal Africa Company.

1975; Guha, 2000; Westoby, 1987). As a result, since the late 1970s attempts have been made to address these failings:

- by thinkers such as Escobar, Ferguson, Rahnema & Bautree and Sachs[8]

- in countries such as Nepal and India, through the introduction of "community forestry" (Agarwal, 2001)

- by Jack Westoby (1987) who highlighted the importance of "social forestry"

- by the United Nations Food and Agriculture Organization (FAO), who stated that "new foresters" must be "familiar with social and economic problems in poor rural areas… and have skills in agronomy, animal husbandry ….. politics, sociology and anthropology" (FAO, 1978).

Attempts have also been made to challenge the marginalisation of indigenous knowledge for romantic and practical reasons (Ellen and Harris, 2001). The romantic reasons include the notion that traditional, indigenous or primitive peoples are in some kind of idyllic harmony with nature (Ellen, 1986). This has often involved the selective re-modelling of Asian and other exotic traditions to suit the needs of western environmentalists for idealised native images (Conklin and Graham, 1995). In this vision, indigenous peoples are given central focus because of, rather than in spite of, their cultural differences. This perception and consequent alliance between indigenous peoples and western science is a fragile one. It is based upon assumed ideals of indigenous realities, which contrast with the realities of the local people themselves. Such assumptions are in danger of leading to cross-cultural misperceptions and strategic misrepresentations.

For practical reasons too, advocates of indigenous knowledge have praised the virtues of "participation", "empowerment", "bottom-up", and "farmer-first". Some measure of the institutionalisation of this version of indigenous knowledge is the number of networking organisations and research units which promote these approaches (Warren et al., 1995). One of the difficulties with these approaches is the danger of leaving intact the dichotomy of western knowledge and indigenous knowledge as homogenous and exclusive entities (Agrawal, 1995b; Berman, 1988; Umans, 1998).

Although many institutions adopted these new models with their participatory techniques and attention to indigenous knowledge, many of them continue to have strongly authoritarian environmental agendas and operate under the same constitution as before.

As a result, many new models of forestry have failed their intended beneficiaries because of (Shiva, 1989):

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8. Escobar, 1995; Ferguson, 1990; Rahnema & Bautree, 1997; Sachs, 1992.

- lack of local support

- lack of genuine participation

- "elite capture"

- inability to respond to local needs

- constraints of centralised planning

- lack of political will and policy support to delegate management authority to local communities

- failure to abolish old policy and laws

- cultural blindness of resource management professionals.

Too often progress has been undermined by the temptation to look for standardised success within a single model. This inevitably fails to do justice to multiple realities embedded in culture, locale, people or indigenous knowledge.

It is questionable how many "new foresters", described by FAO (1978), have been allowed to take up Westoby's challenge. Many forestry development professionals remain ignorant of the socio-cultural context within which they work. Many continue to privilege western science over native wisdom, ways of knowing and indigenous knowledge. For example, in a study by the European Tropical Forest Research Network (ETFRN) of new ways of learning about indigenous forestry knowledge (Lawrence, 2000), most researchers failed to demonstrate how their new learning represented any real paradigm shift. The knowledge they elicited was taken out of its context and "integrated" (Singhal, 2000), "incorporated" (Wiersum, 2000), "turned into" (Michon, 2000) or "associated" (Muraille, 2000) with universal western **scientific forestry** or formal forestry.

Imposition of a development agenda

As noted above, many forest development professionals have co-opted "bottom-up" development (Chambers, 1983) and "participation". Decentralisation has also gained currency in the lexicon of mainstream development, and while it may appear to be an endogenous approach, in reality there is only recognition that local values are a desirable ingredient in the development process. The change agents are still external, the development process is still exogenous, and the focus is on communities rather than individuals, actors or stakeholders.

The danger of focusing only on forest communities or territories, rather than stakeholders, is that it masks inequalities and power relations. This is exacerbated by employing a consensus perspective and participatory approaches that at best border on "tokenism" and at worst are yet another "western tyranny" (Edwards et al., 1999; Hildyard et al., 1998). As a result differences according to class, ethnicity,

wealth, age and gender are obscured and nothing is done to correct the subtle and widespread social processes of disempowerment.

Overemphasis on commodity values of forests

National forest management planning has traditionally been framed in terms of forest uses, especially commodity uses such as timber and pulp wood, rather than forest values or perceptions such as intrinsic or spiritual values (Rolstone and Coufal, 1991). An incomplete understanding of local approaches to forest stewardship may actually reflect both individual and collective differences in forest values held. While forest values and perceptions are assumed to underlie preference for actual forest use, the relationship between preferences and attitudes toward forest stewardship is not well documented, even if it is understood.

An emerging approach to forestry is allowing foresters to move beyond decision-making based around use values and adopt an adaptive approach (Kepkay, 2003; Stankey, et al., 2003) to forest stewardship with a broader set of values (McCay, 2000; Schelhas, 2003; Shindler et al., 1999; Williams, 2002). This new paradigm is predicated on (Schelhas, 2003):

- use values and non-use values

- whole systems that are open-ended

- scientific uncertainty creating space for other sources of knowledge

- adaptive management models

- the recognition of indigenous knowledge through bottom-up approaches

- local people as active participants in the system.

Schelhas (2003) draws on research from the USA and Costa Rica to identify four paradigm shifts that he believes are characteristic of these trends:

1. from simple to multiple interests in natural resources

2. from simple ownership to bundles of rights

3. from science to multiple **knowledge systems**

4. from public interest to stakeholder groups

Forestry, from this perspective, appears now to offer an approach that both enhances the forests and the well-being of the people who depend upon them. This approach provides a platform to address multiple-aim forest management, sustainability, stakeholder needs, plural behaviour patterns,[9] local and indigenous forest values,

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9. Forest management is increasingly characterised by a normative pluriformity regarding the values which it should incorporate (Wiersum, 1997).

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1   Box 1. Values, morals and ethics

Values are based on our subjective reactions to the world around us and informed by ethical and moral judgements. They guide and shape our opinions, beliefs, attitudes and behaviour.

Morals are based on cultural, religious and philosophical concepts and beliefs and provide the basis for allowing humans to determine whether actions are right or wrong. They are externally imposed on a society and serve to regulate the behaviour of its members.

Ethics in the western cultural tradition are often formulated on the basis of logic and reason as behavioural rules for humankind, or, more generally, as precepts and principles or guiding philosophies. They tend to be codified into a formal system or set of rules which are explicitly adopted by a group of people and internally defined. These subjective value sets are often very different in indigenous cultures.

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knowledge equity, and synergy between formal and customary forestry **knowledge systems**. The use of forest values in planning is becoming internationally recognised (Emery et al., 2006).

This new approach offers potential for local people but raises challenges for development professionals. For local "forest actors" it offers the possibility of sustainability on their own terms, basis of knowledge and ways of knowing. For the development professional, it requires **acculturation** and the adoption of an endogenous approach.

Cultural illiteracy

Development professionals have often acquired unhelpful cultural baggage which prevents them from understanding forest communities' beliefs and practices. This baggage includes:

- western ethics and values (see Box 1)

- western science

- western environmental philosophy

- western ways of knowing and perceiving.

Ethics and values in most indigenous cultures are relational. They are based on restoring harmony in and between the human, non-human and spiritual world. Being articulated as behavioural expectations, customs, taboos and rites, they are often explicitly exemplified in myth, story and legend. Indigenous cultural practices place

politics and ethics within the realm of ecosystems; from this perspective it makes no sense to limit politics and ethics only to human beings.

Indigenous peoples recognise the connectedness and the meaningfulness of the non-human world. This does not mean that animals or plants cannot be taken or used for food or clothing. But the taking of life represents the loss of a fellow being's life, a life with intrinsic value "because it has been created by a divine being".[10] This is illustrated in the hunting scene in *The Last of the Mohicans* (Cooper, 1826; Mann, 1992) where Chingachgook chants in Mohican that they are sorry to have killed the elk and asks the animal's forgiveness because they honour his courage, speed and strength. Indigenous peoples often negotiate the taking of life between human society and the larger society of beings (divinities or spirits). Often an intermediary like a shaman is used to ensure balance and reciprocity (Castro, 1991; Dove, 1993; Reichel, 1992). For many animistic/shamanistic peoples, "one aspect of the natural resources actually is the deity" and they exhibit "bonds of affection" for the natural world (Seeland, 1993:356 and 358).

Because they hold the natural world as sacred, indigenous **worldviews** usually have environmental protection and environmental ethics embedded within them. This often means that the overwhelming majority of indigenous people respect and protect biodiversity on some of their lands (often designated as sacred lands). This contrasts with many western societies where a culture of denial and education creates a human/other dualism that undermines sustainability or renders it meaningless (Bowers, 1999; Sterling, 2001). For example, I challenged the validity of the UK's Institute of Chartered Foresters' definition of "sustainability" in their "code of ethics" (Studley, 1995a; 1995b). Their definition was limited to "increasing knowledge about forestry and its interaction"[11] and as such lacked any ethical content.

Science, in most indigenous cultures, is also distinct from western science. The difference[12] is best explained in the following way. Indigenous science is a mode of knowledge that has evolved to allow human beings to fit into, rather than live outside of, ecology. Western science on the other hand evolved in a world that placed humanity apart from and above the natural world, and in command of apparently inexhaustible resources. The privileging of western science over indigenous science is part of a philosophy[13] that regards knowledge as the key to "development". Western

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10. Laverty and Sterling (2004) http://cnx.rice.edu/content/m12160/latest/#Callicott accessed 5/7/05.

11. of General Regulations 28.

12. Unlike the use of the scientific method as only one mode of reaching knowledge, western science or "scientism" claims that science alone can render truth about the world and reality. Scientism's single-minded adherence to only the empirical, or testable, makes it a strictly scientific worldview. Scientism sees it necessary to do away with most, if not all, metaphysical, philosophical and religious claims, as the truths they proclaim cannot be apprehended by the scientific method. In essence, scientism sees science as the absolute and only justifiable access to the truth. http://www.pbs.org/faithandreason/gengloss/sciism-body.html (accessed on 27/7/06).

13. Gnosticism—a philosophical and religious system teaching that knowledge rather than faith is the key to salvation.

science is therefore contemptuous of local and traditional knowledge, and is plainly anti-democratic, anti-spiritual and anti-ecological.

Environmental philosophies are often radically different in western and indigenous cultures. Western environmental philosophy includes human-centred, animal-centred, life-centred and **ecocentric** or holistic approaches (Eckersley, 1992). In contrast, in indigenous people's **worldviews** humans are not only part of the "environment" or the complex web of life, but are seen as the environment itself. There is an acknowledgment that all of life is related and that all of our actions and choices have impacts on other living beings. Although such **worldviews** are being undermined by western science and a market-oriented culture (Merchant, 1980, 1989; Nelson, 1986), some indigenous cultures retain this tradition, which now seems to have profound conservation implications (Gadgil and Guha, 1992).

Ways of knowing and perceiving are a final area of cultural difference. The western "way of knowing" and its validation are based upon quantification, reductionism, the experimental method and everyday waking reality. By contrast, indigenous ways of knowing attempt to explain the features of reality by looking beyond the physical world and our immediate senses (Walsh and Vaughan, 1993). Indigenous ways of perceiving are based on perceptual diversity, which allows people to access knowledge through a variety of perceptual processes—meditation, trance, dreams and imagination (Bourguignon, 1973). Many of these trans-rational, altered states of consciousness are not considered valid processes for accessing knowledge by western science.

Around the world today indigenous ethnic groups are asserting the validity of their own "ways of knowing" in resistance to mainstream ways of knowing.

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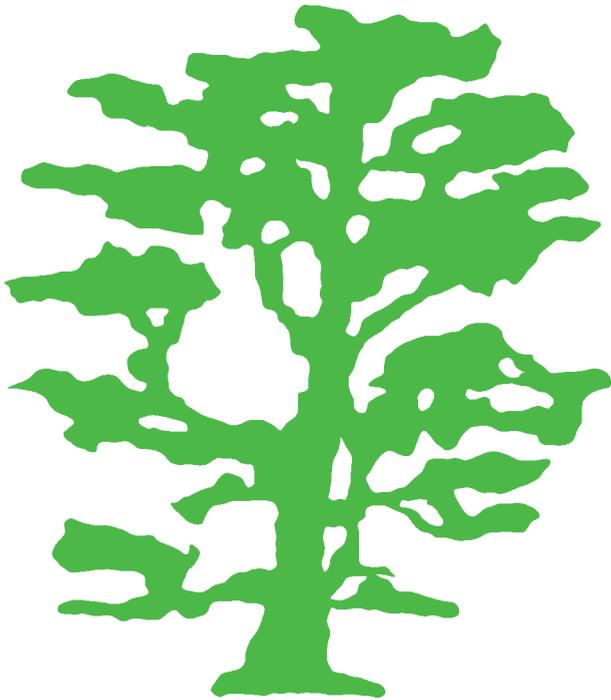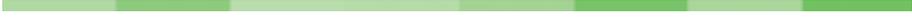
Forest development through the endogenous realisation of aspirations (ERA)

In response to the problems outlined above, since the mid-1990s a new endogenous **paradigm** (Box 2) has emerged within natural resource management that includes a cultural and spiritual dimension.[14] It has been prompted by the work of UNESCO, the United Nations Environment Programme (UNEP) and the Compas (Comparing and Supporting Endogenous Development) Network (see Box 3).

The main potential of the endogenous realisation of aspirations (ERA), which resonates with UNEPs and UNESCOs vision, lies within the social and cultural realm. It raises people's awareness of local problems, promotes community bonds and fosters local identity. These effects are important because they increase quality of life. Indirectly, they can have an impact on the local economy because they motivate people to stay in their communities and become involved in local activities. Regional policy should thus pay more attention to ERA by promoting genuine participation, local initiative, and social and cultural capital. Supporting ERA requires acculturation. By stimulating inter-cultural dialogue, indigenous institutions can be strengthened, enabling the communities to re-enforce their position locally, regionally and internationally.

The literature produced by organisations such as Compas, the Netherlands Organization for International Cooperation in Higher Education (NUFFIC), the Centre for International Research and Advisory Networks (CIRAN) and Terralingua[15] is full of

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14. http://environment.harvard.edu/religion/religion/index.html accessed on 27/7/06.

15. http://www.compasnet.org/english/compmain/public.htm; http://www.nuffic.nl/ciran/ikdm/; http://www.terralingua.org/Resources.htm

2	Box 2. The new endogenous paradigm

Endogenous means "of inside origin". Since the 1970s it has been used in economics and mainstream development discourse, including forest development.

The new endogenous paradigm includes approaches that:

- are based mainly, though not exclusively, on locally available resources such as water, land, vegetation, local knowledge, culture and the way people have organised themselves

- strive to optimise the use of these local resources and to enhance the capacities of local people to learn from their experiences

- aim at enhancing cultural diversity, human welfare and ecological stability

- are a response to the current process of global modernisation.

The endogenous realisation of aspirations (ERA):

- allows insiders to reverse the process of cultural erosion

- allows for experimentation with a mixture of ancient knowledge and new knowledge

- builds on local needs, aspirations and resources

- seeks to improve local knowledge and practices

- aims to provide local control of options for the realisation of aspirations

- allows for the identification and use of niches for the realisation of aspirations

- allows for the selective use of external resources

- allows for the retention of benefits in the local area

- allows for exchange and learning between cultures

- allows for locally determining training and capacity building

- allows for networking and strategic partnership

- allows for understanding local systems of knowing and learning

Sources: Compas magazine http://www.compasnet.org/ (accessed 2nd Feb 2007) and Letty and van Veldhuizen, 2006.

<div style="border: 1px solid green;">

3 **Box 3. ERA in practice**

The Compas programme[16] is an initiative to improve the quality of development support initiatives. The project provides support to local organisations which are enhancing biological and cultural diversity and sustainable management of natural resources by building on indigenous knowledge systems and local leadership.

Compas field activities are based on a variety of local resources. Besides biophysical and biological resources, these include local knowledge, values and norms, culture, social organisations and local leadership. Initially, the fields of action of the Compas partner organisations were mainly related to agriculture, natural resources and health. A few examples from within the Compas Network include:

• the use of local herbs for human and animal medicines in India (Hafeel and Suma, 2000;, Shankar et al., 2001)

• the use of well-selected local varieties of indigenous seeds (Ramprasad, 2000) and animal breeds in India (Shenoy et al., 2001)

• indigenous pest control methodologies in Sri Lanka (Upawansa, 1999)

• re-establishing local control over natural resources in Ghana (Millar and Atoyure, 1999) in Zimbabwe (Gonese, 1999) and in India (Shankar, 1999).

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examples of the ways in which ERA is enhancing the well-being and mutually reinforcing the cultural and ecosystem diversity of indigenous peoples (Box 3).

Learning for ERA

Although ERA offers great potential for indigenous people, it requires forest development professionals to learn a new way of working, including becoming immersed in the host culture (acculturation) and learning techniques for exchanging information and views across cultures (cross-cultural bridging). The cross-culturally engaged forest development professional must:

• recognise and learn to call into question their own ideology without becoming defensive

• be able to shift roles "from expert to acolyte"[17]

• step into and listen, learn and reason within the client's **worldview**

• suspend impulses to control programme agendas and decisions

• create an environment that facilitates sharing knowledge

16. http://www.compasnet.org/english/compmain/bground.htm

17. Simpson and Driben, 2000.

15

Table 1. ERA check-list

Are you as a development professional…	Yes/No
1. Re-building relationships between different actors?	
2. Learning about cosmovision and local knowledge (♂/♀)?	
3. Learning from communities about coping with dominant knowledge?[18]	
4. Engaging in community dialogue and decision making about possible interactions with other knowledge?	
5. Defining strong/weak points of local knowledge, and how to deal with it?	
6. Defining strong/weak points of dominant knowledge and how to deal with it?	
7. Facilitating exchange of experiences and co-evolution….	
a) by exchanging "ways of knowing" and paradigms?	
b) by self-assessment of knowledge systems?	
c) by looking for synergy and complementarity?	
d) by questioning and challenging each other?	
e) by establishing mechanisms for exchange and mutual learning?	
f) by joint prioritising of planning and implementing research?	

Haverkort and Rist (2004) have created a check-list (Table 1) to enable development professionals to conduct a self-analysis of their progress in endogenous approaches.

The acculturation process

Probably the most important role for a forest development professional engaging in ERA is as a knowledge-broker or gatekeeper,[19] especially between scientific/institutional communities and indigenous forest communities. A broker[20] "is someone who acts as an intermediate agent in a transaction or helps to resolve differences" (Roget's

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18. See Studley, 1998.

19. Sillitoe, P. Personal communication on http://myweb.tiscali.co.uk/johnfstudley/Knowledge-broker.txt accessed on 27/10/06.

20. Also known as a go-between, interceeder, intercessor, intermediary, intermediate, intermediator, mediator, middleman.

4 | **Box 4. The adoption of new cultures**

Socialisation is the process by which human beings learn to adopt the behaviour patterns of the community in which they live. Agents of socialisation include the family, school, friendship groups, religious institutions and the mass media.[21]

Enculturation is both a conscious and an unconscious conditioning process whereby children and adults achieve competence in their culture, internalise their culture and become thoroughly enculturated.[22]

Acculturation is the process by which visitors acquire the knowledge, skills, attitudes, values, and behaviours that enable them to become functioning participants of a new sub/culture, usually on a temporary or ad hoc basis. One enters a new sub/culture, in effect, as a child or an acolyte and is enculturated into the new society through the process of adaptation to that society.[23]

Assimilation is based on the assumption that the individual will never return to the society of origin. So he or she takes on the entire lifestyle of the new society. The process is more thorough, all-encompassing, and probably longer. It is usually a one-sided process by which the members of a minority group are integrated into the host society with some permanent loss to the group accepting the majority culture.[24]

Thesaurus, 1995).[25]　Rather than acting as a mediator between two poles on a continuum, Sillitoe (2002) sees the role of knowledge-brokers as mediating knowledge (or values) within "globes of knowledge" with meridians representing, in this case, stakeholder aspirations interfacing with a network of different worldviews and paradigms (see Figure 1). The aim of forest development professionals should be to enhance the well-being of indigenous people and their **biocultural diversity** and empower them to be able to broker for themselves (Chambers, 1997). In order to become knowledge-brokers, forest development professions need to learn about the cultures and paradigms of the knowledge holders (acculturation).

Broadly speaking, culture includes common values, beliefs and norms within groups who share an ethnic heritage, sexual orientation, "ways of knowing", worldview, and socio-economic class. It is learnt and transmitted intergenerationally through the processes of socialisation and enculturation (Pelto and Pelto, 1975) and cross-culturally by acculturation or assimilation (Box 4).

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21. http://home.barton.ac.uk/curriculum/english/media/a2/glossary.htm

22. http://home.snu.edu/~hculbert/encultur.htm

23. http://www.liberty.edu/index.cfm?PID=3601

24. http://www.as.ua.edu/ant/Faculty/murphy/diffusion.htm

25. I prefer Sillitoe's (1998, 2000) use of knowledge-broker to its misleading use by multilateral development banks, which would be more accurately described as "knowledge purveyors" or "knowledge bankers" (See Dev, 2000; Oldham & McLean, 1997; Ranis, 2006; Smith, 1997).

Acculturation and assimilation differ in the degree of adaptation to the new. With acculturation, a person adapts to the new culture, but they assume they will leave again and return to the society of their birth, or move on to a new culture. They are a fully accepted and respected member of the new culture, yet in essence they have dual or multiple identities. This bi/multi dimensional perspective of acculturation can be more completely understood when birth cultures and new sub-cultures are seen as being relatively independent of one another (Berry, 1997). This allows individuals to adopt the values of many cultures.

A major blockage to acculturation comes if anyone views their own culture as superior. This can result in reinforcing one's own culture and knowledge-systems, an inability or unwillingness to change or adapt, and the subtle demand that others change and adopt their culture to be fully accepted.

Accepting other worldviews and paradigms

Acculturation assumes the validity of multiple **worldviews** and **paradigms** (see glossary for definitions). The concept of worldview is critical for cross-cultural engagement because the process of inquiry and the processing of knowledge, our own and others, are based upon culturally constructed worldviews about how the world works (Wallace, 2000).

In general, worldviews are becoming increasingly diverse. This reflects the growth of multiculturalism, new scientific insights, globalisation and individualisation. More and more people are finding it difficult to accept conventional, materialistic and science-based approaches to development. Innovative individuals, citizen groups, scientists and policy-makers are increasingly challenging the way the world works. New visions and practices are emerging, typified by current approaches to, for example:

- rural renewal

- organic agriculture

- sustainable energy

- complementary medicine

- alternative education (Sterling, 2001)

- solidarity[26] or green[27] economics.

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26. A grassroots form of co-operative economics that has developed in Latin America. It promotes the formation of co-operatives, systems of barter, local sustainable agriculture, renewable energy, respect for cultural diversity, etc. One of the basic principles is creating harmony within the human community as well as in relationship to the world around us. Balance replaces growth as a measure of economic well-being. http://www.geo.coop/SolidarityEconomicsEthanMiller.htm accessed 18/7/06

27. Cato and Kennett, 1999; Jacobs, 1993; Milani, 2000; Schumacher, 1973.

Figure 1. Some candidate paradigms to consider for aspirational realisation[28] (modified from Sillitoe, 2002)

Scientific paradigms
- empiricism
- scientism
- post-positivism
- non-linear science

Asian paradigms
- Confucianism
- Fengshui
- Ying/yang
- Ancestor worship

Philosophic paradigms
- rationalism
- reductionism
- materialism
- holism
- atomism

Local Forestry Values and Practices

BIOCULTURAL DIVERSITY

CONSERVATION

Environmental paradigms
- biocentrism
- zoocentrism
- ecocentrism
- indigenous

TOPOCOSMIC HARMONY

Religious paradigms
- christianity
- hinduism
- buddhism
- daoism
- animism
- shamanism

Political paradigms
- marxism
- socialism
- capitalism

Forestry paradigms
- scientific
- neo/populist
- post-modern

In order for development professionals to compare traditional concepts of nature and people-nature relationships with new ideas emerging in ecology, new paradigms are required. Current thinking suggests that there is any number of co-existing paradigms (Figure 1). None of these can encompass all of the data or knowledge. For development, there is no "one way" or grand unified theory (Best and Kellner, 1997; Young, 1994). Most paradigms allow new ideas and technologies to be accepted or rejected, and iterative feed-back mechanisms allow for some modification. When a

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28. In this case for ensuring harmony, biological and cultural diversity and conservation.

particular paradigm gives rise to problems we are unable to solve, our view of reality must change, as must the way we perceive, think about and value the world. We must take on new assumptions and expectations, and this requires the selection (shift or change) of an alternative more appropriate paradigm. This applies especially in the context of cross-cultural engagement if attempts are being made to adopt, build on, learn from, or understand endogenous knowledge or practices.

Cross-cultural engagement allows the development professional as a knowledge-broker to bring multiple worldviews and paradigms together around the problems or aspirations of their indigenous clients (Hassel, 2005). By bringing together multiple worldviews and paradigms, the development professional can expose particular elements that are incompatible with their indigenous clients' worldview and look for synergy in alternative worldviews and paradigms (see Figure 1).

Ward and Kennedy (1999) have developed an adaption scale (See Annex 1) which would enable the development professional to measure their own level of acculturation or adaption. Ward (1996) has also developed frameworks for psychological adaption.

Cultural bridging

It is not enough for development professionals to understand a range of worldviews and paradigms. In order to act as knowledge-brokers they must understand how to bridge between cultures and alternative ways of knowing and perception. They must avoid mining or integrating indigenous knowledge as a useful commodity, or supporting the "colonising propensities" of academic institutions (Sinclair, 2003) who continue to dominate other ways of knowing (Le Grange, 2001).

It is only when we move away from the sterile dichotomy between indigenous and western knowledge, when we begin to recognise intra-group differentiation, and when we seek out bridges between multiple worldviews and paradigms, that we will initiate a productive dialogue to safeguard the interests of those who are disadvantaged (Agrawal, 1995b).

There have been numerous attempts to integrate or incorporate indigenous knowledge with formal forest management (Lawrence, 2000; Wiersum, 2000) although it is recognised (Bennett and Zurek, 2006 page 280) that there is "no conceptual framework for cross-cultural integration"[29] (Bennett and Zurek, 2006). Indigenous knowledge is generated in the immediate context of the livelihoods of people, and it is a dynamic entity that undergoes constant modification as the needs of the communities change. It is impossible for it to maintain its vitality or vigour if

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29. Epistemologically and psychologically.

it is chopped up and isolated in an archive within some centralised forest planning process. There is a tendency to isolate indigenous knowledge sub-sets for the purpose of analysis and documentation (Fairhead and Leach, 1994). Examining local knowledge in this way can draw attention to some aspects at the expense of others and overlook knowledge that does not fall within the selective criteria of western scientific parameters.

There is also a tendency, based on western ways of knowing, to validate knowledge that is objective, separating the quest for knowledge from the knowledge itself. From the perspective of indigenous people this is a degenerate approach (Sinclair, 2003). As a knowledge gathering method, indigenous people cannot understand how it can lead to truth or meet human or ecological needs in light of the environment destruction and personal alienation apparent in the western world (Hails, 2006; Colorado, 1988).

Indigenous ways of knowing offer a solution by refusing to fragment aspects of life (Ermine, 1995; Wilson, 2001). They keep the physical, environmental and spiritual aspects of life experience in harmony through ceremony, **vision quests** and dreams. They also accept multiple states of consciousness, namely dreams, trances, visions, and natural or plant-induced (Ratsch, 2005) meditative states. These are common to 90% of cultures, meaning that such types of consciousness are to be found in most human societies and are considered "normal" by the majority.

For the forest development professional it is therefore essential to know how to bridge between these different types of knowledge, ways of knowing and perceptions. It is essential to find elements from multiple knowledge systems in order to meet endogenous aspirations in any given local environment. But bridging remains a problem if official discourses[30] reject indigenous knowledge and modes of knowing, perception and cosmology.

Some "western" approaches seem to provide space for knowledge equity and bridging. These include (Studley, 2005) hypertext theory, paradigm theory, **abductive** logic and management, ecospiritual paradigms, and post-modern forestry paradigms (see Box 5).

These five complementary approaches allow development professionals to transcend the limitations of any single knowledge system and develop sustainable forestry and biodiversity models that bridge different elements taken from multiple worldviews and paradigms. They also allow these models to evolve in an adaptive fashion informed by mutual feedback mechanisms.

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30. Of development, environment, nature, minority and forestry.

5	Box 5. Approaches to bridging and knowledge equity

Hypertext theory (Landow, 1993) assumes knowledge is organised and processed in similar ways as our minds. As we learn/explore a topic, we form a cognitive web associating new information to existing information forming complex interrelationships. Hypertext theory "does not permit a tyrannical, univocal voice" and it allows us to "abandon conceptual systems founded upon ideas of centre, margin, hierarchy and linearity and replace them with ones of multilinearity, nodes, links, and networks".

Paradigm theory (Usher and Edwards, 1994; Young, 1994) offers the possibility of selecting from "any number of co-existing paradigms" and gives "value to the experiential and the learning engaged in as part of everyday life" based on "multiple 'realities' to be constructed through an already interpreted experience".

Adaptive management (Bateson, 1972; Gadgil et al., 1993; Stankey et al., 2003), predicated on abductive/synthetic and relational approaches, offers the prospect of embracing surprise, and of redefining resource management, human institutions, techniques and values based on the patterns of the larger system of which they are part.

Ecospirituality (see e.g. Tucker and Grim, 2001; Leach, 2003) is a manifestation of the spiritual connection between human beings and the environment. Ecospirituality incorporates an intuitive and embodied awareness of all life and engages a relational view of person to planet, inner to outer landscape, and soul to soil. The recent attention to the importance of the environment and spirituality, and the paradigmatic shift that such issues require, has created a welcoming space for indigenous voices.

The post-modern forestry paradigm (see e.g. Schelhas, 2003) has global application under the rubric of "pluralism and sustainable forestry" and can be adopted not only for indigenous forest values, but also for changes in values in "developed" societies. This emerging paradigm allows foresters to move beyond the narrow confines of "utilitarian forestry" and is predicated on: utilitarian and non-utilitarian values, whole systems that are non-deterministic, scientific uncertainty creating space for other sources of knowledge, adaptive management models, the recognition of indigenous knowledge through bottom-up approaches, and local people as active participants in the system.

For more information see Studley, 2005.

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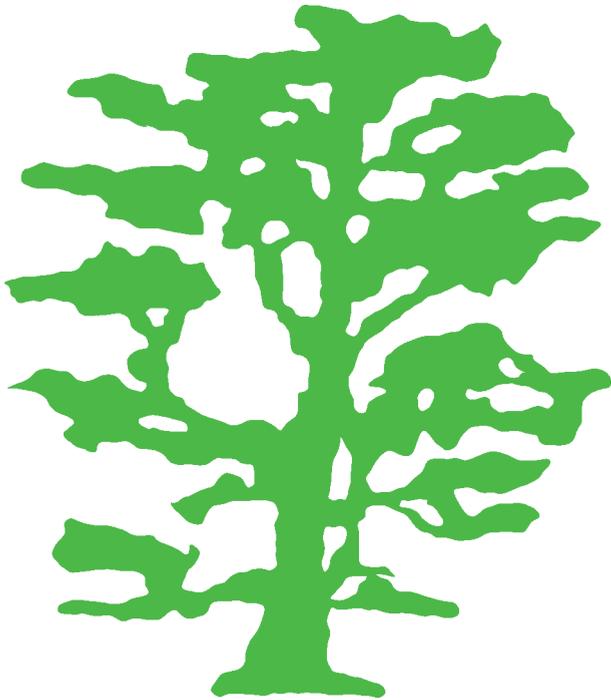
The Case of Eastern Kham

In this section I use a case study from south-west China to illustrate:

1. An ERA approach that is predicated on local people's forest perceptions.

2. The factors that shaped my own acculturation and the fieldwork process I adopted (see Table 2).

In the late 1970s and early 1980s forestry appeared to go through a sea change, and there was more of an emphasis within the FAO (1978) and the World Bank (1978) on community or social forestry. Foresters were encouraged to know as much about rural peoples as about trees and to acquire the requisite skills.[31] I attempted to respond to this suggestion before moving to Nepal in 1984 as a community forester, but there were few opportunities. The inadequacies of **scientific forestry** became apparent almost as soon as I arrived in Nepal and tried to introduce a range of forestry interventions among the animistic/shamanistic mountain peoples. This culminated in 1985 when I led a team of foresters to India, and met with **Chipko** activists Vandana Shiva and Sunderlal Bahugana who explained the nature of forest protest (*Chipko*) and the colonial legacy, were scathing in their critique of scientific forestry and modernity, and argued in favour of indigenous approaches. Due to an academic time lag I had to wait until 1987 to participate in the Oxford Forestry Institute's Social and Community Forestry course. I was fortunate that Nepal was at the forefront of community forestry and that the government was pragmatic enough to realise that large-scale industrial plantations did not have much place in the

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31. Sociology, rural development, anthropology, linguistics, psychology, politics, etc.

Himalaya. In spite of the community forestry emphasis at that time, few foresters appeared to realise that community forestry constituted an alternative paradigm. For example, it took the Nepal-Australia Forestry project more than 10 years to articulate the importance of community forestry paradigms in Nepal (Gilmour and Fisher, 1991). However, this approach immediately resonated with my experience because I:[32]

- was familiar with paradigm theory[33]

- had by then lived in Nepal for nearly seven years

- had adopted an endogenous approach

- had chosen to live **biculturally** with animist/shamanistic peoples

- had consciously/unconsciously become acculturated.

Although I became acculturated automatically, I began to consider if there were tools, mental maps and conceptual models to assist foresters "fast-track" what had taken me seven years to achieve. I had to wait until 1995 to build on these seed thoughts when I was asked to conduct a feasibility study of a major forestry programme in Eastern Tibet. We very rapidly realised that no research had been done, at all, on the role and importance of trees and forests to the Tibetan peoples. This was seen as a prerequisite for the programme. It was suggested that a PhD based on **ethnoforestry** would not only address the role and importance of trees and forests to the Tibetan peoples, but would reach a much larger audience than an NGO feasibility study.[34] This case study is a summary of some of my findings from that study (Studley, 2005).

Kham background

Kham is one of the most unique biological regions on earth. It is situated at the eastern end of the Himalaya between Qinghai-Tibetan plateau and China, comprising part of "Greater Tibet" or "Cultural Tibet". The region constitutes about 4% of China's land area, includes seven mountain ranges and comprises Western Kham and Eastern Kham (see Map 1).[35]

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32. I found similar resonance with Banuri and Margin's work (1993) on knowledge systems following MA studies in 1991-1992.

33. As a platform for understanding animism/shamanism.

34. This was combined with an ethnoforestry consultancy in Yunnan, funded by DFID.

35. The Kham (khams) area of the Tibetan Highland is one of the two Tibetan provinces constituting the East of Tibet, with the other one being named Amdo. This is derived from the Tibetan term mdo-khams which is found in Tibetan and Chinese sources starting from the Mongol-Chinese Yuan Dynasty (1274-1368). As late as 1902 the designation of khams described the easternmost districts of Tibet, embracing some dozen semi-independent petty states, about half of which own allegiance to Lhasa (mostly west of the Yangtze) and the rest were independent or gave joint allegiance to both China and Lhasa (Das, 1904).

Map 1: Eastern Kham
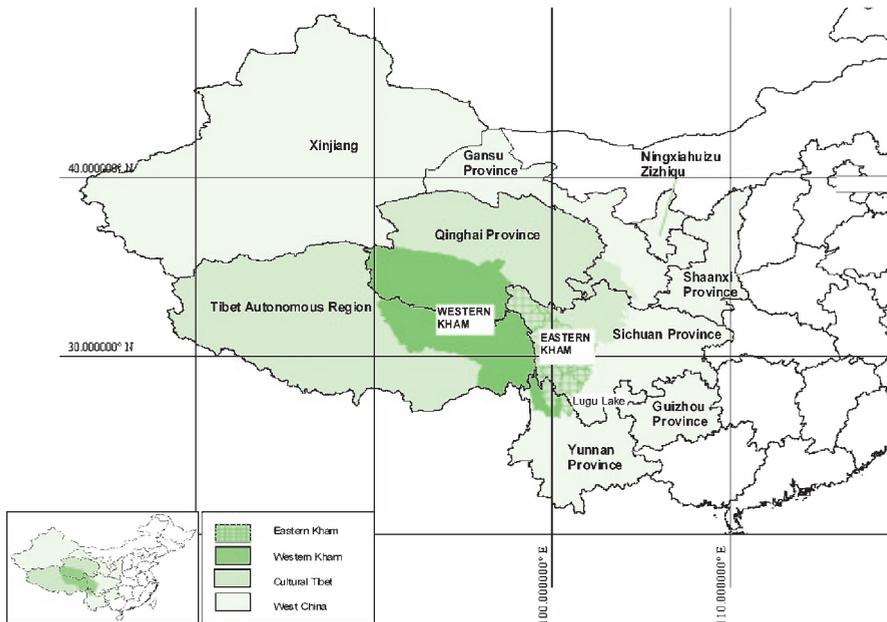
Kham's spectacular north-south mountain ridges, sandwiched between deep river gorges, contain the most diverse vascular plant flora of any region of comparable size in the temperate zone, and almost half of China's flowering plant species. Identified as one of 25 biodiversity hotspots on earth (Myers et al., 1988),[36] this vast region, covering 414,400 sq km, contains over 12,000 species of vascular plants, including 3,500 species which are found nowhere else. Although some botanical exploration has been conducted, the region has never been fully inventoried because of the sensitive political environment and the rugged terrain, which makes much of the area difficult to traverse.

Elevations range from 1,000m to over 7,556m with a mean elevation of 3,500m. Four of Asia's largest rivers[37] flow through the region; they originate on the 5,000m-high Qinghai-Tibetan plateau and are of great economic importance to the people who live along them. External impact on the region is increasing and poses a threat to Tibetan culture and religion. Two examples of this impact include: (1) tree mining by the **Han Chinese** between 1950-1998, which resulted in flooding, climate change, erosion and snow disasters; and (2) resettlement by **Han Chinese**. Such

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36. http://www.nature.com/nature/journal/v403/n6772/abs/403853a0.html

37. The Yangtze, Mekong, Salween and Brahmaputra.

activities threaten not only the diversity of flora and fauna, but also the survival of indigenous cultures that define much of Southeast Asia.

The region bears the strong imprint of Tibetan Buddhism and folk religion, evident in the large temple complexes, *chortens* (a multi-tiered monument often containing sacred relics), prayer flags (see Photo 1), festivals, shaman and **numina** associated with sacred landscape features. Sacred mountains punctuate the landscape and they are unique in that their forests have not been logged (Stevens, 1993, 1997; Studley, 2005). Although more ethnobotanical research has been done in this region than in the rest of China, little research has been conducted into:

• customary nature conservation practices

• linguistic ecology

• environmental perceptions

• forest values

• the impact of proposed landscape use changes on the local people.

Photo 1: Tibetan incense burner, prayer flag and chorten near Lugu Lake, Yunnan

6 | **Box 6. The non-Khamba peoples of Eastern Kham**

The **Naxi** people are of Qiangic origin and traditionally followers of the Dongba religion which is rooted in Tibetan folk-religion.

The **Pumi** have the longest traceable migration path of any minority group in China. Originally Qiangic nomads inhabiting the Qinghai-Tibetan plateau, they later moved to the warmer areas along valleys within the Hengduan Mountain Range in the 4th century BC. Subsequently, they moved to Northern Sichuan in the 7th century, and then to northwest Yunnan in the 14th century.

The **Minyak** people are considered Tibetan by the **Han Chinese** but they have strong distinguishing characteristics. Minyak was a powerful kingdom reaching its zenith about one thousand years ago. They ruled a broad area from Garthar to Gyezil and Nyakchuka to the Gongga Shan Range. Their language is part of the Qiangic linguistic branch. It has two dialects, Eastern and Western Minyak, which reportedly have significant differences.

Little is known about the history/origins of the **Mosuo** culture. On the basis of DNA research the maternal lineages of the Mosuo bear the strongest resemblance with those found in the Naxi while paternal lineages are more similar to those that are prevalent in Yunnan Tibetans (Yang et al., 2004). The Mosuo are matriarchal and matrilineal and speak the Naru language (which resides in the Tibetan-Burman family). Because they don't have a written language their entire history is oral, passed down from generation to generation, mostly through local shaman called Daba.

The **Nosu** (Yi) are not Tibetan and do not strictly constitute an ethnic group, as they consist of 44 subgroups with different self-designations and obscure dialects. One source (Hsu Itang, 1944) even goes so far as to divide the Yi nationality into 485 clans, with each clan occupying a distinct territory.

Peoples of eastern Kham

Of the nearly 5 million "Tibetans" living in China, approximately 2 million Khambas speak Kham,[38] which is quite distinct from the Kham spoken in mid-western Nepal (Watters, 2002). The Khambas inhabit a vast area but are primarily concentrated for political and historic reasons in western Sichuan Province, a large portion of eastern Tibet Autonomous Region (AR), parts of southern Qinghai Province and parts of Northern Yunnan. The eastern Kham language is by far the largest of the Kham varieties with possibly 1.2 million speakers. It is reported to have eight dialects and 80% of it is lexically similar to central Tibetan.

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38. ཁམས་སྐད། *khams skad*

There are also about 250,000 Qiangic[39] speaking peoples and 400,000 Nosu (Yi) peoples in Eastern Kham. The Qiangic speaking peoples are classified by the state as "Tibetan" because of their culture, customs and beliefs.[40] In common with the Khamba they are animistic/shamanistic as well as Tibetan Buddhist, and burn incense and honour mountain gods at yearly festivals. They may speak Khamba as a second or third language, and are often matrilineal.[41] The Qiangic peoples include the Naxi, Pumi, Minyak and Mosuo groups (Box 6). The Nosu (Yi) are not Tibetan or Qiangic speakers.

The Khamba[42] have a fearsome reputation as the most hostile and violent of Tibetans. They have been described as tall and well-built men, fearless and open of countenance. They resemble Apache Indians, with plaited hair hanging from each side of their well-modelled heads (Hattaway, 2000). The region's inhospitable topography, altitude, weather and aggressive population have always united to deny entry to foreigners. Even today, there are few accurate maps that define its contours, record its villages and the secret routes of its nomads. To the Europeans, Chinese and Lhasa Tibetans, Kham has always been a vast no-man's-land. To the south, it is bounded by the Himalaya and the Bramaputra, to the north the Amne Machin range and the Tibetan region of Amdo, and to the east the Sichuan Basin.

History

Space constraints allow me to only summarise my account of the history of Kham (Studley, 2004). It is hardly surprising that here in this wild, forgotten land should be found one of the most rugged races on earth, and an independent fighting spirit that was birthed during the reign of Tibetan King Songtsen Gampo (AD 617-650). Songtsen Gampo was a Tibetan chieftain who set out to unify the wild tribes of central Asia in AD 630. Twenty years after taking up arms, he had raised one of the fiercest armies of all time and extended his empire over Kham and Amdo, which had been the domain of the White Wolf Qiang, as well as most of central Asia and well into China (Marshall and Cooke, 1997).

From the frightened Chinese Emperor he demanded a daughter in marriage. The Emperor was obliged to comply and also to pay an annual tribute to the Tibetan King. So powerful was Tibet at this time that when in AD 763 a subsequent Chinese Emperor refused to pay the fifty thousand rolls of silk owed in tribute to the Tibetan

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39. There is some evidence (Ah Xiang, 2005) that the Qiang people belong to the same bloodline as the ancient Xia Chinese, from Henan Province, and that their molecular sequences (Bailey et al., 2004) are geographically discordant with the Tibetans.

40. Based on Stalin's (1951) definition of nationality.

41. http://www.answers.com/topic/qiang-1 accessed 5th July 2005.

42. Tibetans who live in Eastern Tibet and speak Kham or one of its dialects as their mother tongue.

court, Trisong Detson, Songtsen Gampo's great-grandson, invaded China and captured the capital of the Celestial Empire.[43] The Tibetan King then deposed the Chinese Emperor and replaced him temporarily with his own brother-in-law. Later when King Ralpachen converted to Buddhism, the Tibetan empire began to disintegrate, and Kham became more independent. In 821 during a lull in hostilities, Tibet and China made a pact of non-aggression (Snellgrove and Richardson, 1968; Stein, 1972; Strauss, 1992).

In the 1,200 years that followed, however, the history of Kham was marked by endless feuds between warrior chiefs in deadly competition for supremacy over Kham's remote hinterlands (Lane, 1994). By the end of the 12th century, the Kingdom of Ling, home of the epic hero King Gesar, had expanded to include most of Kham, if we are to believe his "super human" exploits (Samuel, 1992, 2002). In the 1600s the Naxi Kings[44] felt strong enough to make incursions into Tibetan territory, resulting in recurrent fighting on the southern Kham cultural-ecological frontier. This made the Tibetans build watch and defence towers (Photo 2) across southern Kham separating the Tibetans from the Tibeto-Burmans (Rock, 1930a & b; Roosevelt and Roosevelt, 1929; van Spengen, 2002). The kingdom of Ling must have declined because it apparently played no significant role in 1640 during Gushri Khan's[45] campaigns in Kham, when his principal opponent was the pro-*Bon*[46] King of Beri.

Photo 2: A defence tower in the Minyak valley

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43. Which was Xi'an (or Chang'an) in those days.

44. Of NW Yunnan.

45. Gushri Khan, chief of the Qoshut Mongols, allied with other Mongol tribes to wage religious war to help the Fifth Dalai Lama. Gushri Khan defeated the chief of Beri in 1640, and by 1641 all of Kham was under Gushri Khan's control.

46. Although the modern Bon religion has certain differences of vocabulary from the other four major traditions of Tibetan Buddhism, there are no major differences in content. For more on Bon and its three phases see Samuel 1993a, and 1993b.

By the 17th century, the kingdom of Derge had enlarged itself at Ling's and Beri's expense, and subsequently much of eastern Kham became part of the extensive Derge estate. It would appear, however, that Ling and Beri continued as semi-independent states. In spite of Derge's overlordship, eastern Kham's nomads were notorious for their independent nature, and could hardly be considered submissive to anyone except their immediate tribal chiefs. When, as occasionally happened, a foreigner was foolish enough to challenge the Khambas, they would unite, their quarrels momentarily forgotten. When this occurred there were few who could oppose the "race of kings": not the Chinese, or even **Chinggis Khan** who eventually came to terms with them on the basis of a patron-priest relationship (Peissel, 1972).

Identity

Kham is situated between two power centres, China and Tibet. From the late nineteenth to the mid-twentieth century, imperial, colonial and local forces clashed and intersected in a process of place-making and nation-building. Too often, latter-day Chinese, Tibetan and Western accounts have ignored this and peripherised local concerns. Recent research, however, has begun to address aspects of the axes of power, space and identity in Kham, the often-discordant visions of parties who wished to transform it, and the vision of the Khamba.

Traditional history characterised Kham as a frontier zone to be incorporated and civilised by the centres of power. In traditional studies of frontier places, the people who inhabit them have been portrayed as passive objects, and their responses to forces beyond their immediate control simply ignored. When viewed from the centres of power (Beijing, Chengdu and Lhasa) frontier zones like Kham were easily relegated to the margins of history. This position has been interrogated increasingly in recent scholarship of the **Han** frontier and has led to a recentring of the local. The Khambas have been employing political strategies which appropriated both local and inflowing resources, thus turning them into power sources and establishing their sense of centrality.

Although most ethnographic and historical studies focus on central Tibet, with the exception of King Gesar of Ling,[47] it would appear that Kham did not make much impression on the Tibetan or Chinese consciousness until the mid-nineteenth century with the Khamba warlord *nyag rong mgon po rnam rgyal (mgon rnam)*[48] and Chinese and Tibetan activities in the border region. However, there is strong indication that even before this period there was an emergent national consciousness among the Khambas of which *mgon rnam* was only a part. During the Republican period (AD 1911-1949) there were three movements for Khamba autonomy (Peng Wenbin, 2002; Qing Feng, 1975), the Baan incident in 1932, the Nuola Incident incident in

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47. Whose superhuman exploits in the 11th century included conquering most of the region.

48. ནག་རོང་མགོན་པོ་རྣམ་རྒྱལ། *nyag rong mgon po rnam rgyal (mgon rnam)*.

1935, and the Ganze incident in 1939, but they were largely written out of standard Chinese and Tibetan histories. In reality, the Khambas' actions were mapped in response to politics in Central Tibet and China. They were attempting to establish regional autonomy while coping with Chinese and Tibetan nation-building projects (Feng Youzhi, 1992). There has been little research exploring mgon mam's attempt to restructure society and build a Khamba state (Tsering, 1985), the religious and philosophical union resulting from the ris med[49] movement[50] or the revival of the King Gesar cult as the foundational saga for unification (Samuel, 2002). Taken together, these movements appear to signal a nascent sense of unique Khamba identity (Epstein, 2002; Samuel, 1993a) which continues to this day. This identity provides the basis for rituals of defiance and protest against Han China.

Traditional interactions with nature

There appears to be a strong tradition of natural resource stewardship among the minority nationalities who live in Kham; unique linguistic ecologies bear testimony to these traditions. Of those studied, the Tibetan, Pumi, Naxi and Mosuo appear to have the strongest traditions of natural resource management, followed by the Nosu (Yi) and Han. There appears to be evidence of explicit nature conservation in sacred landscape areas.

As "keepers of culture" (Zevik, undated) Kham's shaman and priests are often knowledgeable about trees, plants and animals and play an important role in environmental storytelling and mediation. While the priests are mostly interested in other-worldly religion, the shaman are **liminal** beings,[51] ensuring harmony within the cosmos. The shaman in Kham, including the Tibetan **Lhapa**,[52] the Naxi *Dongba*, the Mosuo *Daba* (Photo 3) and the Pumi *Dingba*, all perform similar functions to the Qiang *Bi*, the Hunza/Gilgat *Bitan*, the Jumla *Dharmi* and the Bhutan *Powa/nenjorm*. The priests include the Nosu (Yi) **Bimo**, Tibetan Buddhist Lamas (attached to monasteries) and local Lamas.[53]

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49. རིས་མེད། *ris med*

50. A synthesis of academic and shamanic aspects of Tibetan Buddhism (Samuel, 1993a).

51. Limen is Latin for threshold. Shaman are mediators between this and the other world; their presence is betwixt and between the human and supernatural (Ellis, 1993; Turner, 1967).

52. Also known as Pawo, or Lha-wa.

53. These were sent home during the Cultural Revolution and gave up their vows, but still perform local household ceremonies mostly associated with rites of passage.

Photo 3: A Mosuo Daba at Lugu Lake, Yunnan

Of those I studied (see Box 7), the Tibetan **Lhapa**, Mosuo *Daba*, Naxi *Dongba*, Pumi *Dingba* and the Tibetan Buddhist *Lama* continue to have a role in environmental education (Ayi, 2001; Cai Huan, 2001; Harrell, 2001; Wellens, 2002; Yang Fuquan, 2003).

Sacred landscape is a common phenomenon throughout West China from Dai Holy Hills in Southern Yunnan (Pei Shengji, 1999) to Tibetan sacred forest in Deqin (Xu Jianchu et al., 2004). All the ethnic groups I surveyed (Studley, 2005) were able to identify sacred mountains, trees, animals and springs and could describe the stewardship measures they were expected to adopt to ensure blessing and protection from the **numina** associated with territory or landscape features. Lion Mountain in NW Yunnan is particularly auspicious for the Mosuo, and all ethnic groups believe *Gemu* (the goddess of Lion mountain) has been violated[54] by the introduction of a cable car (Studley, 2003). They believe there is a causal link between her violation and the unseasonal hail and pine tree defoliation that occurred in 2004 (Rowcroft et al., 2006).

The Tibetans have three categories of sacred landscape. Two are Buddhist (Huber, 1999) and include *neri*[55] mountains and *beyul* valleys (which are sacred "hidden"

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54. Because Lion Mountain was sacred and the cable car would lead to erosion and have a negative cultural impact.

55. ནེ་རི། *neri*

landscapes, epitomised by Shangri-la). The other is animistic, namely *yul* landscapes which are embodied by a divinity[56] (**yul-lha**) with human personality (Blondeau and Steinkellner et al, 1998; Karmay, 1994; Ramble, 1998; Stuart et al., 1995) and characterised by explicit nature conservation.

In many of Kham's matriarchal societies, women's role in production, their special knowledge of forests, and their place in cultural and religious life give them considerable space within the household and the community to make decisions about resource use. Unfortunately, maintaining this position of power has been difficult (Yang and Xi, 2003), particularly in the face of pressures from men, the state and from Buddhism and Confucianism. The Han Chinese bureaucracy tried to "civilise" matriarchal societies largely through administrative measures, without much success. Tibetan Buddhism, by comparison, challenged both matrilineal ideology and gender constructs by gradually replacing a female sun with a father sun and subtly transforming local conceptions about maleness and femaleness (Kelkar et al., 2003; Shih, 1993). A similar process occurred among the Naxi people where patriarchy surpassed matriarchy and the conscious/unconscious forms of the nature goddess Shu were replaced by a masculine elemental character (Xi Yuhua, 2003). These transformations demoted women to a subordinate position to men, and have reinforced their exclusion from political and spiritual life and community decision-making (Kelkar et al., 2003).

Forest and environmental ethics

In common with many indigenous people, in Eastern Kham there is a tradition of spirit-placation/community restitution based on maintaining relational harmony. Of the groups I studied, the Tibetan, Mosuo and Pumi could describe the measures required to placate local **numina** and make restitution with the local community when trees or animals were killed in sacred areas (intentionally or by mistake).

Although Tibetan Buddhism[57] is not insensitive to the natural world, its focus is much more on the purification of the mind and any ethical response to the natural world is secondary and/or symbolic (Eckel, 1997). This contrasts with the **yul-lha** cults of Tibetan folk belief where there is explicit nature conservation within sacred locales.

Although the Buddhist canon teaches that life is sacred and the Buddhist purgatory includes a special cold hell for souls who have killed animals, the Tibetans have

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56. གཞི་བདག gzhi bda or ཡུལ་ལྷ yul lha - These terms can be used interchangeably although *yul-lha* appears more often as a literary term.

57. Tibetan Buddhism (See Stein, 1972; Tucci, 1980) as a whole is a complex but coherent body of Mahayana doctrines and esoteric practices and comprises four major religious orders: Sakyapa, Kagyupa, Nyimepe and Gelugpa.

always been avid hunters. However, they have accepted that there are some taboos[58] on some locations and species and they don't want to anger the local gods. Hunting appears to have been accepted by the establishment when game was plentiful, if there was a demand for furs in the monasteries or from the elite, or for trading purposes in Eastern Kham (Norbu, 1960; Richardson, 1986; Combe, 1926; Tsarong, 1990). Ancient dramas, such as Dunyudunju, are still performed in which the hero learns the art of hunting. Tibetan laymen still seek the blessing and protection of their territorial gods (*yul-lha*) when they go hunting (Bleisch and Wong, 1990).

For all Tibetans the spiritual significance of conservation appears more important than the ecological significance. This finding is supported by **cognitive mapping** that I carried out during the study (see Table 2 for methodological details).

The cognitive mapping exercise revealed that "conservation" is in closer cognitive proximity to "yul-lha", "Tibetan Buddhism" and "blessing" than to "forest" and "wildlife". Khamba respondents are evidently similar to some other indigenous people in that they are not deliberate conservationists or ecologists, but they manifest an ethical attitude because nature has intrinsic value having been created by or presided over by a deity or numina.

Photo 4: A Tibetan lartse (cairn), Sichuan

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58. Sacred and taboo associations attached to particular species of trees, forests, mountains, rivers, caves, lakes and temple sites play an important role in the protection of particular ecosystems by local people, and might provide an alternative and innovative approach to environmental conservation that is not predicated on alien western legal jurisprudence (Schaaf, 1999).

Among Tibetan laymen local **territorial divinities** (*yul-lha*/*gzhi-bda*) are honoured and appeased through the building of *lartse* which are wooden or stone cairns on mountain or hilltops (Photo 4). They are annually constructed in ceremonies governed by the lunar calendar. This is one of the oldest Tibetan customs and is found in all regions inhabited by Tibetans and some Qiangic areas and has continued to the present day without interruption.

The *yul-lha* and other "gods of the past" theoretically "tamed" by Buddhism are closer to Tibetan laymen in both geography, identity and in sensed presence. In the world of the lay Tibetan many landscape features point back to the worship of ancient gods. They are not only conscious of the constant scrutiny of the *yul-lha* when they go hunting, but they also engage in folk-religious rituals and place demands on their gods for protection and success in hunting, trading, travel, farming, forestry and nature conservation. In common with the Sherpa Tibetans (Stevens, 1993; 1997) they appear to recognise several different categories of forest stewardship, from sacred and untouched to unmanaged and overexploited.

Tibetans who inadvertently remove material from a *yul-lha* habitat have an opportunity to make amends, usually by making offerings to the *yul-lha*. This reflects the emphasis on maintaining balance with the surrounding systems, and not upsetting such systems through extreme or unusual actions. Villagers make frequent offerings to local deities to ensure blessing; additional offerings may be used to rectify a disturbance. An even more explicit form of restitution is replanting trees that have been cut down or taken away. This attempts to restore the disturbed area to its former integrity. The belief is that once the trees have grown back, the health and well-being of the culprit and the community will be restored. The replanting of trees is generally at the instruction of a **Lhapa**.

The Tibetans do not appear to have any specific tree/forest consecration ceremonies,[59] but lay people do recognise and protect trees within the territory of their *yul-lha* and sacred forests associated with monasteries are "robed" in cloth or thread (see Photo 5) in similar ways to some Thai or **Chipko** forests (Guha, 2000; Horn, 2000).

The Naxi people make offerings to a *numina* named *shu*, usually at a spring or pond, mediated through a *Dongba* (shaman) as a way of compensating for the non-timber forest products collected from the woods and as a reconciliation with nature. This ensures not only that they live in harmony with the spirit world but that they also receive environmental and social "blessing".

The Pumi follow Tibetan Buddhism and animistic mountain gods. Almost all Pumi villages have their own local mountain gods which are worshipped during festive

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59. Like the Thai people (Darlington, 1998, 2000).

Photo 5: Pumaling monastery forest "robed" in sacred thread

seasons. On those days, the entire family will give food offerings and pray for the good health and prosperity of the family. On the 15th day of each month, a minor mountain god is worshipped, and a grand ceremony is held on the 15th day of the 7th lunar month to venerate a great mountain god. The Pumi people have taboos about polluting sacred lakes[60] and the deliberate or accidental killing of animals/trees in sacred areas. Those who transgress are expected to:

• butcher a ploughing animal for the village to eat

• go to a *Dingba* or *hangui* to appease the spirits and restore topocosmic harmony[61] or

• go to a Tibetan Buddhist *Lama* or local *Lama*.

They traditionally used a system of zoned fishing by family and believe that if the black footed crane (*Grus spp.*) returns to Lugu Lake it will bring prosperity.

The Mosuo people believe that animals and trees are innocent. They do not kill them without reason and they appease the territorial *numina* at local altars (Photo 6) or

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60. The Pumi believe that if they pollute Lugu Lake the goddess tai an yan soo will punish them (Studley, 2003).

61. Bourdieu, 1972; Robert, 1999; Studley, 2005; Wellens, 2002 and personal communication 21/11/2003 weblog.

Photo 6: A Mosuo altar near Lugu Lake, Yunnan

during major festivals. During the Zhuanshan Festival[62] on 25th July they worship *Gemu* (the goddess of Lion Mountain) and pray for her protection. The Mosuo *Daba* play a major role as intermediaries between the human-natural-spirit domains in nature conservation and environmental education but they are almost extinct following persecution during the Cultural Revolution (Cai Hua, 2001; Studley, 2005; Yang Fuquan, 2003).

The Nosu (Yi) whom I interviewed were not aware of any tradition of nature conservation or sacred landscape and mentioned that historically they were "a hunting minority who did not care about nature" and that the **bimo** visited them mostly to perform "rites of passage" (van Gennup, 1960). The *bimo* appear to be clerics in the "high-religious" tradition (Marriott, 1955; Redfield, 1955) and also village intellectuals. The *bimo* offer the community a system of complex procedures focusing on avoiding disaster, bringing fortune and establishing a harmonious relationship between humans, nature and spiritual beings. While they are knowledgeable about flora and fauna, their worldview does not appear to include any animistic paradigms of explicit nature conservation.

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62. Chinese for Festival of Turning (around the mountain).

Table 2. The steps required for cognitive mapping of forest perceptions

1. Forest value identification. This consists of a simple open-ended questionnaire (in the local dialect) asking respondents if forests are important to them, and if they are important, to explain why. There are some dangers in this method that some values such as intrinsic, future and **place-attachment** might not be identified.

2. Text analysis of open ended survey. Text analysis[63] can be used for open ended surveys of forest values.[64] Typically, researchers use it to retrieve word patterns, or word combinations. It is possible to sort letters, words or phrases, and their ranking and determine the strength of association statistically between words. In this case text analysis was used to identify frequencies of forest values and to produce a candidate list of forest values. Some recoding of phrases was required.

3. Field testing of candidate forest value list and translation into local dialect. It is very important for the mapping described here to find the vernacular word used by local people for each forest value. I was given two literary terms in Tibetan for "territorial divinity" which were not understood by unschooled Tibetans, and given one school of Tibetan Buddhism which was unknown in much of Eastern Kham.

4. Preparation of a forest "concepts" list. This includes the list of forest values identified in the open ended survey, the inclusion of "objects of value" and "forest actors" and any external interventions (such as industrial forestation).

5. Selection of survey sites for scaling forest concepts. The usual research considerations (Davison, 1983) should be observed in choosing survey sites/respondents to ensure that the sample size is large enough,[65] there is no bias and that all ethnic/age/gender/literacy level groups are represented. In this case I chose a stratified random approach with survey sites in all counties being within 1 km of roads/tracks, 5 km+ from towns and 1 km+ from other survey sites/respondents.

6. Scaling of paired forest concepts at sites. Respondents are asked to scale forest concepts on a pairwise basis, using white and black as polar opposites and a scale of 1 to 5, where 1 is close (and white) and 5 is distant (and black). This resulted in 105 dissimilarity[66] estimates where 15 concepts were used, and 135 dissimilarity estimates where 17 concepts were used. The coordinates of each site should be recorded using a GPS.

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63. Wordsmith Tools (Scott, 1988).

64. The Ethnograph (Qualis Research Associates, 1998).

65. According to Davison's (1983) formula sample size should exceed 40 * number of dimension/number of values-1. In this case 40*5/17-1= 12.5 samples.

66. Dissimilarity expresses the degree of coincidence or divergence between two elements of a reference set where larger numbers indicate less similarity.

7. Plotting the data. A statistical technique[67] is used to analyse the square mean dissimilarities gathered in Step 6 and display forest concepts as points on a cognitive map (see Figure 2). The greater the distance between the points, the more different the concepts are, in the opinions of people who rated/scaled them.

8. Forest paradigm identification. The cognitive maps, along with hierarchical cluster analysis[68] and local subjective knowledge are used to identify clusters of forest concepts and dimensions. Disaggregation of the population site data[69] provides alternative paradigms on the basis of age, gender etc. On this basis it was possible to identify four clusters (+ 1 singleton), 2 dimensions and 12 forest paradigms.

9. Geospatial analysis (Figure 3). Further techniques based on site coordinates and site data[70] were used to study the distribution[71] of concepts across Kham and directional trends[72] or spatial continuity in the data. The latter technique is useful for examining migration patterns, cultural diffusion or the impact of extension programmes.

10. Boundary analysis (i.e. **wombling**). Geographic boundary analysis[73] is best viewed as a technique for defining boundaries on spatial fields (in this case survey site coordinates and site data[74]), and for evaluating the statistical significance of those boundaries (Jacquez et al., 2000). It is useful for examining zones of change, inviting further analysis of the causes of change.

11. Overlap analysis (Figure 4). This technique[75] examines how significant changes in one aspect (site coordinates and site data[76] boundaries) are linked to other phenomenon. In this case there were significant links between forest concepts and dialect, proximity to provincial capitals (remoteness), watersheds and forest cover.

12. Local corroboration. Before conclusions are made about cluster and dimension identification found in the cognitive maps the corroboration of the local people should be sought. Pile sorting techniques (Borgatti, 1990) are commonly used by anthropologists for this type of work.

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67. Multidimensional scaling using NCSS (Hintze, 2000) , XLStat 5.1 (Addinsoft, 1995-2002), and Anthropac (Borgatti, 1990).

68. Because HCA does not consider dimensionality it can only be used as a guide.

69. Mean paired dissimilarity estimates among forest concepts.

70. Mean paired dissimilarity estimates among forest concepts.

71. Kriging using Idrisi Kilimanjaro (Eastman, 1987-2004) and GS+ (GDS, 1989-2004).

72. Spatial analysis using Passage (Rosenberg, 1998-2004).

73. Wombling using BoundarySeer (Jacquez and Maruca, 2001-2003).

74. Mean paired dissimilarity estimates among forest concepts.

75. Overlap analysis using BoundarySeer (Jacquez and Maruca, 2001-2003).

76. Mean paired dissimilarity estimates among forest concepts.

Methodology and results

The aims of my study were to:

- explore the interface between knowledge systems and resource stewardship

- find suitable endogenous paradigms to allow the indigenous peoples of Eastern Kham to perpetuate, protect, use and conserve their forest and trees on a sustainable basis without compromising their socio-cultural systems, **cosmovision** or well-being

- examine the impact of external interventions (i.e. industrial forestation, state conservation, education, **Hanification** (*hanhua*), socialism, and modernity) on local people and their forest values.

The research generated both qualitative and quantitative data and drew upon historical as well as contemporary materials. The study drew deeply on my knowledge of the region, gained from community forestry in Nepal (1984-1991) and consultancy work in China (1993-2005) and contextualised by PRA studies at Dengke, forest value ranking at Lugu Lake and interviews with key informants and cultural specialists (i.e. shamans).

The quantitative methods I used included text analysis for forest value identification, **multidimensional scaling** for the **cognitive mapping** of forest concepts, spatial analysis and **kriging** for forest concept distribution and trends, **wombling** analysis for changes in forest concepts and overlap analysis for their coincidence with cultural or biophysical phenomena. All these approaches are explained in further detail below.

Mapping forest perceptions

Perception is closely related to all higher-order cognitive functions, including concept formation. Forest perception varies from person to person and community to community depending on local phenomena, but there are general patterns. These patterns can be mapped perceptually as well as spatially and so can be used for forest stewardship. The former can be represented as points on a **cognitive map** and multiple clusters (of points) or paradigms can be identified. Spatial mapping shows the distribution of forest concepts, differences and trends and any coincidence with local phenomena.

Forest perceptions can be mapped (Table 2) by development professionals through field surveys aided and supported by a range of information technologies including geographic information systems, global positioning systems and associated software for mapping and analysis (Table 2).

In order to put forest perception into context, it is worth considering doing a participatory rural appraisal (PRA) study (Chambers, 1993, 2002), structured

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Photo 7: Forest value ranking near Lugu Lake, Yunnan

interviews with key informants and forest value ranking by gender, ethnicity and age (see Photo 7).

Forest values and concepts

It is important to understand that local people are not the only forest stakeholders and so an attempt must be made to consider all forest-related concepts, namely local forest values, external interventions, forest actors and objects of value (in this case the forest and wildlife).

Respondents in Eastern Kham identified seven local values (out of a possible 16 forest values that are included in widely accepted typologies—see Rowcroft et al., 2006[77]). When added to objects of value, actors and external interventions, these increased to 15 (Table 3). Two additional concepts: "this place" and **Ganzi** (a local town) were added later given the importance of place, **place attachment** and identity in the Khamba (Epstein, 2002) and natural resource management literature (Williams, 2002). Ganzi was added to provide a comparison with "this place".

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77. Aesthetic, commercial, recreational, life sustaining, learning, biological, spiritual, intrinsic, historic, future, subsistence, therapeutic, cultural, identity, place attachment and wilderness. Cultural can include symbolic, emotional and mythic and wilderness does not apply to the majority world. See Rowcroft et al., 2006.

Table 3. The 15 locally-defined forest-related concepts

Local values	Conservation[a], blessing[b], Tibetan Buddhism[c] (TB), yul-lha[d], natural environmental function (NEF), forest products (FP), natural hydrological function (NHF)
Objects of value	Forest and wildlife
Local forest actors	Men, women, self[e]
External interventions	Conservation, hunting to earn foreign exchange, industrial forestation[f] (IF), socialism[g]

Notes:

a. Local people recognise three types of conservation: natural, anthropogenic and state-led.

b. Forests are important to ensure divine blessing on the local people.

c Forests are important in Tibetan Buddhism as a symbolic idyll to "pay one's respects" to Buddha.

d Forests (sacred) are important because they are embodied by a local numina (yul-lha) and their existence made him happy.

e. In cognitive mapping surveys it is important to evaluate gender differences between the respondents' attitudes and their beliefs of others. A woman's attitude to conservation might be quite positive but she may believe that other local women have negative attitudes to conservation.

f. This describes an exogenous state-led process which may include the planting or harvesting of individual trees and shrubs as well as plantations. It may also include, as in this case, the misappropriation of traditional grazing land and the social exclusion of local people.

g. Socialism was included to examine its impact on local culture and traditional environmental values and its possible use as a platform for nature conservation. It also provided a means of comparison with religious values.

Cognitive mapping

When **pairwise comparisons** among all forest-related concepts were made at 86 sites, each concept was displayed as a point on a cognitive map. The 86 respondents estimated pairwise dissimilarity[78] among sets of 15 or 17 concepts. The resulting square mean dissimilarities matrix was analysed using **multidimensional scaling** software which produces very precise representations of the dissimilarities as points in graphic form (see Figure 2). The greater the distance between the points, the more different the concepts are according to respondents' perceptions.

According to the map, hierarchical cluster analysis and my subjective knowledge of the region, four clusters of concepts suggest the existence of four cognitive domains which are distributed along two axes or dimensions (natural and human). The domains are socio-economic, psycho-cultural, bio-physical, and environmental-subsistence services (Figure 2).

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78. Using psychometric scaling, with 1 being close and 5 being distant.

Figure 2. An example of a cognitive map showing 4 clusters, in this case for Qiangic speakers
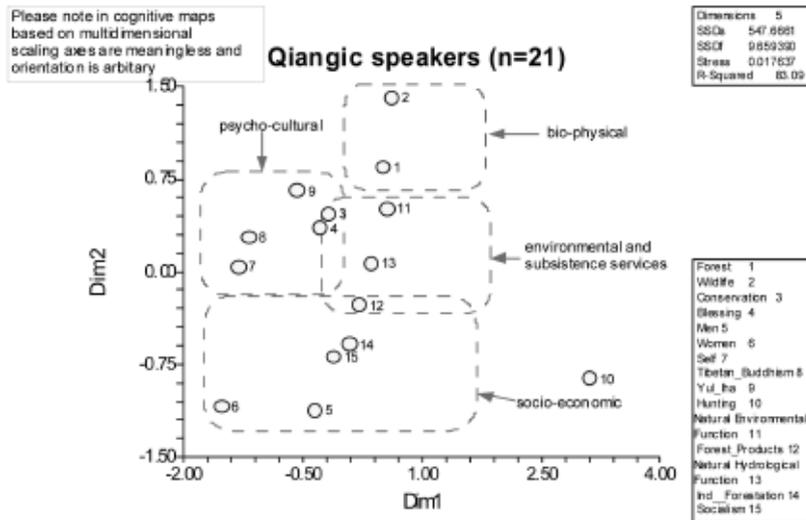
Disaggregating the data changes the juxtaposition of concepts within each domain, and also reveals how different populations locate concepts in different domains. For example, populations that are near large towns and have few forest resources tend to locate "forest products" in the "socio-economic domain", while remote populations with more forest resources locate them in the "environmental-subsistence services domain".

On the basis of disaggregated data it was possible to identify 12 forest paradigms[79], each with 4 cognitive domains, but a unique concept configuration. The 12 paradigms were: (1) all: 15 objects (2) all: 17 objects (3) Kham speakers (4) Qiangic speakers (5) male (6) old: 17 objects (7) young: 17 objects (8) Yajiang County (9) Zhongdian County (10) Yangtze catchment (11) Yajiang catchment (12) Kham speakers in Yajiang catchment.

These findings are important because they:

• reveal how forest concepts relate to one another, to forest values, to objects of value, to forest actors, and to external interventions

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79. Paradigms, paradigmic structure, or possibly schemata are the most apposite descriptions of a constellation of cognitive domains that by definition (Kuhn, 1970) are inscribed within a worldview. Alternative worldviews will result in alternative cognitive domains and forest paradigms.

- reveal the perceptual impact of any new intervention and can be used to inform extension or advocacy

- inform forest stewardship by providing a means for identifying the paradigms of sub-groups of the population (gender/age/ethnicity/county/catchment)

- provide a means for enhancing biocultural diversity by building on the paradigms of sub-group of the population.

Geospatial mapping

When the mean dissimilarities or distances between all concepts at 86 sites were geospatially mapped across Eastern Kham they revealed:

- patterns that coincide with biological, physical, social and cultural phenomena (see Figure 3)

- ethnic and language differences (see Box 7) in forest concepts, gender differences (He Zhonghua, 2003) and differences based on forest value ranking

- differences between age groups, with literate young people appearing to be alienated from place and culture

- marked perceptual differences in forest concepts between some areas, suggesting contrasting views of local culture, environment, external interventions and possibly forest relations

- that forest concepts[80] are also influenced by major dialects (Figure 4), remoteness, forest cover and watersheds

- significant directional trends in forest concepts exist along a N/NE to S/SW axis, which seemingly coincides with the migration patterns of the Khamba people (Box 7) and topographic influences

- that there is also a trend along an axis that is consistent with Qiang migration patterns and acculturation from Chengdu (the capital of Sichuan Province).

The strong correlation between forest concept boundaries and ethnic and language boundaries potentially provides forest planners with a means of identifying groups of people, if they are discrete, who may share common values and concepts.

Significance of the findings

Of the 12 forest paradigms revealed in the cognitive mapping, five (Kham speakers, Qiangic speakers, Yangtze catchment, Yajiang catchment, Kham speakers in the Yajiang catchment) were geospatially significant. Other forest paradigms (micro watersheds, minor dialects, forest cover, counties) were evident on the basis of

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80. On the basis of statistically significant overlap measures (p value (Og) less than 0.05).

Figure 3. Modelling of mean forest concept data across Eastern Kham

LEGEND

low mean values - below 2.11
Qiangic speakers
average mean values - 2.11-2.4
Kham speakers/Yajiang valley
high mean values - +2.4
Kham speakers/Yiangtze valley
mountains 5000m+

county boundaries
rivers
• survey sites
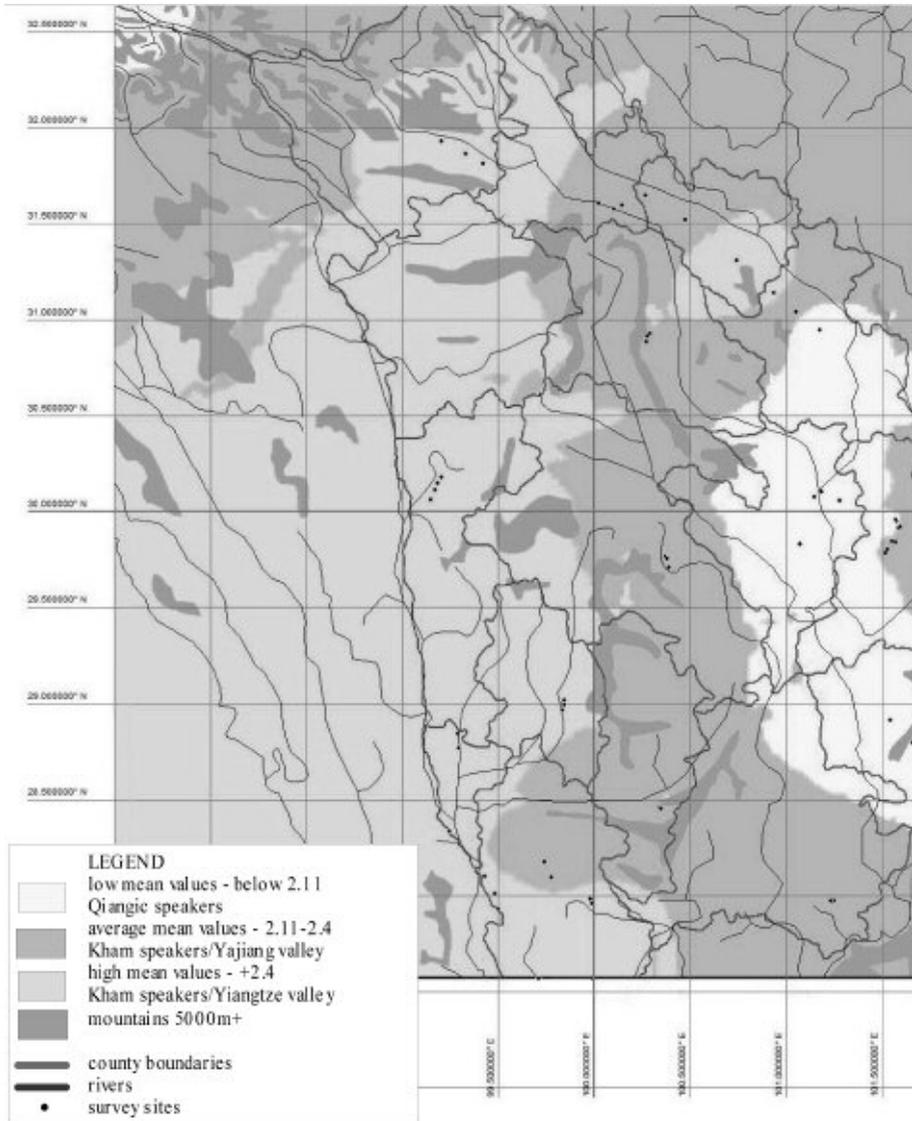
7	Box 7. Genetics, ethnic background, language and Khamba/Qiangic migration

It would appear that genetic patterns share some similarities with culture and linguistics because the mechanisms for transmission are, in part, similar (Cavilli-Sforza, 1994). It is not uncommon for sharp genetic change to coincide with linguistic boundaries. Sharp changes can be due to mating barriers, topography, cultural and past migration including intrusion and adjacent boundaries (Barbujani and Sokal, 1990; Falsetti and Sokal, 1993).

The Khamba Tibetans seemingly originate from two gene pools (Qian et al., 2001), a Central Asian pool characterised by YAP+[81] chromosomes and an East Asian pool characterised by the M122C haplotypes.[82] It is believed that the forebears of the Tibetans from East Asia migrated north, in prehistoric times, to the Yellow River and passed about 124 km to the east of the research area. Later **Baric** peoples and Tibetans, with the YAP+ chromosomes, moved south to the Himalaya and North Yunnan[83] passing through central Kham and close to the Yangtze River (Bing Su et al., 2000; Metspalu et al., 2004; Shi Hong et al., 2003; Torroni et al., 1994; Zhili Yang et al., 2005).

There is some evidence (Ah Xiang, 2005) that the Qiang people belong to the same bloodline as the ancient **Xia** Chinese from Henan Province, and that their molecular sequences (Bailey et al., 2004) are geographically discordant with the Tibetans.

mapping but there was insufficient data to plot their geographic extents with any degree of confidence.

These findings, nevertheless, are important because they suggest that particular paradigms represent well-defined geographical areas within which forest-related concepts are similar enough to warrant a particular forest or biodiversity stewardship approach. They also:

• reveal how forest concepts relate to one another, to forest values, to objects of value, to forest actors, and to external interventions

• reveal the perceptual impact of any new intervention and can be used to inform extension or advocacy

• inform forest stewardship by providing a means for identifying the paradigms of sub-groups of the population (gender/age/ethnicity/county/catchment)

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81. YAP is short for Y Alu Polymorphism, and Alu is a contraction of Arthrobacter luteus. It describes a category of mutations found on the Y chromosome.

82. A set of closely linked genetic markers present on one chromosome which tend to be inherited together. http://www.biochem.northwestern.edu/holmgren/Glossary/Definitions/Def-H/haplotype.html accessed 5th Aug 2005.

83. The Pumi and Naxi populations of N Yunnan also have a high YAP+ frequency.

Figure 4. Overlap measures showing changes in mean forest concept data (h) that coincide with ethnic and dialect boundaries (g) – BLV= boundary likelihood values
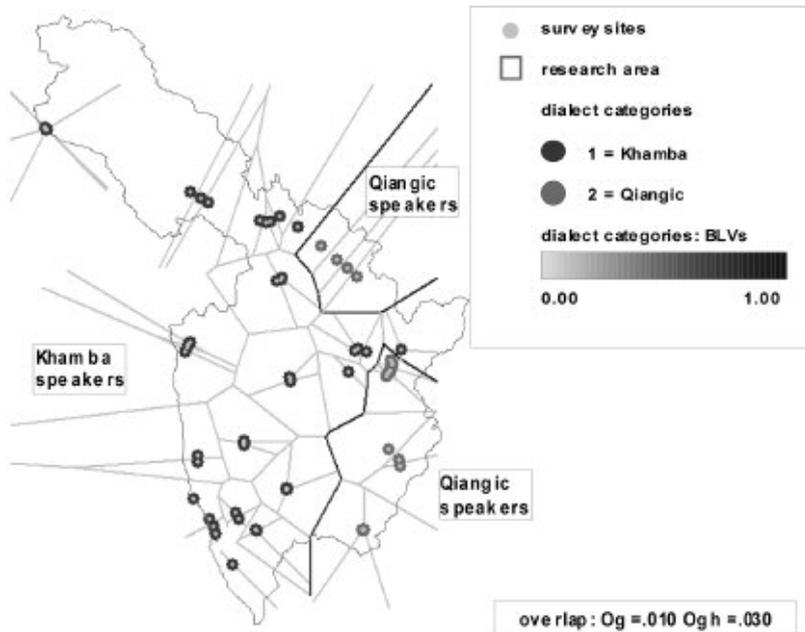
- provide a means for enhancing biocultural diversity by building on the paradigms of sub-group of the population

The mapping of forest concepts allows the development professional (DP) to refine the process in order to satisfy the aspirations and values of discrete local communities without compromising local social and cultural systems, gender relations, worldviews or well-being. It also allows the DP to conduct an impact assessment of any interventions with the local people and identify dangers or advocacy strategies.

### What this all means for forest-based aspirations in different areas

The biological and cultural diversity crisis is largely the result of modern systems of knowledge and globalisation. There is an urgent need to restore the autonomy of local arrangements based on alternative conceptions of reality and multiple sets of values. Plurality of views, values and practices is essential for the full realisation of human

capacities, both individually and collectively which, in this case, are reflected in differences in forest values and concepts.

Pluralism describes situations where distinct groups are actively autonomous and independent, but often interdependent, with legitimate claims and different positions on critical substantive issues. These differences are based on separate values, perceptions, objectives and knowledge. When applied to forestry, pluralism may improve the understanding of certain organisational situations or improve the techniques and methods for sustainable forest management.

The vision presented in this book has most application when the forest-based aspirations of the state resonate with the aspirations of the local people and there is openness to approaches such as ERA. Typically, joint aspirations might include nature conservation, sustainable natural resource stewardship, biological and cultural diversity, the sustainable provision of minor forest products, environmental learning and mentoring, environmental accounting etc. In such situations the development professional, acting as a knowledge-broker, can ensure that the aspirations of both are brought about based on the values and customary practices of the local people.
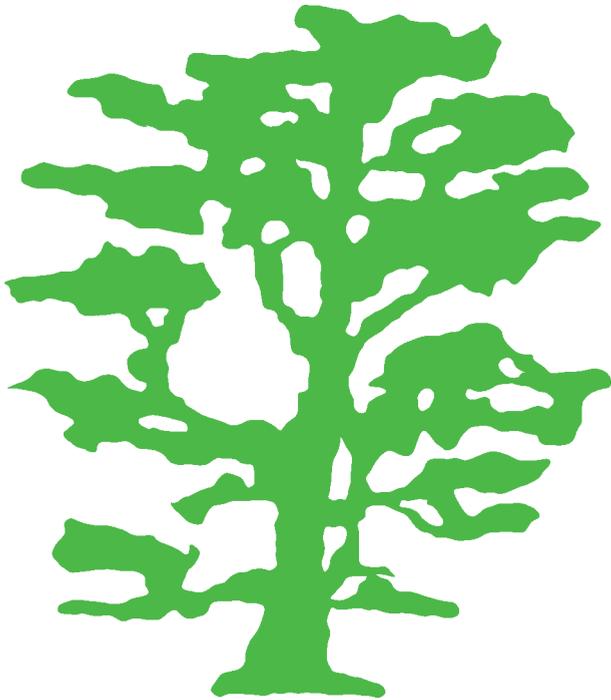
Policy Implications

The purpose of this book has been to draw attention to an alternative vision for realising the aspirations of indigenous people to ensure the enhancement of biological and cultural diversity. The vision is based on endogenous approaches highlighted by UNESCO and Compas. It can be carried out by cross-culturally engaged development professionals who act as knowledge-brokers, mediating between their indigenous clients and multiple stake-holders.

The success of this endogenous approach is dependent on:

- the political will of the state
- building the capacity of forest development staff in acculturation, cross-cultural bridging, forest concept mapping and information technologies
- incorporating this approach into "development" plans.

Creating political will

Why should governments consider adopting an endogenous approach to development? There are many reasons:

1. **It is often cheaper and more sustainable to build on indigenous values than to attempt to modernise or upgrade them:** For example, the Canadian government has discovered it is much cheaper to service an indigenous family at a trapping camp than keep them on welfare at a main settlement (Studley, 2005). This way, the government can also make cost savings on formal environmental education and the policing of forests and nature reserves.

2. **The approach complies with internationally-agreed protocols:** States have agreed to support the rights and interests of indigenous peoples and build on indigenous knowledge in the International Labour Organisation (ILO) Convention 169 (concerning Indigenous and Tribal Peoples in Independent Countries) and in Agenda 21.[84]

3. **It is less likely to lead to conflict or damage:** Changes in land use, ecological imperialism and the introduction of alien species have often led to conflicts, protests and forest arson.

4. **It reduces legal action from international human rights organisations:** There are many examples of indigenous groups, with exogenous help, preventing externally-imposed projects. For example, the Dene[85] of Canada prevented a hydro plant, Tibetans prevented a World Bank resettlement project, Chipko activists from India prevented tree felling, and Australian Aborigines were able to veto mining on their lands (Beauclerk et al., 1988; Fox, 2000; Guha, 2000).

5. **It often mirrors the aspirations of the state.**

6. **It allows for technologies that can be integrated into state planning:** For example, the Nez Perce Indians are using GIS to map their own resources (Meyers, 1993).

7. **Its in step with sea changes in development paradigms** (Pieterse, 1998, 2000; Sachs, 1992, 1994) that reflect new approaches to science (Funtowicz and Ravetz, 1993; Gleick, 1988; Griffin, 1988; Smith, 1999) and natural resource management (McCay, 2000).

8. **It offers the potential of increased foreign exchange from authentic ethno-tourism:** most foreign tourists want an authentic ethnic experience and are less willing to pay for the "staged authenticity" found in some villages or the "incomplete ethnic images", "authentic replicas" or "selective cultural essence" found in ethnic zoos or theme parks (Leepreecha, 2005; Shum, 2005; Studley, 1999; Oakes, 1997; Rath, 1997).

9. **There are low social maintenance costs for government:** The social costs of modernising indigenous cultures can be high: the North American native peoples and the African Ik people are prime examples (Beauclerk et al., 1988; Turnbull, 1984).

10. **It mirrors a return to subsistence lifestyles and woodland cultures:** some Aboriginal groups in central Australia and the James Bay Cree in Canada are doing more foraging today than 20 years ago (Beauclerk et al., 1988). Up to 24% of the Scottish population collects non-timber forest products for household use on a regular basis (Emery et al., 2006).

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84. http://www.un.org/esa/sustdev/documents/agenda21/index.htm

85. The Dene are a group of First Nations that live in the Arctic regions of Canada. They speak Northern Athabaskan languages (Northwestern Canada group) of the Na-Dené language family. They were the first people to settle in what are now the Northwest Territories.

Table 4. Acculturation and adaption processes (not in chronological order)

1. Self-orientation - cultural, linguistic, gender and technical competence

2. Others-orientation - a willingness to communicate with local people and engage with local culture and to culturally bond

3. Perceptual dimension - a willingness to understand why the local culture behaves as it does

4. Identity integration - a willingness to identify with local culture and become **bicultural**

5. Incongruity tolerance - a willingness to match reality to one's expectations

6. Social acuity - the ability to read social cues and to modify one's behaviour accordingly

7. Intercultural identity - the ability to grow beyond birth culture and encompass new cultures, gaining additional insight into many cultures in the process.

Building the capacity of development professionals

In order to promote an endogenous vision the development professional needs to:

- become acculturated in the cultures and paradigms of knowledge holders and stakeholders

- understand the concept of worldview as a foundation for inquiry and mediation and the processing of knowledge

- engage cross-culturally as a knowledge-broker in order to bring multiple worldviews and paradigms together around problems or aspirations on the basis of synergy with that of their indigenous clients

- understand how to bridge between cultures and alternative ways of knowing and perception.

There is very little literature on the acculturation of development professionals (expatriate or native) into the culture of indigenous peoples. But there are several processes (Mendenhall and Oddou, 1985; Osland, 1990) that seem central for acculturation (Table 4) and which can be enhanced with cross-cultural training, experience, cultural mentoring and a willingness to culturally bond with local people.

It is important that natural resource institutions not only recognise acculturation at the policy and planning level, but also secure bilateral aid to build the capacity of development professionals. Currently aid is often arranged through direct budget support to employ macroeconomists for a short period of time. It would be preferable to replace these, in the short-term at least, with environmental or **green economists**

who would work with cultural mentors and development professionals until a team of acculturated professionals has been trained or mentored.

Incorporating the approach into development plans

The approach outlined in this book has the highest prospect of success when the forest-based aspirations of the state resonate with those of the local people. This would enable the development professional to ensure that the aspirations of both mesh with the values and customary practices of the local people. Elements of this vision are already being included in forest planning and stewardship (Box 8).

In the words of Thoreau (1854), it is never easy to "hear a different drummer" and to give up deeply-held views. We often do not know how to replace old assumptions and expectations with new ones, or how to select alternative, more appropriate, paradigms. This, however, is the challenge for forest-sector development professionals as they attempt to make sense of complex natural resource stewardship problems (Lachapelle et al., 2003; Shindler and Cramer, 1999).

<table>
<tr><td>8</td><td>Box 8. Examples of ERA in practice</td></tr>
</table>

- Bridging between different ways of knowing and paradigms in Hawaii, Ecuador and New Zealand (Becker and Ghimire, 2003; Kahakalau, 2004; Simon, 2002).

- Learning values in forest planning and in the mentoring of trainee shaman in China (Brown and Reed, 2000; Yang Fuquan, 2003).

- Indigenous knowledge-based conservation values in forest planning and by the US National Research Council (Brown and Reed, 2000; US National Research Council, 1992).

- Bridging between systems of beliefs and values in New Zealand (Azuma, 2000; Kim and Berry, 1993; Nikora et al., 2004).

- Spiritual values in forest planning and the adoption of the Lakota definition of sacred by the US Forest Service (Brown and Reed, 2000; Melmer, 2005).

- Intrinsic values in forest planning and in the Pacific North West Forestry Plan (Brown and Reed, 2000; Ribe and Matteson, 2002).

- Future values in forest planning and intergenerational equity adopted by Bruntland (Brown and Reed, 2000; Brundtland, 1987).

- Broader approaches to stewardship including cultural, historic, aesthetic, therapeutic, mythic and symbolic values in the USA (Calame-Griaule, 1969, 1970; Koppell, 1990).

- Wilderness values without wilderness designation in Canada (Brown and Reed, 2000; Klein, 1994).

- Place attachment in forest planning in the USA and Scotland (Anderson, 1996; Mackenzie, 1998, 2002; Norton and Hannon, 1999; Schroeder, 1996).

- Commercial values in forest planning predicated on Total Economic Value (TEV) (Brown and Reed, 2000; Pearce, 1990).

- Well-planned industrial forestry (Cossalter and Pye-Smith, 2003).

- Life support values, especially flood prevention recognised in China and India (Guha, 2000; Pearce, 1999).

- Forest product values in forest planning in Alaska, Kenya and Scotland (Brown and Reed, 2000; Emerton, 1996, 1997; Emerton & Mogaka, 1996; Emery et al., 2006).

- Ethnic development recognised in forest planning but based on the World Commission on Dams criteria (He Pikun et al., 2000; WCD, 2000).

- Gender relations and forest knowledge in forest planning in China, Amazonia, and Asia (He Chong Hua, 2000; Hugh-Jones, 1979; Kelkar et al., 2003; Reichel, 1999).

- Adaptive stewardship introduced in the Pacific North West Forest Plan (Kepkay, 2003; Stankey et al., 2003).

- Pluralism in stewardship—FAO conference on Pluralism and Sustainable Forestry and Rural Development (FAO, 1997).

Hearing a Different Drummer: A new paradigm for the "keepers of the forest"

Bibliography

Abendsen, H. (2000) *Inside the 'Men's Club': Secrets of the patriarchy*. At
http://groups.google.com/group/alt.illuminati/browse_thread/thread/29f51ce2a2308768/4
32b18d6cfaf1596?lnk=st&q=victoria+ultra+life+advanced+conditioning&rnum=14&h
l=en , accessed on 3rd Dec 2004.

Abraham, L. (1990) *The Greening*. The Lawful Path:
www.lawfulpath.com/ref/greening.shtml, accessed on 5th Dec 2004.

Abraham, L. and Sanders, F. (1993) *The Greening*. Soundview Publications, Atlanta,
Georgia.

Addinsoft (1995-2002) *XLSTAT: Statistical Software for MS Excel, version Pro 5.1v2*.
Addinsoft.

Agarwal, B. (2001) 'Participatory exclusions, community forestry, and gender: an analysis for
South Asia and a conceptual framework'. *World Development,* 29 (10): 1623-1648.

Agrawal, A. (1995a) 'Indigenous and scientific knowledge: some critical comments'. In
Indigenous Knowledge and Development Monitor 3(3).

Agrawal, A. (1995b) 'Dismantling the divide between indigenous and scientific knowledge'.
Development and Change, 26 (3):413-439.

Ah Xiang. (2005) *Tibetans: Political, social, cultural, historical analysis of China*.
http://www.uglychinese.org/tibetan.htm, accessed on 15th Jan 2005.

Anderson, G. (1996) *Ecologies of the Heart: Emotion, Belief, and the Environment.* Oxford
University Press, New York.

Ayi, B. (2001) 'On the nature and transmission of Bimo knowledge in Liangshan'. In: Harrell,
S. (ed.), *Perspectives on the Yi of Southwest China*. University of California Press, London.

Azuma, H. (2000) 'Commentary: indigenous to what?', *International Society for the Study of
Behavioural Development Newsletter,* 1(37), 9-10.

Baigent, M., Lincoln, H. and Leigh, R. (1982) *Holy Blood, Holy Grail.* Delacorte Press, New York.

Bailey, S., Xu, J. and Hu, X. (2004) 'Using humanities to unwrap biology: The Qiang
controversy'. Presented at *AAPA 73rd Annual Meeting* April 17, 2004 Conference,
Tampa, Florida, American Association of Physical Anthropologists,

www.physanth.org/annmeet/aapa2004/ajpa2004.pdf#search=%22Using%20humanities%2
0to%20unwrap%20biology%3A%20The%20Qiang%20controversy%22 accessed on
22nd August 2005.

Banuri, T. and Marglin, F. (1993) *Who Will Save the Forests? Knowledge, power and
environmental destruction.* Zed Books, London & New Jersey.

Barbujani, G. and Sokal, R. (1990) 'Zones of sharp genetic change in Europe are also
linguistic boundaries'. *Proceedings of the National Academy of Science,* 87:1816-
1819.

Bateson, G. (1972) *Mind & Nature: A necessary unity*. Bantam Books, NY.

Beauclerk, J., Narby, J. and Townsend, J. (1989) *Indigenous Peoples: a fieldguide for
development*. Oxfam, Oxford.

Becker, C. and Ghimire, K. (2003) 'Synergy between traditional ecological knowledge and
conservation science supports forest preservation in Ecuador'. *Ecology and Society*, 8
(1): Article 1 www.ecologyandsociety.org/vol8/iss1/art1/main.html accessed on 6th
August 2005.

Bennett, E. and Zurek, M. (2006) 'Integrating epistemologies through scenarios'. In: Reid, W., Berkes, F., Wilbanks, T. and Capistrano, D. (eds.), *Bridging Scales and Epistemologies: Linking local knowledge and global science in environmental assessments*. Island Press, Washington. www.millenniumassessment.org/documents/bridging/papers/bennett.elena.pdf accessed on 23/10/06.

Berman, M. (1988) *All That is Solid Melts into Air: The experience of modernity*. Penguin, New York.

Berry, J. (1997) 'Immigration, acculturation, and adaptation'. *Applied Psychology: An International Review*, 46:5-68.

Best, S. and Kellner, D. (1997) *The Postmodern Turn*. Guilford Publications, New York.

Bing Su, Chunjie Xiao, Ranjan Deka, Seielstad, M, Daoroong Kangwanpong, Junhua Xiao, Daru Lu, Underhill, P, Cavalli-Sforza, L, Ranajit Chakraborty and Li Jin (2000) 'Y chromosome haplotypes reveal prehistoric migrations to the Himalayas'. *Human Genetics*, 107: 582-590.

Bleisch, B. and Wong, H. (1990) *Global Markets and Sacred Mountains: nature conservation in the Tibetan areas of Sichuan and Gansu Provinces.* In China Exploration and Research Society, Hong Kong at www.khamaid.org/about_kham/articles/bleischwong.htm , accessed on 15th June 2001.

Blondeau, AM. and Steinkellner, E. (1998). *Tibetan Mountain Deities: Their cults and representations*. Verlag der Osterreichischen Akademie der Wissenschaften, Wien.

Bo, W., Hong, E., Ling, R., Huifeng, X, Kaiyuan, L., Wenyi, Z., Bing, S., Shiheng, S., Li, J. and Chunjie, X. (2004) 'The origin of Mosuo people as revealed by mtDNA and Y chromosome variation'. *Science in China. Series C, Life sciences/Chinese Academy of Sciences* 47 (1):1-10.

Bonaiuto, M., Carrus, G., Martorella, H. and Bonnes, M. (2002) 'Local identity processes and environmental attitudes in land use changes: the case of natural protected areas'. *Journal of Economic Psychology*, 23 (5):631-653.

Bonner, R. (1994) *At the Hand of Man: Peril & hope for Africa's wildlife*. Vintage Books, New York.

Borgatti, S. (1990) *Anthropac: A program for collecting and analyzing data on cultural domains.* Version 3.0 for DOS. University of Carolina.

Bourdieu, P. (1972) 'La maison ou le monde enversé'. In: Bourdieu, P. (ed.) *Esquisse d'une theorie de la pratique.* Droz, Geneva,

Bourguignon, E. (ed.) (1973) *Religion, Altered States of Consciousness and Social Change*. Ohio University Press, Columbus, OH.

Bowers, C. (1999) *The Culture of Denial: Why the environmental movement needs a strategy for reforming universities and public schools* (Review), State University of New York Press, Albany NY.

Brown, G. and Reed, P. (2000) 'Validation of a forest values typology for use in national forest planning'. *Forest Science*, 46 (2): 240.

Brundtland, H. (1987) *Our Common Future*. Oxford University Press, Oxford.

Burchfield, J. (2001) 'Finding science's voice in the forest'. In Brick, P., Snow, D. and van de Wetering, S. (eds.). *Across the Great Divide: Explorations in collaborative conservation in the American West*. Island Press, Washington DC.

Cai Hua. (2001) *A Society Without Fathers or Husbands: The Na of China*. Zone Books, New York.

Calame-Griaule, G. (1969). *Le thème de l'arbre dans les contes Africains 1*. SELAF, Paris.

Calame-Griaule, G. (ed.) (1970) *Le thème de l'arbre dans les contes Africains 2.* SELAF, Paris.

Capra, F. (1982) *The Turning Point: Science, society and the rising culture.* Wildwood House Ltd., London.

Capra, F. (1997) *The Web of Life: A new scientific understanding of living systems*. Anchor Books, New York.

Castro, AP. (1991) 'Indigenous Kikuyu agroforestry: a case study of Kirinyaga Kenya'. *Human Ecology*, 19 (1): 1-18.

Cato, M. and Kennett, M. (eds.) (1999) *Green Economics: Beyond supply and demand to meeting people's needs*. Aberystwyth: Green Audit Books.

Chambers, R. (1983) *Rural Development: Putting the Last First*. Longman, New York.

Chambers, R. (1993) *Challenging the Professions: Frontiers for rural development*. Intermediate Technology Publications, London.

Chambers, R. (1997) *Whose Reality Counts?* Intermediate Technology Development Group, London.

Chambers, R. (2002) *Relaxed and Participatory Appraisal*. At http://www.ids.ac.uk/ids/particip/research/pra/pranotes02.pdf , accessed 1st June 2005.

Clark Labs/Clark University (2006) *Idrisi: GIS and Image Processing Software*. Version Andes 15.00 Clark University Worcester USA.

Coffman, M. (1998) *The IUCN: From the UN to your back yard*. Sovereignty International, Bangor ME. At http://www.sovereignty.net/p/ngo/iucn.htm, accessed on 5th May 2002.

Colorado, P. (1988) 'Bridging western and native science'. *Convergence*, 21 (2/3): 49-68.

Combe, G. (1926) *A Tibetan on Tibet*. T. Fisher Unwin Ltd, London.

Conklin, B. and Graham, L. (1995) 'The shifting middle ground: Amazonian Indians and eco-politics'. *American Anthropologist*, 97 (4): 695-710.

Cooper, J. (1826, reprinted 1986) *The Last of the Mohicans.* Penguin Classics, London.

Cossalter, C. and Pye-Smith, C. (2003) *Fast Wood Forestry - Myths and realities*. WWF;

The Center for International Forestry Research (CIFOR), IUCN - The World Conservation Union, Forest Trends. At

http://assets.panda.org/downloads/fastwood.pdf#search=%22Fast%20Wood%20Forestry%20-%20Myths%20and%20Realities%22 accessed on 23/10/06.

Darier, E. (ed). (1999) *Discourses of the Environment*. Blackwell, Oxford.

Darlington, S. (1998) 'The ordination of a tree: The Buddhist Ecology movement in Thailand'. *Ethnology*, 37 (1):1-15.

Darlington, S. (2000) 'Rethinking Buddhism & development: the emergence of environmentalist monks in Thailand'. *Journal of Buddhist Ethics* 7, at http://jbe.gold.ac.uk/7/darlington001.html , accessed on 29th July 2001.

Das, Sarat Chandra. (1904) *Journey to Lhasa and Central Tibet*. Murray, London.

Davison, M. (1983) *Multidimensional Scaling*. Wiley, New York.

Dev, R. (2000) *Unity of Knowledge*. At http://www.boloji.com/opinion/0005.htm accessed on 23/10/06.

Diemberger, H. (2002) 'The People of Porong and concepts of territory in introduction in territory and identity', In: Buffetrille, K. and Diemberger, H. (ed.), *Tibet and the Himalayas*, Brill, Leiden.

Dove, M. (1983) 'Theories of swidden agriculture and the political economy of ignorance'. *Agroforestry Systems*, 1(3): 85-99.

Dove, M. (1993) 'Uncertainty, humility and adaption in the tropical forest: The agricultural augury of the Kantu'. *Ethnology*, 32(2):145-167.

Driessen, P. (2003) *Eco-Imperialism: Green power, black death.* Free Enterprise Press, Bellevue, Washington.

Dryzek, J. (1987) *Rational Ecology: Environment and political economy*. Basil Blackwell, New York.

Eckel, M. (1997) 'Is There a Buddhist philosophy of nature?' In: Tucker, M. and Williams, D. (eds.) *Buddhism and Ecology*. Harvard University, Cambridge MA.

Eckersley, R. (1992) *Environmentalism and Political Theory: Towards an ecocentric approach*. UCL Press, London.

Edwards, B., Goodwin, M., Pemberton, S. and Woods, M. (1999) *Partnership Working in Rural Regeneration*. Findings 039. Joseph Rowntree Foundation, York.

Ellen, R. (1986) 'What Black Elk left unsaid: on the illusory images of green primitivism'. *Anthropology Today*, 2(6):8-12.

Ellen, R. and Harris, H. (2001). *Concepts of Indigenous Environmental Knowledge in Scientific and Development Studies Literature: A critical assessment.* University of Kent, at http://lucy.ukc.ac.uk/Rainforest/SML_files/Occpap/indigknow.occpap_TOC.html accessed on 23/10/06.

Ellis, L. (1993) 'Trickster: Shaman of the liminal'. *Studies in American Indian Literatures - Series 2*, 5(4): 55-68.

Emerton, L. (1996) 'Valuing the subsistence use of forest products in Oldonyo Orok Forest Kenya'. *Rural Development Forestry Network Paper*, 19e (Summer).

Emerton, L. (1997) 'Valuing forest resources for conservation purpose'. Presented at *African Rainforests and Conservation of Biodiversity Proceedings of the Limbe Conference 17-24 January 1997*, Limbe Botanic Garden Cameroon. Earthwatch Institute, http://www.earthwatch.org/site/pp.asp?c=crLQK3PHLsF&b=479887 accessed on 17th 2000.

Emerton, L. and Mogaka, H. (1996) 'Participatory environmental valuation of forest resources in the Aberdares Kenya'. *PLA Notes*, 26: 6-10. IIED, London.

Emery, M., Martin, S. and Dyke, A. (2006) *Wild Harvests From Scottish Woodlands: Social, cultural and economic values of contemporary non-timber forest products.* Forestry Commission, Edinburgh. At: http://www.fs.fed.us/ne/newtown_square/publications/other_publishers/OCR/ne_2006_emery001.pdf accessed on 27/10/06.

Epstein, L. (2002) *Khams Pa histories: Visions of people place and authority*. Piats 2000 Tibetan Studies Proceedings of the *Ninth Seminar of the International Association for Tibetan Studies*. Brill, Leiden and Boston.

Ermine, W. (1995) 'Aboriginal epistemology'. In: Battiste, M. and Barman, J. (eds.). *First Nations Education in Canada: The circle unfolds*. University of British Columbia Press, Vancouver.

Escobar, A. (1995) 'Imagining a post development era'. In: Crush, J. (ed.). *Power of Development*. Routledge, London.

Fairhead, J. and Leach, M. (1994) 'Declarations of difference'. In: Scoones, I. and Thompson, J. (eds.). *Beyond Farmer First*. Intermediate Technology Publications, London.

Falsetti, A. and Sokal, R. (1993) 'Genetic structure of human populations in the British Isles'. *Ann. Hum. Biol.,* 20 (3): 215-229.

FAO. (1978) *Forestry for Rural Communities*. FAO, Rome.

FAO (1997) 'Pluralism and sustainable forestry and rural development'. Presented at *Pluralism and Sustainable Forestry and Rural Development*: Rome: December 9-12 1997. Rome, FAO.

Feng Youzhi. (1992) *Xikang Shi Shi Yi (Supplementary Collections of Xikang History)*. Cultural-Historical Data Committee, Kangding, China.

Ferguson, J. (1990) *The Anti-Politics Machine: Development depoliticisation and bureaucratic power in Lesotho*. Cambridge University Press, Cambridge.

Fischer, F. (2000) *Citizens, Experts and the Environment: The politics of local knowledge*. Duke University Press, Durham NC.

Forester, J. (1989) *Planning in the Face of Power*. University of California Press, Berkeley.

Forman, S. (1975) *The Brazilian Peasantry*. Columbia University Press, New York and London.

Fox, J. (2000) 'Advocacy research and the World Bank: propositions for discussion'. Presented at *Spank the Bank and the Battle for Seattle: Does anthropology have a social responsibility in a global world conference.* 99th Annual Meeting of the American Association of Anthropologists, San Francisco California 17th Nov 2000.

Funtowicz, S. and Ravetz, JR. (1993) 'Science for the post-normal age'. *Futures,* 25/7 September 1993:735-755.

Gadgil, M., Berkes, F. and Folke, C. (1993) 'Indigenous knowledge for biodiversity conservation', *Ambio,* 22: 151-156.

Gadgil, M. and Guha, R. (1992) *This Fissured Land: An ecological history of India*. Routledge, London.

GDS (1989-2004) *GS+ Geostatistics for the Environmental Sciences, version 7*. Gamma Design Software Michigan Facility.

Gilmour, D. and Fisher, R. (1991) *Villagers, Forests and Foresters: The philosophy process and practice of community forestry in Nepal*, Sayogi Press, Kathmandu.

Gleick, J. (1988) *Chaos: Making a new science*. Penguin, New York.

Gonese, C. (1999) 'Bio-cultural diversity in Zimbabwe'. *Compas Magazine*, 2:7.

Gorard, S. and Taylor, C. (2004) *Combining Methods in Educational and Social Research.* Open University Press, London.

Grenier, L. (1998) *Working with Indigenous Knowledge: A guide for researchers*. IDRC, Ottawa. http://www.idrc.ca/en/ev-9310-201-1-DO_TOPIC.html accessed on 23/10/06.

Griffin, D. (1988) *The Reenchantment of Science: Post-modern proposals.* University of New York Press, Albany.

Guha, R. (1997) 'The authoritarian biologist and the arrogance of anti-humanism: wildlife conservation in the Third World'. *The Ecologist*, 27 (1):14-20.

Guha, R. (2000) *The Unquiet Woods: Ecological change and peasant resistance in the Himalaya.* University of California Press, Berkeley and London.

Hafeel, A. and Suma, T. (2000) 'Healing hands of Shimoga'. *Compas Magazine*, 3:10.

Hails, C. (ed.) (2006) *Living Planet Report 2006.* WWF; ZSL; GFN, Gland, Switzerland. http://assets.panda.org/downloads/living_planet_report.pdf accessed on 24/10/06.

Harrell, S. (2001) *Perspectives on the Yi of Southwest China*. University of California Press, London.

Hassel, C. (2005) 'The craft of cross-cultural engagement'. *Journal of Extension*, 43(6) http://www.joe.org/joe/2005december/a1.shtml.

Hattaway, P. (2000) *Operation China: Introducing all the peoples of China*. Piquant, Carlisle UK.

Haverkort, B. and Rist, S. (2004) 'Towards co-evolution of knowledges and sciences: no shortcut in integrating local and global knowledge'. Paper for the Compas panel in the conference: *Bridging Scales and Epistemologies: Linking Local Knowledge with Global Science in Multi-Scale Assessments.* March 2004, Alexandria, Egypt, Millenium Ecosystem Assessment, Penang, Malaysia ,

He Chong Hua (2000) 'Minority women and forest'. In: He Pikun, Yu Dejiang and Li Weichang (eds.) *Forests, Trees and Minorities*. Yunnan Nationality Press, Kunming.

He Pikun, Yu Dejiang and Li Weichang (2000) *Forests, Trees and Minorities*. Yunnan Nationality Press, Kunming.

He Zhonghua (2003) 'Forest management in Mosuo matrilineal society Yunnan, China'. In: Kelkar, G., Nathan, D. and Walter, P. (eds.). *Gender Relations in Forest Societies in Asia.* Sage, London.

Hildyard, N., Hegde, P., Wolvekamp, P. & Reddy, S.(1998) 'Pluralism, participation and power', *Forests Trees & People Newsletter*, 35:31-35.

Hintze, J. (2000) *NCSS 2000 Statistical Software.* NCSS Statistical Software, Utah.

Hobart, M. (1993) *An Anthropological Critique of Development.* Routledge, London.

Hoffman, M. (2001) *Secret Societies and Psychological Warfare*. Independent History and Research, Idaho.

Horn, R. (2001) 'Saffron savior'. *Time Asia* 21/8/2000

http://www.time.com/time/asia/features/ontheroad/thailand.forests.html accessed on 23/10/06.

Hsu Itang [Xu Yitang], (1944) *Leibo Xiaolaingshan zhi Lomin* [A Report of the Lolo in Leibo, Xiaoliang Mountains],University of Nanjing Institute of Chinese Cultural Studies, Chengdu, China.

Huber, T. (1999) *The Cult of Pure Crystal Mountain: Popular pilgrimage and visionary landscape in southeast Tibet.* Oxford University Press, Oxford.

Hugh-Jones, C. (1979) *From the Milk River: Spatial and temporal processes in northwest Amazonia*. Cambridge University Press, Cambridge.

Innes, J. (1990) *Knowledge and Public Policy*. 2nd edition, Transactions Books, New Brunswick.

IUCN, UNEP and WWF (1991) *Caring for the Earth: A Strategy for Sustainable Living*. Gland, Switzerland.

Jacobs, M. (1993) *The Green Economy.* University of British Columbia Press, Vancouver.

Jacquez, G., Maruca, S. and Fortin, MJ. (2000) 'From fields to objects: a review of geographic boundary analysis'. *Journal of Geographical Systems*, 2:221-241.

Jacquez, J. and Maruca, S. (2001-2003) *BoundarySeer: Software for Geographic Boundary Analysis, version 1.2.0*. Terraseer Inc, Crystal Lake, IL.

Johnson, R. and Onwuegbuzie, A. (2004) 'Mixed methods research: a research paradigm whose time has come'. *Educational Researcher*, 33 (7):14-26.

Kahakalau, K. (2004) 'Indigenous heuristic action research: bridging western and indigenous research methodologies'. *Hülili: Multidisiplinary Research on Hawaiian Well-Being* 1 (1):19-33. http://www.ksbe.edu/pase/pdf/Hulili/Kahakalau.pdf accessed on 23/10/06.

Karmay, S. (1994) 'Mountain cults and national identity'. In: Barnett, R. and Akiner, S. (eds.) *Resistance and Reform in Tibet*. Hurst & Co, London.

Kasser, T. (2002) *The High Price of Materialism*. MIT Press, Cambridge.

Katz, C. (1998) 'Whose nature, whose culture? Private productions of space and the preservation of nature'. In: Braun, B. and Castree, N. (eds.). *Remaking Reality: Nature at the millennium*. Routledge, London.

Kelkar, G., Nathan, D. and Walter, P. (2003) *Gender Relations in Forest Societies in Asia*. Sage Publications, London.

Kepkay, M. (2003) *Complexity and Adaptive Management in Washington State, 1987-2001*. Masters thesis, Simon Frazer University BC. Canada.

Kim, U. and Berry, T. (1993) *Indigenous Psychologies: Research and experience in cultural context*. Sage, Newbury Park, CA.

Kinsley, D. (1995) *Ecology & Religion: Ecological spirituality in cross-cultural perspective*. Prentice-Hall, New Jersey.

Kitossa, T. (2000) 'Same difference: biocentric imperialism and the assault on indigenous culture and hunting'. *Environments*, 28 (2):23-36.

Klein, D. (1994) 'Wilderness: a western concept alien to Arctic cultures'. *Information North*, 20 (3):1-6. At http://arcticcircle.uconn.edu/HistoryCulture/wilderness.html accessed on 23/10/06.

Koppell, C. (1990) 'The major significance of "minor" forest products: the local use and value of forests in the West African Humid Forest Zone'. *Community Forestry Note* 6. FAO, Rome.

Krauss, M. (1992) 'The world's languages in crisis'. *Language*, March:1-10.

Krug, E. (1994) 'A modern history of the new green world order'. *Contra Mundum*, 12 (Summer). http://www.contra-mundum.org/ accessed on 5th April 2000.

Kuhn, T. (1970) *The Structures of Scientific Revolutions (With Postscript)*. University of Chicago Press, Chicago.

Lachapelle, P., McCool, S. and Patterson, M. (2003) 'Barriers to effective natural resource planning in a "messy" world'. *Society and Natural Resources*, 16: 473-490.

Landow, G. (1993) *Hypertext: The convergence of contemporary critical theory and technology.* John Hopkins University Press, Baltimore MD.

Lane, F. (1994) 'The warrior tribes of Kham'. *AsiaWeek*, March 2:30-38.

Laporte, B. (2004) *The Knowledge Bank in Action.* World Bank, Washington DC.

Laverty, M. and Sterling, E. (2004) *Intrinsic Value*. At http://cnx.rice.edu/content/m12160/latest/, accessed on 12th July 2005.

Lawrence, A. (ed.) (2000) *Forestry Forest Users and Research: New ways of learning*. ETFRN, Wageningen, The Netherlands.

Le Grange, L. (2001) 'Challenges for participatory action research and indigenous knowledge in Africa'. *Acta Academica*, 33 (3): 136-150.

Leepreecha, P. (2005) 'The politics of ethnic tourism in northern Thailand'. Presented at the workshop on *Mekong Tourism: Learning Across Borders*, 25 February 2005, Social Research Institute, Chiang Mai University.

http://www.rockmekong.org/events/html_file/socialResearchCHM/files/Prasit.pdf accessed on 23/10/06.

Letty, B. and van Veldhuizen, L. (2006) *Synergies between EndogenousDevelopment and Participatory Innovation Development as Methodologies for Understanding and Improving Rural Livelihoods*. http://216.239.59.104/search?q=cache:KuSQdkKFPpYJ:www.prolinnova.net/South_Africa/paper_letty_van%2520veldhuizen%2520sept%25202006.doc+endogenous+selective+use+of+external+resources&hl=en&ct=clnk&cd=1 accessed 5th Feb 2007.

Lomas, R. (2004) *Freemasonry and the Birth of Modern Science*. Fair Winds Press, Brighton.

Long, A. and Ploeg, JD. van der (1994) 'Endogenous development: practices and perspectives', In: van der Ploeg, JD. and Long, A. (eds.) *Born From Within. Practice and perspectives of endogenous rural development,* Van Gorcum, Assen, The Netherlands.

Loreau, M., Oteng-Yeboah, A., Arroyo, M., Babin, D., Barbault, R., Donoghue, M., Gadgil, Häuser, C., Heip, C., Larigauderie, A., Ma, K., Mace, G., Mooney, H., Perrings, C., Raven, P., Sarukhan, J., Schei, P., Scholes, R. and Watson, R. (2006) 'Diversity without representation'. *Nature* 442:245-246.

Luke, T. (1999) 'Environmentality as green governmentality'. In: Darier, E. (ed.) *Discourses of the Environment*. Blackwell, Oxford.

Ma Lihua. (1993) 'Shamanic belief among nomads', In: Ramble, C. and Brauen, M. (eds.), *Anthropology of Tibet and the Himalaya*, University of Zurich, Zurich.

Mann, M. (1992) *The Last of the Mohicans.* 20th Century Fox.

Marglin, F. and Marglin, S. (eds) (1990) *Dominating Knowledge: Development culture & resistance.* Clarendon Press, Oxford.

Marriott, M. (ed) (1955) 'Little communities in an indigenous civilization in village India'. *American Anthropology*, 57:171-222.

Marshall, S. and Cooke, S. (1997) *Tibet Outside the TAR* (CD format), Alliance for Research in Tibet. Hong Kong.

McCay, B. (2000) 'Post-modernism and the management of natural and common resources'. *The Common Property Resource Digest*, 54(Sept):1-6. http://www.indiana.edu/~iascp/E-CPR/cpr54.pdf accessed on 8th June 2004.

Mackenzie, F. (1998) 'The Cheviot, the stag and the white white rock: community identity and environmental threat on the Isle of Harris'. *Environment and Planning D*, 16:509-532.

Mackenzie, F. (2002) 'Re-claiming place: the Millennium Forest Borgie, North Sutherland Scotland'. *Environment and Planning D*, 20 (5):535-560.

McMaken, R. (2001) *The Environmental Enclosure.* LewRockwell.com http://www.lewrockwell.com/mcmaken/mcmaken32.html , accessed on 20th Feb 2002.

Melmer, D. (2005) 'Sacred sites on federal land are mammoth issues'. *Indian Country Today* (March 14, 2005) http://www.indiancountry.com/content.cfm?id=1096410538 accessed on 23/10/06.

Mendenhall, M. and Oddou, G. (1985) 'The dimensions in expatriate acculturation: a review.' *Academy of Management Review*, 10:39-47.

Merchant, C. (1980) *The Death of Nature*. Harper Collins, New York.

Merchant, C. (1989) *Ecological Revolutions: Nature, gender, and science in New England*. The UNC Press, Chapel Hill, NC.

Metspalu, M., Kivisild, T., Metspalu, E., Parik, J., Hudjashov, G., Kaldma, K., Serk, P., Karmin, M., Behar, D., Gilbert, M., Endicott, P., Mastana, S., Papiha, S., Skorecki, K., Torroni, A. and Villems, R. (2004) 'Most of the extant mtDNA boundaries in South and Southwest Asia were likely shaped during the initial settlement of Eurasia by anatomically modern humans'. *BMC Genetics*, 5 (26).

Meyers, R. (1993) 'Technology serving tradition', *Cultural Survival Quarterly*, 17 (1):35-37.

Michon, G. (2000) Indigenous forestry: how to turn localised knowledge into a relevant forestry science', In: Lawrence, A. (ed.), *Forestry, Forest Users and Research: New Ways of Learning*, ETFRN, Wageningen.

Milani, B. (2000) *Designing the Green Economy: The postindustrial alternative to corporate globalization.* Rowman & Littlefield, Lanham, MD.

Millar, DAR. and Atoyure, P. (1999) 'Shrines and groves'. *Compas Magazine* 2: 34.

Morano, M. (2002) (Wednesday, July 24) *CBS's Osgood Criticized for Link to 'Extreme' Enviro Group*. At http://www.newsmax.com/archives/articles/2002/7/23/151137.shtml accessed on 23/10/06.

Muraille, B. (2000) 'Associating people and industrial forestry: joint forest management in Lao PDR'. In: Lawrence, A. (ed.) *Forestry, Forest Users and Research: New ways of learning*. ETFRN, Wageningen, The Netherlands.

Myers, N. (1988) 'Threatened biotas: hotspots in tropical forests'. *Environmentalist*, 9:187-208.

Myers, N., Russell A., Mittermeier, C., Mittermeier, G., da Fonseca, GAB. and Kent, J. (2000) 'Biodiversity hotspots for conservation priorities'. *Nature* 403: 853-858.

National Research Council (1992) *Conserving Biodiversity: A Research Agenda for Development Agencies.* National Academy Press, Washington, DC.

Nelson, R. (1986) *Make Prayers to the Raven*. University of Chicago Press, Chicago.

Nikora, L., Levy, M., Masters, B. and Waitoki, M. (2004) *Indigenous Psychologies Globally: A perspective from Aotearoa/New Zealand*. Maori & Psychology Research Unit, University of Waikato, Hamilton, Aotearoa/New Zealand. http://psychology.waikato.ac.nz/mpru/pubs/paps-sums/2004indpsyc.pdf accessed on 23/10/06

Norbu, T. (1960) *Tibet is my Country.* Rupert Hart-Davis, London.

Norton, B. and Hannon, B. (1999) 'Democracy and sense of place values in environmental policy', In: Light, A. and Smith, J. (ed), *Philosophies of Place*, Rowman and Littlefield, New York.

Oakes, T. 1997, 'Ethnic tourism in rural Guizhou; sense of place and the commerce of authenticity' In Picard, R. (ed.), *Tourism, Ethnicity, and the State in Asian and Pacific Societies*, University of Hawaii Press, Honolulu.

Oldham, G. and McLean, R., (1997) *Approaches to Knowledge-Brokering*. International Institute for Sustainable Development, at http://www.iisd.org/pdf/2001/networks_knowledge_brokering.pdf accessed on 23/10/06.

Osland, J. (1990) *The Hero's Adventure: The overseas experience of expatriate business people*. PhD thesis, Case Western Reserve University, Psychology, Cleveland, Ohio.

Pearce, DW. (1990) 'An economic approach to saving the tropical forests'. *Discussion Paper 90-06*, London Environmental Economics Centre, London.

Pearce, F. (1999) 'Tree theory is cut down'. *The Guardian* (25/3/1999).

Pedersen, P. (1995) Nature, religion & cultural identity: the religious environmentalist paradigm. In: Bruun, O. and Kalland, A. (eds.). *Asian Perceptions of Nature*. Curzon Press, London.

Pei Shengji. (1999) 'The Holy Hills of the Dai'. In: Posey, D. (ed.) *Cultural & Spiritual Values of Biodiversity*. Intermediate Technology Publications and United Nations Environment Programme (UNEP), London.

Peissel, M. (1972) *Cavaliers of Kham: The secret war in Tibet*. Heinemann, London.

Pelto, P. and Pelto, G. (1975) 'Intra-cultural diversity: some theoretical issues'. *American Ethnologist*, 2: 1-18.

Peng, W (2002) 'Frontier process, provincial politics and movements for Khampa autonomy during the republican period'. In: Epstein, L. (ed.) *Khams pa Histories: Visions of People Place and Authority*. Brill, Leiden, Boston, Koln.

Pieterse, J. (1998) 'My paradigm or yours? Alternative development, post-development, reflexive development'. *Development and Change*, 29:343-373.

Pieterse, J. (2000) 'After post-development'. *Third World Quarterly*, 21:175-191.

Poffenberger, M. (ed.) (1990) *Keepers of the Forest*. Kumarian Press, West Hartford.

Poisner, J. (1996) 'A civic republican perspective on the National Environmental Policy Act's process for citizen participation'. *Environmental Law*, 26 (1):53-94.

Posey, D. and Dutfield, G (1997) *Indigenous Peoples and Sustainability: Cases and actions.* International Books, Utrecht.

Pouzzner, D. (2001) *The Architecture of Modern Political Power: The new feudalism.* At http://www.mega.nu:8080/ampp/ , accessed on 1st Oct 2004.

Princen, T. Maniates, M. and Conca, K. (2002) *Confronting Consumption*. MIT Press, Cambridge, UK.

Qian, Y., Qian, B., Su, B., Yu, J., Ke, Y., Chu, Z., Shi, L., Lu, D., Chu, J. and Jin, L. (2001) 'Study on the multiple origins of Tibetan using Y chromosome SNP markers'. Presented at *Human Genome 2001 Conference*, Edinburgh 19th-22nd April, 2001, *The Human Genome Organisation*.

Qing Feng (1975) 'Xikang Gesangzeren Shijian Jingguo (The process of the Gesangzeren Incident in Xikang)'. *Sichuan Historical Literature*, 157: 44-48.

Qualis Research Associates. (1998) *The Ethnograph: Qualitative Data Analysis Software Version 5.08.* Colorado Springs.

Rahnema, M. and Bautree, V. (1997) *The Post Development Reader*. Zed Books, London.

Ramble, C. (1998) 'The classification of territorial divinities in pagan and Buddhist rituals of South Mustang'. In: Blondeau, A.-M. and Steinkellner, E. (eds.) *Tibetan Mountain Deities: Their cults and representations*. Verlag der Osterreichischen Akademie der Wissenschaften, Wien.

Ramprasad, V. (2000) 'Nutrition and vital energy'. *Compas Magazine*, 3:32.

Ranis, G. (2006) 'The MDBs and the nation-state'. In: Cameron, D., Ranis, G. and Zinn, A. (eds.) *Globalization and Self-determination: Is the nation state under siege?* Routledge, London.

Rath, A. 1997, 'Cultural Sublimation: The Museumizing of Indonesia', *Explorations in Southeast Asian Studies*, 1 (1) Online.

Ratsch, C. (2005) *The Encyclopedia of Psychoactive Plants: Ethnopharmacology and its applications*. Park Street Press, Rochester, VT.

http://www.bouncingbearbotanicals.com/bookthe-encyclopedia-psychoactive-plants-p-405.html accessed on 23/10/06.

Redfield, R. (1955) 'The social organisation of tradition'. *Far Eastern Quarterly*, 15:13-22.

Reichel, E. (1992) 'Shamanistic modes for environmental accounting in the Colombian Amazon: lessons from indigenous ethno-ecology for sustainable development'. Presented at *International Symposium on Indigenous Knowledge and Sustainable Development*, 20-26 September 1992. International Institute of Rural Reconstruction (IIRR), Silang, The Philippines.

Reichel, E. (1999) 'Gender based knowledge systems in the eco-politics of the Yukuna and Tanimuka of Northwest Amazon, Columbia. In: Posey, D. (ed.) *Cultural and Spiritual Values of Biodiversity*. Intermediate Technology/United Nations Environmental Programme, London.

Ribe, R. and Matteson, M. (2002) 'Views of old forestry and new among reference groups in the Pacific Northwest'. *Western Journal of Applied Forestry*, 17 (4):173-182(10).

Richardson, H. (1986) *Adventures of a Tibetan Fighting Monk*. The Tamarind Press, Bangkok.

Robert, J. (1999) *History of Space Perceptions III: A sense of place: Some historical symbols myths and rituals of "placeness"*, at http://www.pudel.uni-bremen.de/pdf/HSPACE3.pdf , accessed on 17th Nov 2003.

Robertson, T. and Beasley, D. (undated) 'Cognitive Anthropology.' An online text from *Anthropological Theories: a Guide Prepared by Students for Students*. University of Alabama. http://www.as.ua.edu/ant/Faculty/murphy/436/coganth.htm.

Rock, J. (1930a) 'Seeking the Mountains of Mystery: an expedition on the China-Tibet frontier to the unexplored Amnyi Machen Range'. *National Geographic Magazine* 57 (4):131-185.

Rock, J. (1930b) 'The glories of Minya Konka'. *The National Geographic Magazine*, 58 (4): 385-437.

Roget's New Thesaurus. (1995). *Roget's New Thesaurus*. Third Edition. Houghton Mifflin Company, Boston, Massachusetts, USA.

Rolston, H. and Coufal, J. (1991) 'A forest ethic and multivariate forest management'. *Journal of Forestry*, 89:35.

Roosevelt, T. & Roosevelt, K. (1929) *Trailing the Great Panda*. Charles Scribners and Sons, New York & London.

Rosenberg, M. (1998-2004) *Passage: Pattern analysis, spatial statistics and geographic exogesis, version 1.1.* Rosenberg, MS Tempe, AZ 85287-4501.

Rowcroft, P., Studley, J. and Ward, K. (2006) 'Eliciting forest values for community plantations and nature conservation'. *Forests, Trees & Livelihoods* 16:329-358.

http://members.lycos.co.uk/johnfstudley/Forval.htm accessed on 23/10/06.

Sachs, W. (1992) *The Development Dictionary*. Zed Books, London.

Sachs, W. (1994) 'The blue planet: An ambiguous modern icon'. *The Ecologist*, 24 (5):170-175.

Samuel, G. (1992) *Ge Sar of Ling: The origins and meaning of the East Tibetan epic*. Report No. 2 711-722 (Shoren & Zuiho, eds.) 5th Seminar - Monograph Series, *Naritasan Institute for Buddhist Studies Occasional Papers* SL 5916655000. Newcastle, NSW, Australia.

Samuel, G. (1993a) *Civilized Shamans: Buddhism in Tibetan Societies*. Smithsonian Institute Press, Washington DC.

Samuel, G. (1993b) 'Shamanism bon and Tibetan religion'. In: Ramble, C. and Brauen, M. (eds.). *Anthropology of Tibet and the Himalaya*. University of Zurich, Zurich.

Samuel, G. (2002) 'The epic and nationalism in Tibet'. In: Penny, B. (ed.) *Religion and Biography in China and Tibet*. Curzon Press, Richmond, Surrey.

Schaaf, T. (1999) 'Environmental conservation based on sacred sites'. In Posey, D. (ed.) *Cultural & Spiritual Values of Biodiversity*. Intermediate Technology Publications and United Nations Environment Programme (UNEP), London.

Schelhas, J. (2003) 'New trends in forest policy and management: an emerging postmodern approach?' In: Teeter, L., Cashore, B. and Zhang, D. (eds.) *Forest Policy for Private Forestry: Global and Regional Challenges*. CAB International, Wallingford.

Schumacher, E (1973; reissued 1998) *Small is Beautiful: A study of economics as if people mattered.* Hartley & Marks, Vancouver.

Schroeder, HW. 1996. 'Voices from Michigan's Black River: obtaining information of "special places" for natural resource planning'. *General Technical Report NC-184*. St. Paul, MN: USDA Forest Service.

Scott, M. (1998) *Oxford Wordsmith Tools, version 4.* Oxford University Press, Oxford.

Seeland, K. (1993) 'Sanskritisation and environmental perception among Tibeto-Burman speaking groups', In: Ramble, C. and Brauen, M. (eds.), *Anthropology of Tibet and the Himalaya*, University of Zurich, Zurich.

Shankar, G. (1999) 'From hunting to ecological protection', *Compas Magazine*, 2: 31.

Shankar, G. and Vearma, K. (2001) 'Tribal organization shows its strengths'. *Compas Magazine*, 5: 22.

Shenoy, U., Kumara, A. and Anand, A. (2001) 'Cows give fulfilment in life'. *Compas Magazine*, 5: 34.

Shi Hong, Dong Yongli, Li Weixiang, Yang Jie, Li Kaiyuan, Zan Ruiguang and Xiao Chunjie (2003) 'The geographic polymorphisms of Y chromosome at YAP locus among 25 ethnic groups in Yunnan, China'. *Science in China*, C:135-140.

Shih, C.K. (1993) *The Yongning Moso: Sexual union, household organization, gender and ethnicity in a matrilineal duolocal society in Southwest China.* PhD Dissertation, Stanford University, Palo Alto, California.

Shindler, B. and Cramer, L. (1999) 'Shifting public values for forest management: making sense of wicked problems'. *Weatern Journal of Applied Forestry*, 14 (1): 28-34.

Shiva, V. (1989) *Staying Alive*. Zed Books, London.

Shiva, V. (1993) *Monocultures of the Mind: Perspectives on biodiversity and biotechnology,* Zed Books, London.

Shum, K. (2005) *Tourism in Muang Sing: A summary of tourists' perspectives.*

http://www.hotelschool.cornell.edu/chr/pdf/showpdf/chr/research/casestudies/Shum_LaosReport_TourismResearch.pdf accessed on 23/10/06.

Sillitoe, P. (1998) 'Defining indigenous knowledge: the knowledge continuum'. *Indigenous Knowledge and Development Monitor*, 6 (3):14-15.

Sillitoe, P. (2000) 'Globalising indigenous knowledge'. Presented at the *Association of Social Anthropologists 2000 Conference*, School of Oriental and African Studies London, http://www.asa2000.anthropology.ac.uk/sillitoe/sillitoe_paper.html accessed on 23/10/06.

Sillitoe, P. (2002) 'Globalizing indigenous knowledge'. In: Sillitoe, P., Bicker, A. and Pottier, J. (eds.) *Participating in Development: Approaches to indigenous knowledge.* Routledge, London and New York.

Simon, K. (2002) *Searching for Synergy: Maori/indigenous and scientific conservatory values: reconciling affinity and difference?* University of Waikato, New Zealand. At http://www.devnet.org.nz/conf2002/papers/Simon_Katerina.pdf accessed on 23/10/06.

Simpson, L. and Driben, P. (2000) 'From expert to acolyte: learning to understand the environment from an Anishinaabe point of view'. *American Indian Cultural Research Journal*, 24 (3):1-19.

Sinclair, R. (2003) 'Indigenous research in social work: the challenge of operationalizing worldview'. *Native Social Work Journal* 5, 5:117-139.

Singhal, R. (2000) 'A model for integrating indigenous and scientific forestry management: potentials and limitations for adaptive learning'. In: Lawrence, A. (ed.) *Forestry, Forest Users and Research: New Ways of Learning*. ETFRN, Wageningen, The Netherlands.

Slikkerveer, L. (1999) 'Ethnoscience TEK and its application to conservation'. In Posey, D. (ed.) *Cultural & Spiritual Values of Biodiversity*. Intermediate Technology Publications and United Nations Environment Programme (UNEP), London.

Smith, C. (1999) *Nonlinear Science and the Postpositivist Researcher.* At http://www.culturalresearch.org/nonpost.pdf accessed on 23/10/06.

Smith, M. (1997) *Knowledge Broker Initiative: Linking the creators and users of knowledge*. International Development Research Centre (IDRC). At http://idrinfo.idrc.ca/archive/reportsintra/pdfs/1997e/112225.htm accessed on 23/10/06.

Snellgrove, D. and Richardson, H. (1968) *A Cultural History of Tibet*. Shambala, Boston and London.

Stalin, J. (1951) *Marxism and Linguistics*. International Publishers, New York.

Stankey, G., Bornmann, B., Ryan, C., Shindler, B., Sturtevant, V., Clark, R. and Philpot, C. (2003) 'Adaptive management and the Northwest Forest Plan: rhetoric and reality'. *Journal of Forestry*, 101 (1):40-46.

Stein, R. (1972) *Tibetan Civilization*. Faber, London.

Sterling, S. (2001) *Education & Sustainable Development*. Green Books, Dartington.

Stevens, S. (1993) *Claiming the High Ground: Sherpas' subsistence and environmental change in the highest Himalaya.* University of California Press, Berkeley.

Stevens, S. (ed.) (1997) *Conservation through Cultural Survival: Indigenous people and protected areas.* Island Press, Washington DC.

Strauss, R. (1992) *Tibet: A Travel Survival Kit.* Lonely Planet Publications, Australia.

Stuart, K., Banmadorji and Huangchojia (1995) 'Mountain gods and trance mediums: A Qinghai Tibetan summer festival'. *Asian Folklore Studies*, 54:219-237.

Studley, J. (1995a) 'Environmental ethics with ethics content?' *Institute of Chartered Foresters News*, 1:18-19.

Studley, J. (1995b) 'Green Ethics'. *Institute of Chartered Foresters News*, 3: 26.

Studley, J. (1998) *Dominant Knowledge Systems & Local Knowledge*. Mountain Forum, at http://www.mtnforum.org/oldocs/126.doc accessed on 23/10/06.

Studley, J. (1999) 'Ecotourism in China'. In http://members.lycos.co.uk/johnfstudley/ecotours.htm accessed on 23/10/06.

Studley, J. (2003) *YEDP Ninglang: Notes & Diary*. At http://members.lycos.co.uk/johnfstudley/NINGFIND.htm accessed on 23/10/06.

Studley, J. (2004) *The History of Kham*. At http://www.members.lycos.co.uk/johnfstudley/Kham History.rtf accessed on 23/10/06.

Studley, J. (2005) *Sustainable Knowledge Systems and Resource Stewardship: In search of ethno-forestry paradigms for the indigenous peoples of Eastern Kham*. Geography PhD thesis (Geography), Loughborough University, Loughborough.

Thoreau, H. (1854) *Walden or Life in the Woods.* London Folio Society, London.

TNC (2005) *Robert Moseley*. The Nature Conservancy (USA), Arlington VA. At http://www.nature.org/tncscience/scientists/misc/moseley.html , accessed on 15th Jan 2005.

Tolman, EC. (1948). 'Cognitive maps in rats and man'. *Psychological Review* 55: 189-208.

Torroni, A., Miller, J., Moore, L., Zamudio, S., Zhuang, J., Droma, T. and Wallace, D. (1994) 'Mitochondrial DNA analysis in Tibet: implications for the origin of the Tibetan population and its adaption to high altitude'. *American Journal of Physical Anthropology,* 93:189-199.

Trouvalis, J. (2000) 'The dawn of postmodern forestry'. In: Trouvalis, J. (ed.). *A Critical Geography of Britain's State Forests.* Oxford University Press, Oxford.

Tsarong, D. (1990) *What Tibet Was As Seen By a Native Photographer*. Dundul Namgyal Tsarong, New Delhi.

Tsering, T. (1985) 'Nag-Ron Mgon-Po Rnam-Rgyal: A 19th century Khams-Pa warrior'. In: Aziz, B. and Kapstein, M. (eds.). *Soundings in Tibetan Civilization*. Manohar, Delhi.

Tucci, G. (1980) *The Religions of Tibet*. Routledge and Kegan Paul, London.

Tucker, M. and Grim, J. (2001) 'Introduction: the emerging alliance of world religions and ecology'. *Daedalus* (Web version) Fall, at http://www.amacad.org/publications/fall2001/tucker-grim.aspx , accessed on 22nd Dec 2004.

Turnbull, C. (1984) *The Mountain People*. Paladin, London.

Turner, V. (1967) *The Forest of Symbols: Aspects of Ndembu Ritual.* Cornell UP, Ithaca.

Umans, L. (1998) 'Participatory process analysis'. *Forest, Trees & People Newsletter*, 35.

UNESCO, Terralingua, World Wide Fund for Nature, 2003. *Sharing a World of Diversity: The Earth's linguistic, cultural, and biological diversity.* http://www.terralingua.org/UNESCO%20publication.pdf accessed on 10th April 2007.

Upawansa, G. (1999) 'The eco-approach to agricultural development'. *Compas Magazine*, 1:14.

Usher, R. and Edwards, R. (1994) *Postmodernism and Education*. Routledge, London.

van Gelder, T. and Port, R. (eds) (1995) *Mind As Motion: Exploration in the dynamics of cognition*. Massachusetts Institute of Technology Press, Cambridge, MA, USA.

van Gennup, A. (1960) *The Rites of Passage*. Routledge and Kegan Paul, London.

van Spengen, W. (2002) 'Frontier history of Southern Kham: banditry and war in the multi-ethnic fringe lands of Chatring Mili and Gyethang 1890-1940'. In: Epstein, L. (ed.). *Khams pa Histories: Visions of people, place and authority*. Brill, Leiden, Boston and Koln.

Wallace, B. (2000) *The Taboo of Subjectivity. Toward a new science of consciousness.* Oxford University Press, New York.

Walsh, R. & Vaughan, F. (1993) *Paths Beyond Ego*, Penguin Putman Inc., New York.

Ward, C. (1996) 'Acculturation'. In: Landis, D. and Bhagat, R. (eds.). *Handbook of Intercultural Training* (2nd ed). Sage, Thousand Oaks, CA.

Ward, C. and Kennedy, A. (1999) 'The measurement of sociocultural adaptation'. *International Journal of Intercultural Relations*, 23:659-677.

Warren, D., Slikkerveer, L. and Brokensha, D. (1995) *The Cultural Dimension of Development: Indigenous knowledge systems.* Intermediation Technology Publications, London.

Watters, D. (2002) *A Grammar of Kham*. Cambridge University Press, Cambridge.

WCD (2000) *Dams and Development: A new framework*. The Report of the World Commission on Dams (WCD), Earthscan Publications Ltd, London and Sterling, VA.

Wellens, K. (2002) 'The Premi'. In: Ember, C., Ember, M. and Skoggard, I. (eds.) *Encyclopedia of World Cultures: Supplement (Human Relations Area Files)*. Macmillan, New York.

Wellens, K. (2003) Personal Communication on 21st Nov 2003 about Pumi Hangui, at http://members.lycos.co.uk/johnfstudley/blog/wellens211103.txt accessed on 23/10/06

Westoby, J. (1987) *The Purpose of Forests - Follies of Development.* Basil Blackwell Ltd, Oxford.

Wiersum, K. (1997) 'Normative pluriformity in forest management: professional and community perspectives'. In: FAO, CIRAD and IUFRO (eds.). *Pluralism and Sustainable Forestry and Rural Development*: Rome: December 9-12 1997.

Wiersum, K. (2000) 'Incorporating indigenous knowledge in formal forest management: adaption or paradigm change in tropical forestry?' In: Lawrence, A. (ed.). *Forestry Forest Users and Research: New Ways of Learning*. European Tropical Forest Research Network (ETFRN), Wageningen, The Netherlands.

Williams, B. and Matheny, A. (1995) *Democracy, Dialogue and Environmental Disputes*. Yale University Press, New Haven, CT.

Williams, DR. (2002) 'Post-utilitarian forestry: what's place got to do with it?' Presented at *Proceedings of the Human Dimension of Natural Resources in the West Conference*, Alta, WY 18-21 Oct 2002. United States Department of Agriculture: Forest Service. http://www.fs.fed.us/rm/value/docs/post-utilitarian_forestry.pdf accessed on 19th Oct 2004.

Wilson, S. (2001) 'What is an indigenous research methodology?' *Canadian Journal of Native Education*, 25:175-179.

Wollstein, J. (1998) (September 1998) 'Nightmare in green'. *The Freeman: Ideas on Liberty*, 48 (9) http://www.fee.org/publications/the-freeman/article.asp?aid=3536 accessed on 23/10/06.

Womble, W. (1951) 'Differential systematics', *Science* 114 (2961):315.

World Bank. (1978) *Forestry: Sector Policy Paper.* World Bank, Washington DC.

Xi Yuhua (2003) 'Shu: Naxi nature goddess archetype'. In: Kelkar, G., Nathan, D. and Walter, P. (eds.). *Gender Relations in Forest Societies in Asia: Patriarchy at odds*. Sage Publications, New Delhi.

Xu Jianchu, Ma Erzi, Tashi Duojie, Fu Yongshou, Lu Zhi and Melick, D. (2004) 'Integrating sacred knowledge for conservation: cultures and landscapes in SW China'. Presented at *Bridging Scales and Epistemologies: Linking local knowledge and global science in multi-scale assessment*. 17-20 March, Alexandria, Egypt, MEA. http://www.cbik.org/cbik-en/cbik/our_work/indigenous/Ecology%20and%20Society%20Paper.pdf#search=%22Integrating%20Sacred%20Knowledge%20for%20Conservation%3A%20Cultures%20and%20Landscapes%20in%20SW%20China%22. Accessed on 23/10/06.

Yang Fuquan (2003) 'Mentorship of indigenous cultural specialists: A case study of training of Dongba Naxi Priests'. In: Xu, J. and Mikesell, S. (eds.) *Landscapes of Diversity: Indigenous knowledge sustainable livelihoods and resource governance in montane Southeast Asia*, Yunnan Science and Technology Press, Kunming, China.

Yang Fuquan and Xi Yuhua (2003) 'Naxi women: protection and management of forests in Lijiang, China'. In: Kelkar, K., Nathan, D. and Walter, P. (eds.). *Gender Relations in Forest Societies in Asia: Patriarchy at Odds*. Sage Publications, New Delhi.

Yang, X., Yang, Z., Shi, H., Dong, Z., Yang, J., Zeng, W., Gao, L. and Xiao, C. (2004) 'Y-STR polymorphisms among five Chinese minorities, Mosuo, Mongolian, Naxi, Pumi and Tibetan, in Yunnan Province, PR China'. *Ann. Hum. Biol*., 31 (1):103-111.

Young, T. (1994) *Paradigm Theory: Foundations for post-modern science*. Red Feather Institute for Advanced Studies in Sociology, Weidman, Michigan. http://critcrim.org/redfeather/chaos/004paradigm.html, accessed on 27th April 1999.

Zevik, E. (undated) 'First look: the Qiang people of Sichuan'. In: *Asian Anthropology*. The Chinese University Press, Shatin, NT, Hong Kong. http://www.chineseupress.com/promotion/AsianAnthroV1sample/7.pdf accessed on 23/10/06.

Zhili Yang, Yongli Dong, Lu Gao, Cheng., B., Jie Yang, Weimin Zheng, Jing Lu, Yanshua Su and Chungjie Xiao (2005) 'The distribution of Y chromosome haplogroups in the nationalities from Yunnan Province of China'. *Ann. Hum. Biol*. 32 (1): 80-87.

Annex 1:
Sociocultural adaptation scale

Please indicate how much difficulty you experience in _____(clients' culture) in each of these areas. Use the following 1 to 5 scale:

- 1 = no difficulty
- 2 = slight difficulty
- 3 = moderate difficulty
- 4 = great difficulty
- 5 = extreme difficulty

Table 5. Sociocultural adaption scale

1. Making friends
2. Finding food that you enjoy
3. Following rules and regulations
4. Dealing with people in authority
5. Taking a _____ (clients') perspective on the culture
6. Using the transport system
7. Dealing with bureaucracy
8. Understanding the _____ (clients') value system
9. Making yourself understood
10. Seeing things from the _____ (clients') point of view
11. Going shopping
12. Dealing with someone who is unpleasant
13. Understanding jokes and humour
14. Accommodation
15. Going to social gatherings
16. Dealing with people staring at you
17. Communicating with people of a different ethnic group
18. Understanding ethnic or cultural differences
19. Dealing with unsatisfactory service
20. Worshipping
21. Relating to members of the opposite sex
22. Finding your way around
23. Understanding the _____ (clients') political system
24. Talking about yourself with others
25. Dealing with the climate
26. Understanding the _____ (clients') worldview
27. Family relationships
28. The pace of life
29. Being able to see two sides of an inter-cultural issue

Source: Ward, C., & Kennedy, A. (1999). The measurement of sociocultural adaptation. International Journal of Intercultural Relations, 23: 659-677.

Glossary

Abductive (reasoning)	Abduction, or inference to the best explanation, is a method of reasoning in which one chooses the hypothesis which would, if true, best explain the relevant evidence. Abductive reasoning starts from a set of accepted facts and infers their most likely, or best, explanations. http://en.wikipedia.org/wiki/Abductive_reasoning
Acculturation	The process by which outsiders become immersed in the host culture
Baric	Baric consists of a number of languages spoken in Assam and falls into a Bodo branch (not to be confused with Bodic-Tibetan, and Bodish, a subdivision of Tibetic) and a Garo branch
Bicultural	A person who is bicultural has the ability to function effectively and appropriately and can select appropriate behaviours, values and attitudes within two or more cultures
Bimo	A Pumi priest or village intellectual
Biocultural diversity	Biocultural diversity is defined as "The diversity of life on earth in both nature and culture" (UNESCO, Terralingua , Worldwide Fund for Nature, 2003)
Chinggis Khan	It is likely that contemporary Mongols would have pronounced Genghis Khan more like "Chinggis". Chingis Khan is the spelling used by the modern Republic of Mongolia http://en.wikipedia.org/wiki/Genghis_Khan accessed on 10th April 2007
Chipko (movement)	From their origins as a spontaneous protest against logging abuses in Uttar Pradesh in the Himalayas, thousands of supporters of the Chipko movement, mainly village level women, have won bans on clear-felling in a number of regions and influenced natural resource policy in India. The name of the movement comes from a word meaning "embrace". The women practiced satagraha or non-violent resistance, and interposed their bodies between the trees and the contractors' axes, thus becoming the environmental movement's first tree huggers. http://www.iisd.org/50comm/commdb/list/c07.htm accessed on 10th April 2007
Cognitive mapping	Cognitive maps are a type of mental processing, or cognition, composed of a series of psychological transformations by which an individual can acquire, code, store, recall, and decode information about the relative locations and attributes of phenomena in their everyday or metaphorical spatial environment. Tolman (1948) is generally credited with the introduction of the term 'cognitive map'. Here, 'cognition' can be used to refer to the mental models, or belief systems, that people use to perceive, contextualise, simplify, and make sense of otherwise complex problems. Cognitive maps have

been studied in various fields of science, such as psychology, planning, geography and management. As a consequence, these mental models are often referred to, variously, as cognitive maps, scripts, schemata, and frames of reference

Cosmovision	Cosmovision refers specifically to the way in which the members of a particular culture perceive their world, cosmos or universe. It represents a view of the world as a living being, which includes not only natural elements such as plants, animals and humans, but also spiritual elements such as spirits, ancestors and future generations. In this view, nature does not belong to humans, but humans to nature. As the concept of cosmovision includes the relationships between humans, nature and the spiritual world, it describes the principles, roles and processes of the forces of nature, often intertwined with local belief systems (Slikkerveer, 1999) The study of cosmovisions requires a special research methodology to deal with 'extra-scientific' factors and variables that are often 'invisible' to outsiders, including variations along gender lines (IUCN/UNEP/WWF 1991)
Ecocentric (ecology)	In the early 1970s Norwegian philosopher Arne Naess began classifying ecophilosophers as either "shallow" or "deep". This typology was one of many then used to describe the difference between an anthropocentric (man-centred) and ecocentric (environment-centred) approach to ecology. In the early 1980s it rose to prominence, becoming the main way ecophilosophers are classified
Eco-imperialism	Eco-imperialism refers to the forceful imposition of western environmental views on developing countries. Eco-imperialism is said to occur when environmentalists place the well-being of the environment over the well-being of humans, particularly those living in developing countries
Ethnoforestry	Ethnoforestry is defined as the creation, conservation, management and use of forest resources, through continued practice of customary ways by local communities. Thus, it is specific and appropriate to each community and environment. http://www.ogiek.org/indepth/ethnoforestry.htm accessed on 10th April 2007
Ganzi (town)	Ganzi is the name of a Tibetan prefecture, a county, and a town located at 3,581 m on the banks of the Yalong River. Historically it was the most important town in the Trehor region and a centre of Tibetan nationalism
Green economist	Green economic theory generally favours local measures and localised grassroots institutions over global measures and paternalistic and elite-driven global institutions (See Cato and Kennett, 1999; Jacobs, 1993; Milani, 2000; Schumacher, 1973)
The Han (Chinese)	The Han (Simplified Chinese: 汉族 or 汉人; Traditional Chinese: 漢族 or 漢人; pinyin: hànzú or hànrén) is an ethnic group originating from China. As the ethnic group forming the majority of the Chinese population, it is the largest single

human ethnic group in the world, numbering over 1.3 billion people. The Han people constitute about 92% of the population of mainland China and about 19% of the entire global human population. There are substantial genetic, linguistic, cultural and social differences between its various subgroups, mainly due to thousands of years of regionalised assimilation of various ethnic groups and tribes in China. The Han are traditionally symbolised by the colour red.

The name Han comes from the Han Dynasty, which succeeded the short-lived Qin Dynasty that united China. It was during the Qin Dynasty and the Han Dynasty that the various tribes of China began to feel that they belonged to the same ethnic group, compared with other ethnic groups around them. In addition, the Han Dynasty is considered a high point in Chinese civilisation, able to expand its power and influences to Central and Northeast Asia

Hanification/hanhua	(cultural colonization by the Han). The term 汉化 hanhua, "becoming Han," usually rendered in English as sinicisation, implies both becoming ethnically and culturally Chinese but also invokes Han dynasty imperial precedents. Under Mao, the Chinese adopted an assimilationist policy of transmigration, or cultural colonialisation inspired by Stalin's policies in the Soviet Union. The aim was to settle the Han majority in minority areas to dilute ethnic groups, reducing sectarian sentiments and making the local people Chinese (hanhua)
Industrial forestation	This describes an exogenous state-led process which may include the planting or harvesting of individual trees and shrubs as well as plantations. It may also include, as in this case, the misappropriation of traditional grazing land and the social exclusion of local people
Knowledge Systems	The expression 'knowledge systems' is in the plural to signify that there are multiple ways of defining reality. This is not meant to evoke a multiplicity of domains of knowledge (such as economics etc.) but rather it refers to a multiplicity of communities of knowledge. From this perspective indigenous and modern communities embody different systems of knowledge, different ways of understanding, perceiving, experiencing, and relating to the social milieu and natural environment. Moreover the expression refers not only to knowledge self-consciously explicated but also to knowledge which is implicit in all action (Banuri and Marglin, 1993)
Kriging	Kriging is a method of interpolation named after a South African mining engineer named D. G. Krige who developed the technique in an attempt to more accurately predict ore reserves. Over the past several decades kriging has become a fundamental tool in the field of geostatistics. For more info see http://www.ems-i.com/gmshelp/Interpolation/Interpolation_Schemes/Kriging/Kriging.htm

Lhapa	Tibetan shaman
Multidimensional scaling	A set of related statistical techniques often used in data visualisation for exploring similarities or dissimilarities in data
Numina	A presiding divinity or spirit of a place
Pairwise comparisons	Any process of comparing entities in pairs to judge which of each pair is preferred, or has a greater amount of some quantitative property. Comparisons can be made using psychometric scaling: http://en.wikipedia.org/wiki/Pairwise_comparison
Paradigm	A constellation of concepts, values, beliefs, perceptions, methodological assumptions and practices shared by a community inscribed in a larger worldview which forms a particular vision of reality that is the basis of the way a community organises itself (Capra, 1997; Kuhn, 1970)
Place attachment	The emotional connection formed by an individual to a physical location due to the meaning given to the site as a function of its role as a setting for experience. A range of thoughts, beliefs, attitudes and behaviour as well as feelings are evoked through attachment to place. Thus, place attachment involves an elaborate interplay of emotion, cognition, and behaviour in reference to place
Scientific forestry	'Scientific forestry' emerged from the narrow commercial interests which viewed the forest only in terms of commercially valuable wood. It first reduced the value of diversity of life in the forest to the value of a few commercially valuable species, and further reduced the value of these species to the value of their dead product: wood. The reductionism of the scientific forestry paradigm created by commercial industrial interests violates both the integrity of the forests and the integrity of forest cultures who need the forests in its diversity to satisfy their needs for food, fibre and shelter (Shiva, 1993)
Territorial divinities	Territorial divinities (yul-lha) inhabit features of the landscape and are 'controlled' by a 'shaman/medium' (lha pa). The yul lha are protective deities associated with specific clans, who came under their protection, and who bestow honour (dbu 'phang) and blessing on the land, people, and political leadership (Diemberger 2002, Ma Lihua 1993).
Vision quest	A vision quest is a rite of passage in some Native American cultures http://en.wikipedia.org/wiki/Vision_quest
Wombling	In the analysis of spatially referenced data, interest often focuses not on predicting the spatially indexed variable itself, but on boundary analysis, that is, the determination of boundaries on the map that separate areas of higher and lower values. Existing boundary analysis methods are sometimes generically referred to as wombling, after a foundational article by Womble (1951)

Worldview	Worldviews are the collective communities of knowledge, cognitive frameworks and screens of perceptual consciousness that a particular society holds about their world and about reality, and by which they order their life experiences (Banuri and Marglin, 1993)
Xia	The Xia Dynasty (Chinese: 夏朝 pinyin: xià cháo; Wade-Giles: hsia-ch'ao), ca. 2070 BC–1600 BC of China is the first dynasty to be described in the Records of the Grand Historian and unofficial Bamboo Annals, which record the names of seventeen kings over fourteen generations. It lasted 431 or 471 years. The dynasty was preceded by the legendary Three August Ones and Five Emperors, and followed by the Shang Dynasty. http://en.wikipedia.org/wiki/Xia_Dynasty accessed 7th April 2007
Yul-lha	Territorial gods

Hearing a Different Drummer: A new paradigm for the "keepers of the forest"

It is becoming increasingly apparent that virtually all aspects of diversity are in steep decline. Indigenous knowledge systems, biodiversity and cultural diversity (three interacting, interdependent systems) are all threatened with extinction throughout the world. This book explores the diversity crisis from the perspective of forestry. It introduces an emerging vision, known as the endogenous realisation of aspirations (ERA), that attempts to enhance well-being and biocultural diversity by building on local or endogenous ambitions and dreams. Based on research in the Kham region of south-western China, the author offers some practical methods for allowing development professionals to develop an understanding of and empathy for the local cultures within which they work, as well as to identify and understand local forest concepts and values. He also offers some policy recommendations for incorporating this approach more widely into development practice.

How − and under what conditions − can diverse, localised food systems be sustained in the twenty-first century? Who gains and who loses when local food systems are strengthened? These are some of the questions examined by the *Sustaining Local Food Systems, Agricultural Biodiversity and Livelihoods* project.

This project combines a political ecology perspective on food systems and livelihoods with action research grounded in local practice. Research is done with, for and by people − rather than on people − to bring together many different ways of knowing and types of knowledge for learning and change. As such this action research seeks to bridge the gap between the academic orientation of political ecology and the largely activist focus of food sovereignty, human rights and environmental justice movements.

The *Reclaiming Diversity and Citizenship* Series publishes lessons from case studies in India, Indonesia, Iran and Peru along with findings from other studies linked with this action research project. Contributors are encouraged to reflect deeply on the ways of working and outcomes of their research, highlighting implications for policy, knowledge, organisations and practice. The *Reclaiming Diversity and Citizenship* Series also seeks to encourage debate outside mainstream policy and conceptual frameworks on the future of food, farming and land use. The opportunities and constraints to regenerating local food systems based on social and ecological diversity, human rights and more inclusive forms of citizenship are actively explored by contributors.

The research project and this publication series are co-ordinated by Michel Pimbert in the 'Sustainable Agriculture, Biodiversity and Livelihoods' Programme at the International Institute for Environment and Development (IIED). It receives financial support from the Netherlands Ministry of Foreign Affairs (DGIS).