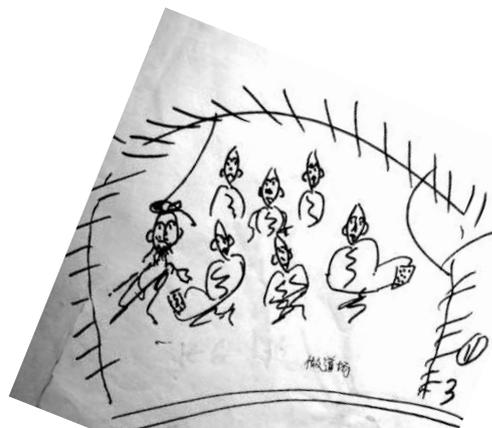


Indigenous Knowledge and Peoples (IKAP) Network on Capacity Building in MMSEA¹

Training-of-IKAP-Trainers The MMSEA Trainer Pool



Basic Concepts of Indigenous Knowledge

- 1. The Nature of Indigenous Knowledge**
- 2. What are the Main Characteristics of Indigenous Knowledge and its Differences from Scientific Knowledge?**
- 3. Knowledge System**
- 4. The Understanding of Indigenous Knowledge**
- 5. Diverse Systems**
- 6. How to Understand Indigenous Knowledge**
- 7. Indigenous Knowledge and Biodiversity**

**Authors: Dr. Maria A. Salas, Dr. Hermann J. Tillmann
Chiang Mai, May 2004**

¹ Mainland Montane South East Asia includes the mountainous areas of ethnic minorities in Vietnam, Cambodia, Lao PDR, Thailand, Burma and the provinces of Yunnan, Sichuan and Guizhou in the PR China.

1. THE NATURE OF INDIGENOUS KNOWLEDGE

Knowledge is a process of social construction of ideas about the external world that guide human action.

- **External world:** is what is outside the individual and social heads
- **Ideas:** are in the “heads” of individuals and in social “heads”
- **Guide to human action:** although the essence of knowledge is ideas in “heads,” it has a practical character that involves group efforts of cooperation

Knowledge is:

- **Process:** because it can never be completed nor is it final
- **Social construction:** is based in the social perception of reality, encoded in cultural categories communicated in a language shared by a group of people, and reproduced by knowers or an ‘epistemic’ community.

What is Knowledge?

Knowledge is “between your two ears”

Knowledge comes “from the heart”

Knowledge is a social construction

Knowledge is power

INDIGENOUS KNOWLEDGE

Indigenous knowledge is a concept that has several definitions in the context of contemporary theory and praxis related to development and conservation. If we look at the concept from a historical perspective, we are confronted with several questions: What is knowledge? What are the main characteristics of indigenous knowledge? What are the differences between scientific knowledge and indigenous knowledge?

KNOWLEDGE IS “BETWEEN YOUR EARS”

The first definition emphasizes the, mental, ideational, intellectual, and cognitive nature of knowledge. When we talk about knowledge, we are referring to ideas, perceptions and memories that a person captures about reality. There is no knowledge without persons who mentally perceive and interpret reality. Therefore we can definitively say there is no knowledge in the books. In order to study indigenous knowledge, we must interact with persons, face to face, and listen to how they express the contents of their heads. (Roeling, 1988)

KNOWLEDGE COMES “FROM THE HEART”

This definition refers to the fact that feelings shape ideas, perceptions and memories. A good example is the concept of emotional intelligence, which is the newest finding of social psychology and learning theory. It explains that what we know is a capacity from within, from our sensitivity to unravel problems emotionally and cognitively.

KNOWLEDGE IS A SOCIAL CONSTRUCTION

Although knowledge is a subjective understanding of the world (each person is able to perceive, think and feel ideas and memories), no one person alone possesses the complete

meaning of one topic. Knowledge is shared by an “epistemic community,” that is, each one of the social group knows something. This has an important research consequence that, in order to study indigenous knowledge, we have to recognize the existence of different members of a social or ethnic group who give different “versions” to a topic. Our task is to identify how these versions are generated, transmitted and used. (Long and Long, 1992)

KNOWLEDGE IS POWER

This definition refers to the fact that the ultimate goal of knowledge is to orient human action. Each person behaves relying on some ideas, values, perceptions and concepts that he or she selects. Another related issue to the power dimension of knowledge is the mobilizing effect of ideas in society. Think about what happens within groups when they agree about a revolution, peace, mediation, etc. and this is put into action.

SUMMARY

Knowledge is a subjective understanding, occurring in our minds. It involves ideas, perceptions, values, and feelings. The meaning of knowledge is socially constructed, and its ultimate goal serves to orient and guide human action.

2. WHAT ARE THE MAIN CHARACTERISTICS OF INDIGENOUS KNOWLEDGE AND ITS DIFFERENCES FROM SCIENTIFIC KNOWLEDGE?

If we look at knowledge as a cycle of generation, dissemination and use we have following differences between indigenous and scientific knowledge.

Indigenous Knowledge	Scientific Knowledge
<p>IK is locally rooted in the culture of a particular place. Since it is based on the experiences of living peoples, it is always changing, being produced or generated, as well as reproduced, discovered, lost, or recreated. IK is context-specific, therefore the efforts to transfer that knowledge to other places would mean dislocating it.</p>	<p>SK aspires to be universally valid a product of a culturally de-contextualized intellectual effort. It is generated in institutions like universities, international centers and is shared by the experience of researchers, professors, and academicians.</p>
<p>IK is orally transmitted, with the help of collective memory, encoded in stories, myths, legends, songs, and systems of classification of resources that are decoded by the members of the same “epistemic community.” Since IK is empirical and hypothetical, it is learned by imitation and demonstration. Therefore, documenting IK should be done in the codes and classificatory categories of the local language and culture and emphasizing the construction aspects.</p>	<p>SK is recorded in books and articles. Each discipline develops its own theories, models and specialized languages. For example, botanists and social scientists have their own terminologies for the phenomena they focus on and they use for the transmission of contents to students or other scientists. SK tends to be theoretical, abstract and esoteric.</p>
<p>IK uses metaphorical devices and repetition to assist in the retention of ideas. But at the same time new knowledge is added without conflicting with the basic ideas. When we study IK and use graphic representations or oral history to collect IK, it needs to be explained by the actors themselves, otherwise we misinterpret it.</p>	<p>SK aims for objectivity, in which judgment is based on observable phenomena and uninfluenced by emotions or personal prejudices of the observer. The ideas are demonstrated through logical argumentation and very often the paradigms change, for example , of conservationists versus developmentalists.</p>

<p>IK is socially differentiated. There is IK shared by the majority of the community, for example, the main periods to transplant the rice. This is common knowledge. There is a type of knowledge that is held by persons with very special experiences, for example women knowledgeable in NTFPs, or men who can determine the proper sites for constructing a house. In terms of knowledge generation there are significant differences in knowledge: old people recall some practices that young people don't know anymore. This is a specialist's knowledge. Finally some individuals in the local culture achieve a degree of coherence in rituals and other symbolic behavior and act as intermediates between the material and spiritual world. They are persons who possess sacred knowledge like the Bimo in Akha and Yi societies, or the Dongba in Naxi society, or the Lama among the Tibetans. We have to pay serious attention to this social differentiation of knowledge in the local communities when we study IK.</p>	<p>SK, as a social product, is also socially differentiated, but in other categories: for example you have at the universities, undergraduate students, post-graduate students and professors with long history of teaching. In a research institute one can find junior staff, senior staff, and experts who have a very deep knowledge about a disciplinary field. But no matter how deep the knowledge of an expert, the scientific knowledge never enters into the area of sacredness because since the beginning of modern science, scientific knowledge has been secular (non-religious).</p>
<p>IK is holistic, meaning that it perceives the technical as well as the spiritual, the material as well as the symbolic, the real as well as the unreal world. A good example is the Ying and Yang, a holistic concept that explains metaphorically causes that emphasize the complementarity of opposites. Therefore IK cannot be tested in scientific categories like right and wrong, cannot be measured in any quantities, cannot be separated as only technical, or only rational. One has to look within the IK's own system of explanations for the particular relations of cause and effect.</p>	<p>SK is analytical, meaning that the scientist, in order to understand a phenomenon, separates it into component parts. Each one is studied through methods that can give quantitative results but not a necessary or complete or articulated image of the functions that the parts have to each other.</p>

Source: (Havelock, 1986)

CONCLUSIONS

Indigenous knowledge and scientific knowledge are different systems of generation, interpretation and use of ideas, perceptions, and feelings about reality. But one is not superior to the other. *Both are equally valuable.* Study of indigenous knowledge requires awareness of our own knowledge in order to prepare to enter in a process of communication with local people. Communication means dialogue: exchange of ideas and perceptions to reach a common understanding.

3. KNOWLEDGE SYSTEM

Knowledge system here is used to characterise different ways of knowing in terms of four characteristics: epistemology, transmission, innovation, and power. (Marglin, 1991)

Epistemology is the first issue: how do we know what we know? Every system of knowledge has its own theory of knowledge, that is, its own theory of what counts as knowledge.

Transmission is closely related to epistemology. How do we go about distributing and receiving knowledge?

Innovation refers to the process of change: how does the content of what we (collectively) know get modified over time?

Finally, *power*: what are the political relationships between members of a community who make use, in greater or lesser measure, of the same system of knowledge? And how does a particular knowledge community relate to other knowledge communities?

4. THE UNDERSTANDING OF INDIGENOUS KNOWLEDGE

In order to understand how indigenous knowledge perceives nature and uses symbols to convey the meaning of what indigenous peoples know about their resources, we need to focus on three concepts that will help us to study indigenous knowledge. (Toledo, 2001)

Cosmos: How indigenous peoples' view of the universe explains their engagement with nature

Corpus: The repertoire of ideas and cognitive explanations about nature

Praxis: The set of technical procedures by which nature is conserved

I. COSMOS

In the cosmovisions of indigenous peoples—that is, a people's vision of the entire universe, both known and unknown—what we call natural resources, environment, land, or nature, are perceived in a particular way, as they are embedded in the most diverse meanings attributed by the cultures.

Nevertheless, we can find some common traits in the culturally diverse world on how indigenous knowledge understands nature:

- It is sacred: therefore it is worshiped, respected and honoured.
- It cannot be transferred other individuals or businesses: one cannot deplete it only for economic purposes without the risk of suffering sanctions. Therefore, the way that most indigenous people understand their relationship to nature is in terms of reciprocity, which means to take and return with a sense of equity and gratitude.
- It is to be nurtured: since it is the primary source of life that nourishes and teaches how to live.
- It is the centre of the cosmos: as nature provides material support, it is also the source of identity.
- It is a living being: as such, it is part of the social world together with animals, plants, and stones, and all living beings are in permanent communication.

Cosmovisions play the role of a regulating mechanism, translated in the customary laws and prescribing the culturally embedded rules on how to approach and use nature. Therefore it is important to pay attention to the origin myths, rituals, ceremonies and festivals as acts of negotiation among all living beings. They contain the rules by which human beings participate in the social as well as in the spiritual communities.

Indigenous cosmovisions are currently endangered due to sedentarization. In most of the nations, where indigenous peoples have conserved their resources, the states are relocating groups of people who lack local knowledge of the areas. These displaced groups are inflicting terrible degradation on local resources to which neither the indigenous peoples nor science have alternative solutions. Most dramatic examples are in the Sahel of Africa and the Amazon tropical forest of Brazil. Even in the Arctic circum-polar regions, global warming and chemical pollution originating thousands of miles away are devastating the environment and her indigenous Inuit communities.

II. CORPUS

All indigenous societies have a long history of direct nurturing (as opposed utilizing or exploiting) of resources that is deeply rooted in their cosmovisions. Each one has produced a set of particular and complex ways of interacting with nature (5–7000 cultures and languages), which constitute the wealth of cultural variability and biodiversity (90% of bio-cultural diversity in the world).

These particular and complex ways of perceiving, conceptualising and symbolizing the direct utilization of resources is stored in a collective repertory of ideas that guides the resource conservation practices in each indigenous society.

Some important traits of the corpus of knowledge that has nurtured the conservation of biodiversity are:

- It is **ecological**: Every single manifestation of life (water, air, stones, mountains, plants, trees, mushrooms and so forth) bears a special significance.
- It is **historical**: The corpus is transmitted orally from generation to generation by means of the collective memory, which is the most important intellectual and creative resource of indigenous cultures.
- It is **systematic**: The transmission of corpus is well structured. For example, the classifications of plants, animals, rivers, lakes, mountains and so forth are conveyed in bodies of topics known as ethnotaxonomies, which encompass utilitarian as well as spiritual criteria.
- It is **time bound**: The best examples are agricultural or resource-use calendars. They reveal the conception of time by which the cyclic, reciprocal interactions with nature take place, linking the sacredness of such human action (the rituals) with the practical uses (the technology).
- It is **accumulative**: It is also in the mind of some individuals who are not just knowledgeable but *wise*, because they synthesize personal and collective experiences in an outstandingly creative and powerful manner. They usually endowed with an exceptional long-term memory, like that of the Bimo, who can recall the names of ancestors extending more than sixty generations back.

A study of indigenous knowledge requires consulting these wise persons at least to obtain an historical perspective of the corpus of existing knowledge. A wise person of sixty can remember what he or she has received from the preceding generation (seventy years back).

This person knows what he or she shares with the present generation and is in the position of transmitting his or her particular experience to the members of the next generation (who will hopefully perpetuate this corpus another thirty years if they do not succumb to lure and threats such as introduction of genetically modified seeds, depletion of resources, and urban values). This means that a wise person of sixty years can provide us with a temporal overview of a knowledge span of at least 100 years. Seventy years into the past and thirty in the future.

III. THE PRAXIS

Indigenous peoples subsist basically from ecological exchanges (nurturing nature) and not so much from economic exchanges (with the markets). The exchanges with nature are guided by a corpus of knowledge that praises diversity. This is manifested in practical behaviour in following terms:

Multi-use of resources: Indigenous people have the capacity of transforming natural resources through integration of the different activities like agriculture, gathering, small-scale cattle raising, forest, collection, agroforestry, fishing, hunting, handicrafts, but with a clear vision of maintaining heterogeneity. That is why indigenous territories consist of a mosaic landscape of agricultural, swidden-fallow successional vegetations, grasslands, fish ponds, orchards, home gardens, and so forth. That is why most Indigenous territories look like a complex patchwork of agricultural fields, grasslands, ponds, orchards, home gardens and so forth. The multi-use of resources and multiplicity of engagement with the environment are possible due to the multiple objectives of indigenous people, which are expressed in their daily activities, agricultural calendar, life cycles and so forth.

Creation of mosaic-like landscapes represents a human-originated mechanism that tends to maintain and increase biodiversity. As a result of indigenous knowledge praxis, the areas where indigenous peoples exercise their indigenous knowledge, especially in their home gardens, agro-forestry patches and polycultural fields are the real genetic banks for humanity.

In the persistence of the praxis of multiuse one can interpret how indigenous knowledge is dealing with the monoculture orientation of the policy and the market which favour one cash crop, intensification of land use, plantations schemes, agrochemicals, etcetera.

Maximization of resources: Products and energy are recycled and not wasted. Indigenous peoples' households are a result of the generation of immense varieties of food (rices, potatoes, barley, wild vegetables, mushrooms), animals, domestic appliances, tools, herbal medicine, vegetable fibres for clothing, wool, housing materials like wood and tiles, and so on. In the praxis of maximization we can see how indigenous knowledge efficiently and sustainably utilizes all the available resources, often repeated recycling them, without great disturbances of the environment.

The major disturbances of local environments are caused by the introduction of a single dominant animal or plant species or production systems that rely only on the economic (market-oriented) strategy.

Self-sufficiency: Means that the indigenous praxis operate with low levels of input and high outputs. This mechanism of self-sufficiency is seriously affected by the commodification of livelihoods.

CONCLUSION

The concepts cosmos, corpus and praxis are inseparable in the analysis of human behaviour. They are helpful for researching and understanding the complexity of meanings expressed by indigenous knowledge. In the last thirty years, botanists, ecologists, anthropologists, and

linguists have stopped merely collecting descriptive data that does not explain the principles and the ways in which ideas orient human action. With the help of these three concepts, science has evolved to produce significant fields of study like Ethnobotany, Ethnoecology, Ethnobiology, Ethnogeography, Ethnotaxonomy and Ethnomedicine. These fields all share the prefix 'ethno', which means 'people' or 'cultural group', stressing the exploration of how nature (plants, landscapes, life, geography, classifications systems and medicine) is mentally constructed from the point of view of indigenous knowledge, and how indigenous peoples represent their use of resources in their cultural images and symbols.

5. DIVERSE SYSTEMS

Indigenous Knowledge (IK) is distinct from cosmopolitan, urban or scientific knowledge in that the people who generate and use it belong to rural societies with long established, intimate relationships with their local environments and ecologies. It cannot be simply called traditional because the word 'traditional' connotes a prejudice of conservatism and resistant to technological change. Indigenous knowledge should be recognized as consisting diverse systems of generation, transmission and use, with epistemologies based on their own scientific principles built up through thousands of years of empirical observations and experiments of indigenous peoples.

CULTURALLY EMBEDDEDNESS AND LANGUAGE AS A VEHICLE FOR INDIGENOUS KNOWLEDGE

As diverse systems, bodies of indigenous knowledge consist of collective experiences accumulated throughout history and transmitted from parents to children within the frame of local cultures. The main vehicles for communicating indigenous knowledge are local languages, oral or written. Therefore, cultural expressions such as stories, songs, proverbs, music, dance, handicrafts, myths, values, and beliefs constitute the central focus of attention required to understand indigenous knowledge. Local languages contain concepts and names for everything they perceive in nature as classified and quantified within their own logical systems.

Akha (Hani)

For example, Akha (Hani) people from Xishuangbanna, in Yunnan, perceive themselves as part of the natural world in which everything has its own spirit. Certain forests are the home of spirits and therefore taboo for the Akha villagers. Collecting certain products, cutting trees, or hunting are forbidden in four types of forests identified as sacred:

- *Lawbyum*: the burial hill forests where the ancestors live
- *Puchan*: the village protecting forest belts that separate the human world and the spiritual world
- *Misan-sanchu*: the virgin forests where the Earth Spirit lives
- *Nejawdu*: the sacred sites where various spirits live

(Pei Shengji and Luo Peng 2000)

In IK-action the cultural dimension of knowledge is taken into account. This means that, in order to jointly plan protective measures of the forests, it is necessary to include Akha (Hani) conceptualizations, their ways of perception and classification of the forest.

Naxi

Another case that illustrates how knowledge is embedded in culture comes from the Naxi people in Lijiang. Most communities conceive the relationship between nature and human beings as if “nature and humans were two brothers with the same father and different mothers.” The complexity of a spiritual linkage of all living beings in Naxi language is called Shu. From this idea, the Naxi people construct explanations about what the consequences of human behaviour are when one of the brothers starts to get greedy and cuts the trees or hunts too many animals, or if the fields are not cultivated properly. Improper utilization of the resources are like rivalries within the family and the cause of many disasters. The important value of taking only what is necessary from nature is broken. As a result, humans have to repay the debt to nature by engaging in certain rituals. Naxi people think of nature as a living being that deserves respect and care and should never be exploited. It is due to this cultural principle that Naxi people preserved the good condition of their relationship between nature and humans

(Yang Fuquan, 2000).

In IK the cultural dimension of knowledge does not play the role of a barrier or a superstition, it is the common ground to jointly plan future actions.

POWER

Indigenous knowledge also implies a relationship with mainstream society summarized in the questions of whose knowledge counts and who benefits from the use of knowledge. When local people make decisions about agricultural practices such as the use of their own rice seeds versus high yielding varieties, and relying on organic methods as opposed to applying chemical fertilizers, they are confronted with serious dilemmas. Each alternative implies different knowledge systems. Using their own seeds means reliance on the practice of selecting and reproducing the local races in plots that are ecologically adapted as the result of hundreds of years of collective experience. A decision to use High Yielding Varieties requires following the instructions of the seed company or the extension services of outsiders whose knowledge lacks awareness of the local conditions. It implies submitting not only to a market orientation in order to pay for the inputs from year to year but to a whole new structure of distribution and finance controlled from the outside with values, needs and objectives vastly divergent from local ones. If we look at who benefits from the use of chemicals as opposed to organic practices, we can clearly see that it is the chemical industry and associated marketing and finance interests.

Firstly, the economic power of these companies and the hold it gives them over the lives of local peoples increases since the farmers have to apply more and more chemical fertilizers and pesticides to their plots once they start with these industrial inputs.

The labour of the local people, which once turned local resources into locally consumed use values, is replaced with high-value products for which local people must exchange their low-valued labour, such that their lives become engaged in reproducing the labour and capital represented by the chemical companies and no longer life in their own communities. Due to the unequal rate of exchange, it means a necessary transformation of the local community, expropriation of lands, transformation of the manner of production, usually accompanied by migration of the productive segments of the population out of the local area in search of low-paying and low status urban jobs, or worse.

Secondly, in the case of most flower and vegetable producers in Yunnan, the soil, water, air and people become contaminated. The seed resource loses its reproductive quality and

generative capacity—of not just life in the form of the plants themselves, but in the broadest sense of family and community—and people are confronted with environmental problems that endanger future agricultural pursuits. In summary, reliance solely on the products of scientific knowledge undermines indigenous knowledge, with the consequence of discrediting the associated life-style and culture, of dismantling the complex natural and human relationships referenced by this knowledge, and of generally disempowering of indigenous peoples.

IK AND IDENTITY

IK is not fossilized into traditions that are unable to change. It is related to cultural identity and is adapted to the self-definition of peoples. Cultural identity is alive; it reacts with multiple interactions in the wider society. As long as local people remain in their territories, with their own political institutions, customary laws and distinct cultures, their traditions will remain firm.

Yi

A good example of indigenous knowledge and identity is the case of Yi people from Chuxiong Autonomous Prefecture. They have a long tradition of plant worship. At least 21 species of flowers that grow in the forests of Yi communities are protected. They also have special festivals that are named by plants. The Day of Ma Ying Hua (*Rhododendron delavayi*) is the celebration of the Flower God on March 3, and the Flower Day on February 8.

These are just two examples of the rich calendar of indigenous festivals that Yi people follow in belief that flowers and other plants were their benefactors in the creation of human society. Every household has various *popos*—small human forms made with different plants placed on the wall of the kitchen. These represent their ancestors and are therefore sacred and inviolable.

As long as Yi people maintain their forests, where rich plant resources grow, their plant worship, a cult to their ancestors and their identity will remain firm. The knowledge of plant forms the basis of a tradition of protection by Yi communities. These plants support their identity and hence the preservation of the forests. Yi people would never deplete the flowers, something that would be tantamount to destroying their own identity, and thereby themselves

(Liu Aizhong, et al., 1997).

INTERACTIONS WITH NATIONAL SOCIETY

Indigenous knowledge is a product of a local context and is deeply embedded in the local culture. Any cultural transmission from indigenous peoples to national societies has to involve the free and informed consent of the former and the openness of the latter. This requires mutual respect and understanding and cannot occur while feelings of inequality persist between the two types of society. An example is the scientific polemic about the sustainability of swidden agriculture that is derogatorily referred to as ‘slash and burn’ and therefore considered as environmentally unacceptable.

Without a process of mutual assessment of the complexity of advantages and disadvantages of swidden agriculture and the assertion of political power, many agricultural institutions simply censure this agricultural practice. For indigenous peoples, swidden, which is also known as both ‘shifting cultivation’ and ‘forest fallow’, is part of a repertoire of sophisticated techniques that have made sustainable rotational agriculture within the forest possible for millennia.

IK IS HOLISTIC

Concepts such as technical and aesthetic, economic and spiritual or landscape, lands, earth and territory are arbitrarily distinguished as separate components for an allembicing notion of territory. In the same way that indigenous territories are extremely diverse, so are the collective relationships that bind peoples to a territory. Thus knowledge, territory and identity, as are peoples, are interrelated. Knowledge therefore cannot be separated from the human and natural environment.

Dai

The Dai people's knowledge illustrates another example of indigenous conceptualisation that expresses the interrelationship of human beings and nature. They understand that the world where life takes place consists of five major elements: forest, water, land, food and humans. They perceive the forest as the cradle in a chain of reciprocal relationships: water comes from the forest, land is fed by water, and food comes from the land that is fed by water and rivers. The forest supports human life, and the forests are one with the supernatural (Pei, 2000).

In the past, this way of thinking has contributed to the protection of mountain forests in Dai territories. However, in the last two decades, externally driven development along with a fragmentary approach to nature is seriously impacting the human-nature balance among the Dai. Modernization privileges the market economy other forms of social integration, leading to invasion of more natural forests by cash crops such as cardamom or rubber trees. The chain of reciprocal relations as part of the holistic knowledge of the Dai culture is being threatened because economic goals do not provide sustainability within indigenous society.

CHANGE AND CONTINUITY

Indigenous knowledge is not just a fixed set of abstract classificatory rules. It has developed from a multiplicity of activities and long-term observation that are largely tacit and which embody a multitude of skills and practicalities. Therefore it cannot be understood according to a set of rigid prescriptions. On the contrary, far from rigid, indigenous knowledge is constantly being updated and changed. If these changes take place within a framework grounded in indigenous institutions and customary legal systems, they lend to cultural continuity. Even the impact of externally driven change shows the flexibility of indigenous knowledge.

Kucong

For example, the Kucong, officially named Lahu, in Jinping County have been and continue to be culturally hunters and gatherers.

They are adapting to new conditions in terms of their livelihood and their knowledge, building new abilities relying on protective practices but recreating them in a new form. Since 1957 they have faced significant changes with their resettlement from their pristine forests to a sedentary life style in villages in which they cultivate rice paddy and upland maize.

The Kucong have been forest dwellers for generations, accumulating extensive environmental knowledge on the uses and conservation of the mountain forest resources. One basic principle of Kucong knowledge is to conceive the Xilong Mountain as sacred since the gods of nature live at the top. According to their customary law, this area has been excluded from hunting, collecting plants, wood

fuels and stones. Kucong people believe if they protect the habitat of the gods they will be protected from natural disasters and social damages.

The Kucong have mountainous origins in altitude ranges between 1,090 and 3,074 meters above sea level. Their area represents one of two mega-biodiversity areas of Yunnan Province due to the complex geographic and climatic patterns. It can be said that there are different seasons at different elevations on the same mountain, and two adjacent sites have different weather. Before the resettlement, Kucong life relied on the direct use of forest resources from where they obtained adequate and diversified food. Migration in these diverse landscapes correlated with swidden agriculture and was socially organized on the basis of the *ka*, a kinship independent unit.

They practiced “silent trade,” that is, leaving collected products along the road and hiding them in the forest for exchange with outsiders’ crop products.

At present, Kucong livelihood as hunters and gatherers seems impossible. They lead sedentary lives in villages located in the middle zones of the Xilong Mountains and their territories have been reduced to agricultural plots. Their access to the forests is limited by the rules of the Xilongshan Nature Reserve Forest Management.

In spite of these externally driven changes of life conditions, Kucong people have re-created the rules of agricultural production according to their collector’s mentality. Rather than conform to rice and maize cultivation with the technical help of the local government extension, they are combining terracing learned from Hani people and shifting cultivation, which they have always practiced. In this way they supplement the low outputs of the official rice and maize cultivation. They have added cassava and other vegetables to the swidden fields. In order to increase the biodiversity they once enjoyed, they also engage in home gardening. The Kucong cultivated gardens are not as diverse as the natural forest in which they once had their homelands, but they are recreating a comparable landscape with fruit trees and vegetables. Kucong healers are trying to recover some endangered medicinal plants by growing them in their home gardens. The hunting activities and the collection of forest products like wild vegetables, nuts and medicinal plants have shifted from a subsistence orientation to cash income generation. Since the Kucong have lost access to the high forest areas they perceive as “sacred mountain,” this rich indigenous reserve has been replaced by the *mikaisjie* or sacred grove. Many Kucong villages have their own sacred grove nearby their villages, where they practice ecological knowledge, protecting and worshipping these small areas in order to be protected by the gods of nature.

(Huai Huyin, et al. 2000)

INDIGENOUS SPECIALISTS

Indigenous knowledge is communicated as experiences gained by the ancestors to subsequent new generations. This temporal transfer of collective experiences is rooted in practical activities as well as oral languages, written heritages and other symbolic forms of representation. All members of the community—elders, women, men and children—are integrated through local practices and languages and share various kinds of knowledge for securing their livelihoods depending upon social position. Besides the gender and generational differences due to roles and tasks in society, there are levels of specialization according to access, use and types of knowledge.

Akha (Hani)

Among the Akha people of Mingsong, Xishuangbanna, all villagers, men, women, elders, and youth share a basic understanding of the practice of land use in an ecosystem that varies from 800 to 2,000 meters above sea level. Boundaries between production zones are easily distinguished, including paddy field terraces, swidden fields, agro-forestry tea gardens, community protected rattan forest (*Sangpabawa*), home gardens, forest for timber and firewood and water source forest. Individuals within the community who have a deeper understanding of swidden fields can identify over 155 species of plants used for crops, medicinal, recreational and religious purposes. Other individuals who have greater knowledge about seed conservation are able to cultivate home gardens containing at least 227 plant species. Yet others are talented in forecasting weather, plant and animal identification, and so forth. Social recognition of these indigenous specialists make them reliable partners in participatory processes.

In local communities there are other types of knowledge that are not equally shared by all members. It arises from revelations received from the spiritual world. Indigenous peoples who practice these types of knowledge are also specialists, but in the sense that they use methods quite distinct from those of western scientific methodology.

The division between technical and spiritual knowledge is difficult to distinguish, because these specialists do not make such a distinction.

Continuing with examples from Akha culture, the community protected rattan forest *Sangpabawa* until 150 years ago with regulations shared by all villagers. The eldest of the clan, the priest or *Boemo* and the village leader or *Zoema* establish the appropriate time and quantity of the harvest. During the swinging festival, which takes place in July after the transplanting of rice seedlings, Akha people celebrate the beauty and the best qualities of their knowledge. The *Boemo*, a man with an extraordinary memory, capable of recalling the names of male ancestors going back sixty generations, recites ancient oral traditions regarding the origins of the Akha. He brings the past (the world of the ancestors) into the present (this world) by remembering the origin of the *Yailkuqq*, the swinging festival.

(Wang Jianhua, 2000)

Indigenous specialists possess a domain of knowledge with particular tasks that go beyond the technicalities of forest management. The knowledge practiced by indigenous specialists provides material and also symbolic and ritual needs of local people and very often falls into the realm of secret and sacred knowledge. The knowledge of these specialists, sometimes called shamans, has the general function of maintaining stability and harmony in the relationship between nature and humans. Dealing with such indigenous specialists, requires not only an equal-to-equal relationship but also an intercultural approach based on a special attitude of respect and admiration for the rituals and the meaning of the cosmovisions or local philosophies in which they are embedded.

A shaman is an intermediary between the human and the spirit worlds. He or she is a common person in daily life but on certain occasions achieves psychic states, due to praying, dancing or other means. Shamans are able to foresee the coming rain, dream about the time of harvesting, obtain revelations from the spirits regarding use of forest resources, or conduct ceremonies against evil spirits affecting crop production. Many shamanistic practices

concentrate on recuperating health, including insects, animals, and humans. They re-establish harmony at all levels of manifestations of life.

6. HOW TO UNDERSTAND INDIGENOUS KNOWLEDGE

WE ARE OUTSIDERS

The above explanation about the nature of indigenous knowledge should make it clear that by supporting IK means dealing with *three interacting interdependent systems* that represent a survival value to indigenous peoples: *knowledge, culture and biodiversity* (Louise Grenier, 1998). That indigenous knowledge meets subsistence, health, trade, ritual and spiritual needs of local peoples makes it fundamentally different from our knowledge. Indigenous knowledge has its own dynamic processes based on creative, innovative and experimental approaches to the local environment.

In spite of this, indigenous knowledge is not an isolated system. Essential components of indigenous knowledge are products of external relationships with neighbouring communities, including non-indigenous people or “outsiders.” The latter is a complex topic with historical roots in encounters between peoples, in which one group, the civilizing centre, interacts with other groups (the peripheral peoples) in terms of a particular kind of inequality (Harrell, 1995).

This legacy is still in evidence. Nowadays, social, physical, biological, agricultural scientists, development agents, government officials, non-governmental practitioners and others—the so called non-rural outsider actors—are interacting more frequently with indigenous and tribal peoples, and ethnic minorities or farmers in the context of development action. Many outsiders ignore or belittle indigenous knowledge, portraying it still as primitive, static, superstitious or folkloric. Due to racism (knowledge is superior based on skin colour), ethnocentrism (believing ones cultural categories are the only true and correct ones) or blind modernism (modern technology will solve all the problems of humankind), outsiders neglect or are sceptical of the value of the contributions indigenous knowledge can make for humankind. They engage in development work within the terms of mainstream policy, irregardless of and at the expense of local techniques, specialists, cultures and languages, accelerating the extinction of local plants, animals and ecosystems.

The impacts of externally driven technical and economic solutions in local communities undermine the sustainability of the rural world and the integrity of the earth’s biosphere. They diminish local people’s self-confidence in their knowledge capacity to deal with natural resources and undermines their self-esteem and ability to help themselves. It produces a vicious cycle of prejudices that say local people need to depend on external solutions to solve their local problems.

Knowledge: socially constructed concepts and practices that guide different human approaches to living

Culture: the process of creating and attaching diverse meanings to human action

Biodiversity: all living organisms, their genetic material and their ecosystems modified and conserved by knowledge and cultural action

By engaging in an interaction as conscientious outsiders, we can enrich our understanding of indigenous knowledge by gaining awareness of our own categories of knowing, perceiving and believing. This occurs when we interact with local people at a deep human level allow their answers to become mirrors to ourselves. We can learn a new meaning of our scientific principles, of our own cultural heritage, and of values attached to biodiversity.

DIALOGUE BETWEEN DIFFERENT KNOWLEDGE SYSTEMS

Another basic premise to understanding indigenous knowledge for development action is to recognize that if local people can situate indigenous knowledge within the own culture's framework of meaning and tradition of biodiversity conservation, indigenous knowledge has the full capacity to creatively transform and use information in new circumstances.

From assessment of approaches based on unilateral transfer of technology, we learn that diffusion of external knowledge becomes threatening to local livelihoods when people are unable to visualize and decide, both practically and conceptually, about the benefits that the new knowledge brings. In the process our role is to create a bridge of understanding between our knowledge and indigenous knowledge in order to improve and guarantee the continuation of local life in a global society.

There is a growing awareness of indigenous people's demands to be heard in development decisions on the basis of a dialogue—that is, the process of reaching understanding between subjects of different knowledge heritages on a basis of equality. Understanding this implies a personal way to interpret meaning. In the dialogue between different knowledge systems for development action, there is no neutral point of view or collection of real facts. To be able to understand other knowledge requires openness of mind, empathy and awareness of our mental frames, and furthermore “we should always accept that the other party could be right”. (Dhamotharan, 2000)

Strengthening IK goes beyond the technocratic transfer of technologies. It is a long-term interaction between knowledge systems involved in the generation of creative and ecologically sound models to address the use and nurturing of natural resources.

KNOWLEDGE ABOUT AGRO-BIODIVERSITY

At the beginning of the twentieth century, China was among the most productive lands in the world using mainly Chinese agro-technology. The yields in terms of rice and wheat and the quantity and diversity of vegetables met the needs of a dense population. Intensive, highly diversified agriculture based on the recycling of nutrients and organic raw materials (what scientific people call ‘wastes’) was the most outstanding feature of Chinese farming systems that provided sufficient food and a balanced diet to the large majorities. Natural catastrophes sometimes caused poverty and starvation, but mostly it was rapacious elites, corrupt officials, soldiers and bandits within the context of colonial dismemberment of the country rather than agricultural inadequacies that were to blame (Anderson, 1998; Lippit, 1974; King, 1911).

Chinese farmers based their agricultural practice on a long and shared experience with concepts of biological chains (what is now labelled organic farming) complemented by dedication and devotion to their lands. Farmer specialists practiced an intense care in the choice of cultivation sites, taking into account the elements of wind and water (*feng shui*). Groves of trees protected the villages, and measures against landslides and floods were part of the rural landscapes. Special agricultural knowledge and wisdom based on customs and a shared empirical basis were efficiently applied to take advantage of the resources. Rural Chinese people utilize an immense number of elements in nature and include many natural products in their diets: flowers, mushrooms, ferns, insects, dogs, cats, and internal organs, to name a few, that for the most part the rest of the world refuses to eat.

A special trait of Chinese agriculture is that much of the agrobiodiversity developed in their diets is due to the traditional medical cultures entailed by diverse models of understanding nature. Foods are generally eaten to maintain balance in the body and mind. The theoretical principles of health and harmony (the yin and yang theory) have evolved hand in hand with agricultural knowledge for more than 4,000 years as part of innovative eras in the Chinese history of science.

Nowadays, intrinsic to agricultural knowledge systems in China, we find that the logic and the practice of biodiversity conservation is a twofold biological and cultural process, especially among ethnic minorities. They have preserved at least a reasonable proportion of tree cover (Anderson, 1988), and due to their nurturing approach to nature we can clearly establish a correlation between ethnic inhabited areas and biodiversity hot-spots.

We therefore recognize the contemporary holders of knowledge about biodiversity—farmers, ethnic minorities and indigenous people—as innovative partners in the joint construction of a vision of global sustainability harmonizing the needs of local economies and the environment within a framework of equity, justice and cultural diversity.

7. INDIGENEOUS KNOWLEDGE AND BIODIVERSITY

FROM THE YUNNAN INITIATIVE 2000

The Yunnan Initiative calls attention to the decline of biodiversity and the threats that local and indigenous cultures face as they strive to sustain and nurture their diverse eco-cultural landscapes in which they live and on which they depend. Among the most powerful contemporary forces contributing to the decline of cultural and biological diversity are the expansion of global markets and unsustainable development policies.

Participants of the Cultures and Biodiversity Congress, held in Yunnan Province, China, from 20 July through 30 July 2000, drew up “The Yunnan Initiative,” which identifies not only principles and potential actions but also an overall vision to enhance the ability of local groups—acting alone or in collaboration with other local groups, non-government organizations (NGOs), government or business—to strengthen their evolving cultural traditions while finding innovative solutions for improving their livelihoods and conserving biodiversity. The Yunnan Initiative acknowledges the importance of agrobiodiversity as a resource for local and indigenous communities.

The Yunnan Initiative supports the strong link between cultural and biological diversity as expressed in the Declaration of Belem, the Kunming Action Plan, and the Code of Ethics of the International Society of Ethnobiology. The Yunnan Initiative also endorses the Convention on Biological Diversity (CBD) in its recognition of the necessity for respecting cultural and spiritual values to achieve sustainable development and the central importance of local communities in the *in situ* conservation of biodiversity.

The Yunnan Initiative outlined in the following section recognizes the leading role that local cultures have played in creating and maintaining biodiversity. It also stresses that this linkage is under threat from many directions, including various government policies and programs as well as commercial activities that reduce local rights to and responsibilities for natural resources. While recognizing that some local cultures are more resilient than others, the Yunnan Initiative reflects an optimism that many local groups can continue shaping and strengthening both their cultural and biodiversity heritages when appropriately assisted by the non-government, government and commercial sectors of society to ensure an equitable and sustainable stream of benefits. Collaboration among these groups that involves participatory processes and utilizes both local and scientific languages and knowledge is essential.

PRINCIPLES

1. There is an *inextricable link* between cultural, language and biological diversity that emerges from historic ties to land and territory

This means that language is essential for the transmission of traditional ecological knowledge which is central to ethnic identity and well-being. Knowledge and culture are anchored to land

through sacred, historical and heritage sites, many of which may define territories that extend beyond current areas of habitation. These sites may actually provide the spiritual source for knowledge.

2. *Life is part of a whole that is lost when reduced to mere “components” for human use or commercialization*

This means that knowledge or genetic resources cannot be removed from local communities without breaking their spiritual and holistic links with the culture and land.

3. *Knowledge, innovations and practices of indigenous and local communities are essential for effective *in situ* conservation of biodiversity*

Traditional knowledge is, by its basic nature, dynamic and innovative. This essential point is recognized in Article 8.j of the Convention on Biological Diversity (CBD), which calls for the wider use and application of knowledge, innovations, and practices of indigenous and local communities that are relevant to the conservation of biodiversity. Although the CBD precariously implies that traditional resources can be treated as “components” that can be removed from their cultural contexts, it nonetheless provides a powerful political basis for empowering indigenous and local communities.

4. *These knowledge, innovations and practices are mostly *collective* (community, gender, lineage or specialist sub-groups) and may have sacred or heritage values, making them inalienable treasures with ancestral or spiritual dimensions*

Knowledge is collectively held, but not always at the community level; its guardians may be different sub-groups within a village or larger units of the ethnic group. People are likely to be the stewards of traditional resources rather than owners; therefore, sale or transfer may not be possible.

5. *Effective use of knowledge, innovations, and practices depends on local participation and collaboration through partnership and dialogue, which require *equity of power relationships**

This means that true dialogue can only occur between equals. If equity does not exist, then dialogue will not occur and partnerships are impossible. Thus, equity of power relationships must be established before any advances can be made; this may require significant changes in land and resource rights, as well as capacity-building, training, education, and greater access to legal and political mechanisms.

6. *“Enhancement” of local communities depends upon development of *adequate mechanisms* for benefit-sharing, capacity building, and protection (of the “*inextricable link*”)*

Equity of power relationships may have to be established through the development of skills and experiences that provide local communities with effective means of communication and access to legal and political means. They must also reap unequivocal benefits from their collaboration with outside agencies, institutions and individuals.

7. *Planetary survival depends upon the effectiveness of *human actions* now*

Increased erosion of biological and cultural diversity will contribute to global environmental economic and social instability. This means that those who ascribe to this strategy must become *proactive* in the promotion of its Principles and Actions in ways that are culturally and political appropriate for their nation, region, and locality.

The following additional principles emerged from the group presentations. They present a more detailed intermediate position between the above normative principles and those principles which guide actions. Indigenous communities are dynamic, learning organizations of diverse people with the normal human tendencies toward conflict and its resolution and toward adaptation to external influences. Moreover, communities vary greatly from one to another in how they are structured, what they value and need, and how they resolve conflicts and adapt to change.

- Diverse ecosystems, cultures, languages, skills and products are tremendous resources in a global economy, and controlling their exploitation and degradation is an important national investment. Indigenous communities have earned legal rights to values they have created. They deserve the empowering awareness of the unique value of their knowledge, skills, landscapes, and ways of living.
- Governments and markets need diverse cultures and natural systems. They typically homogenize communities, cultures, languages and natural systems to facilitate control through uniform actions, expectations and rules, a process they see as 'rationalization'.
- The result is destruction of diversity and the well-being it provides, establishment of uniform policies that actual diverse behaviour will breach, or valuation of uniform products, skills, and knowledge so as to encourage relative simplification and depletion of natural and cultural systems.
- There is a need for strengthening the means to protect and encourage cultural and biological diversity, despite pressures for homogenization, and to translate the benefits of diversity so as to change these pressures to favour rather than undermine diversification. Such means include the full representation of diverse cultures in settings that permit open and equal interchange with dominant cultures; opportunities for market protection, influence, and fair benefit for distinctive products, skills and contributions; the diversification of landscape uses, reserves and species composition; and functioning processes of fair adaptation and conflict resolution from village to higher levels of governance.
- Successful policies are formed through the full and fair engagement of all parties they affect.
- Bridging institutions—learning, scientific and mediation centers, for example—facilitate and diversify relations between communities, governments, and markets.
- Equalize the valuation of knowledge systems and cultures and build modes of transcultural change to achieve new and mutually beneficial syntheses. The integrity and well-being of communities grows with their capacities to understand their own special resources, abilities, and landscapes and to act in ways that use their special qualities to best advantage. Scientific capacities are needed to understand and use traditional systems of explanation and to work with communities through an emerging meta-language and methods of collaborative science. Governments need capacities to work with and enhance diversity and to gradually replace uniform prescriptions with policies that seek and benefit from diverse responses.
- Mass media offer means to advance regard for cultural diversity and biodiversity and to build the community confidence, knowledge and resources that help villagers to advance practices and achieve policies to sustain them.
- Seeds, symbols, ceremonies and systems of livelihood and landscape embody the historical experience and collective knowledge of a people.

- Tourism, as well as science, should be developed only as a mutual opportunity for exchange, learning and benefit between hosts and guests.

Bibliography

- Dhamotharan, Mohan 2000. **Diversity and dialogue**, in: Links between Cultures and Biodiversity. p. 735 – 749, CBIK, Kunming,
- Grenier, Louise 1998. **Working with Indigenous Knowledge. A guide for researchers**. IDRC, Ottawa
- Harrel, Stevan (ed.) 1995. **Cultural Encounters on China's Ethnic Frontiers**; Seattle and London.
- Havelock, Ronald G. 1986. **The knowledge perspective: definition and scope of a new study domain**, in: Beal, George M., Dissayanake, Wimal, Konoshima, Sumiye. 1986 Knowledge generation, exchange and utilization, pp. 11-34. Westview, Boulder/London.
- Huai Huyin, Xu Jianchu and Pei Shengji. 2000. **Ecological Conservation Practices and the Cultural Adaptation of the Lahu and Hani in Jinping**, Yunnan, China. In Links between Cultures and Biodiversity. Proceedings of the Cultures and Biodiversity Congress 2000 20–30 July 200, Yunnan, P.R. China, Xu Jianchu, ed. pp. 934–940. Kunming: Yunnan Science and Technology Press.
- King, Franklin Hiram. 1911. **Farmers of Forty Centuries or Permanent Agriculture in China, Korea and Japan**. Madison: Mrs. F. H. King. Electronic document: <http://www.soilandhealth.org/01aglibrary/010122king/ffc.html>,
- Long, Norman, and Ann Long, eds. 1992. **Battlefields of Knowledge: The Interlocking of Theory and Practice in Social Research and Development**. London: Routledge.
- Lippit, Victor. 1974 **Land Reform and Economic Development in China**. New York: International Arts and Sciences Press.
- Liu Aizhong, Qian Jie, Pei Shengji, Chen Sanyang. 1997. **Plant Worship and Sacred Groves among the Yi People in Chuxiong of Yunnan, China**. Ethnobotany 11 (1): 1–8.
- Marglin, Stephen, Frederique Apffel Marglin. 1990. **Dominating Knowledge: Development, Culture and Resistance**. Oxford: Clarendon Press.
- Pei Shengji, and Luo Peng. 2000. **Traditional Culture and Biodiversity Conservation in Yunnan**. In Links between Cultures and Biodiversity. Proceedings of the Cultures and Biodiversity Congress 2000, 20–30 July 2000, Yunnan, P.R. China, Xu Jianchu, ed. pp. 143–153. Kunming: Yunnan Science and Technology Press.
- Prain, Gordan, Sam Fujisaka, and D. Michael Warren. 1999. **Biological and Cultural Diversity: The Role of Indigenous Agricultural Experimentation in Development**. London: Intermediate Technology Publications.
- Rich, Robert F. 1981. **The knowledge cycle**. Sage publications, Beverly Hills
- Roeling, Niels, 1988. **Extension science. Information systems in agricultural development**. CUP, Cambridge
- Toledo, V. M., 2001. **Biodiversity and indigenous peoples**. En: S. Levin et al. (Eds) Encyclopedia of Biodiversity. Academic Press: 1181-1197.
- Veldhuizen, Laurens van, Ann Waters-Bayer, and Hank de Zeeuw. 1997. **Developing Technology with Farmers: A Trainer's Guide for Participatory Learning**. London: Zed Books.
- Wang Jianhua. 2000. **Cultural Practices and Indigenous Knowledge of Swidden Cultivation in Mengsong Akha Community, Xishuangbanna, South Yunnan, China**. In Links between Cultures and Biodiversity, Proceedings of CUBIC, ed, Xu Jianchu, pp. 633–638. Kunming: Yunnan Science and Technology Press.
- Yang Fuquan. 2000 **Traditional Community Resource Management System of the Naxi People in Lijiang**. In Links between Cultures and Biodiversity, Proceedings of CUBIC, ed. Xu Jianchu, pp. 871–881 Kunming: Yunnan Science and Technology Press.