

Culture and Cosmivision: Roots of Farmers' Natural Resource Management

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Although natural resources conservation and management aim to improve situations in the ecosphere, it is crucial to understand processes and relationships in the sociosphere. The motives and beliefs through which people function are rooted in communities' culture and related cosmivisions. Throughout the world cosmivision have looked at the relationships between society, nature and the spiritual world as integrated parts of life. Many natural elements have a sacred meaning and people uses of nature, e.g., in agriculture and also astrology, are guided by traditional knowledge systems, beliefs, ceremonies and rituals. Traditional institutions have been assigned specific tasks in natural resources management Although many elements resulted in sustainable use of resources, these systems have not always had a Positive impact at social or ecological levels With globalization and changes occurring in the environment culture also change rapidly. However, it is argued that a thorough understanding of cultural roots, beliefs, traditions, and power relations is essential for the conservation and sustainable management of resources at community level. Adaptive management should take account of these elements, so that it is both culturally and ecologically effective.

INTRODUCTION

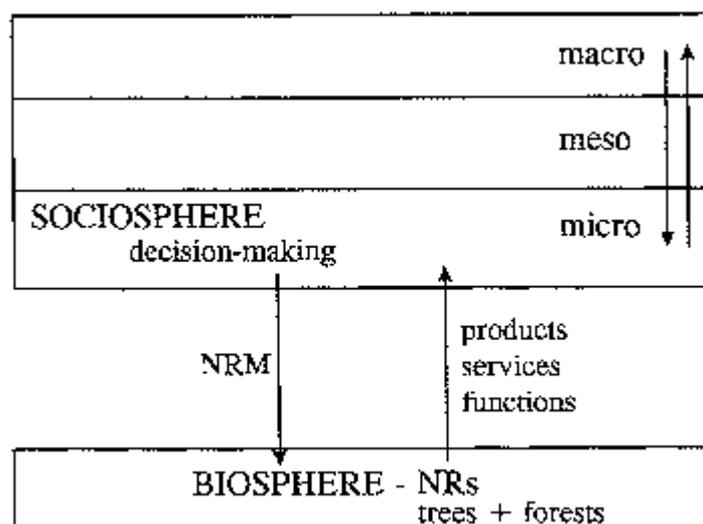
The focus of this paper is natural resource conservation and management. In this context I pay special attention to what culture and cosmivision mean for people's vision of natural resources, and what the implications are for natural resource management and decision-making. This paper aims to give a global view of the central issues of culture and cosmivision².

FRAMEWORK FOR ANALYSIS

Ultimately we deal with processes that are formed by and among people in the "sociosphere". Processes formed here should have a positive impact on processes (and products) in the "biosphere". Focussing on social actors in our effort to understand natural resources and management, we implicitly underline the fact that social processes, decisions, and actions are crucial factors in natural resource conservation and management.

The meso- and macro-levels also have a major impact on local level decision-making and power relations. I illustrate this relationship in Figure 1.

Figure 1: Interaction between the socio- and biosphere



Farmers are at the centre of the micro-level (see Figure 2). With their families, they constitute the communities at the local level. Each community is "embedded" in its specific culture, which is a product of the history of the community and encompasses its "cosmovision" (including spirituality), its knowledge systems, social Organisation, and its productive, day-to-day practices. Culture plays a major part in the vision (perception, spirituality), knowledge, practices, and positions of individual farmers.

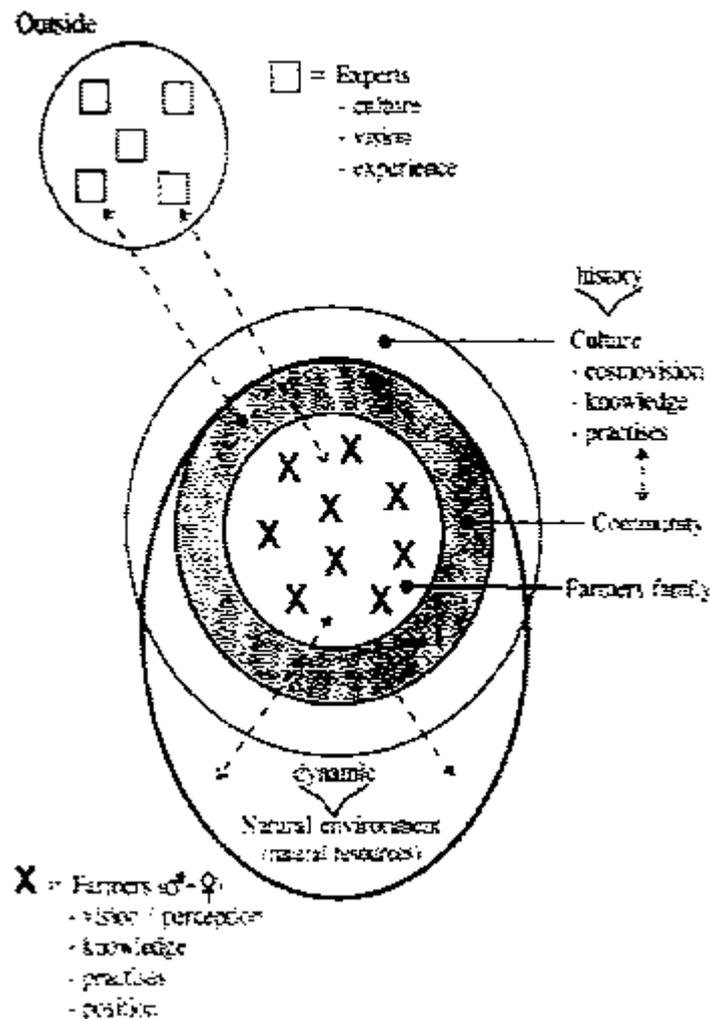


Figure 2: Farmers, culture and the outsider

This whole social complex acts within its physical environment (geographical location and natural resources base: Figure 1); an environment that changes over time, and with which local people, communities, and cultures interact in many different ways.

Some questions which can help our understanding of the dynamics in this complex picture are:

1. What does the culture have to say about natural resources, the environment, nature, and about natural resource management? How is that view expressed? How is decision-making defined by a specific culture?
2. What is the social position of the farmer (in decision-making) in the family, the community, and traditional institutions, and in relation to the meso- and macro-levels?
3. What is the vision, knowledge, and practice of the farmer regarding nature, natural resources, natural resource management, and decision-making?
4. What role do experts, as outsiders, play? What is the nature of the cultural (knowledge) bias experts bring?

Decision-making in natural resource management is a process that involves:

- Individuals.
- The community; and
- Society (in which the place of an individual or a community in the hierarchy determines the process of decision-making to a large extent).

Questions to be asked here are:

1. Who makes decisions and who does not - those within the hierarchy and institutions?
2. What decisions are made - contents, peoples' vision/ knowledge, cultural links?
3. How are these decisions made - process of decision-making and power relations?

CULTURE AND (COSMO)VISION

Although not directly visible to an outsider, in societies in the South (as well as the West and East) in which conventional western technologies, beliefs, and values have been accepted, one finds a persistent core of indigenous culture and indigenous knowledge below the surface (Reichel-Dolmatoff 1996). In decision-making by rural communities on natural resource management, cultural heritage remains a determining factor (Haverkort and Hiemstra 1999).

WHAT IS CULTURE?

Culture refers to the body of socially acquired traditions which already appeared in rudimentary form among mammals (especially primates):

"Many animals possess learned traditions that are passed on from one generation to the next and that could be seen as a rudimentary form of culture... It is only among the hominids that culture has become a primary source of adaptive behaviour, more important than bio-logical evolution involving changes in gene frequencies." (Harris 1980:35).

The great evolutionary step of culture is that the capabilities and habits of culture-bearing animals are acquired through social heredity rather than through the more ancient process of biological heredity (Harris 1980).

In 1873 Sir Edward Tylor stated:

"Culture ... is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society... laws of human thought and action..."

So both mental and behavioural aspects can be distinguished (Lessa and Vogt 1979). The geographer Peter Jackson defined cultures as *"... maps of meaning through which the world is made intelligible"* (Davis 1999).

No culture exists in a vacuum. Culture has a history, its own dynamics and context, both with its linkages to the physical environment and with other cultures. Culture is from all times and all places. It differs and changes continuously and in this respect, can be compared to a natural system, for example an ecosystem.

The world harbours a great diversity of cultural expressions, which are transmitted from one generation to the next. The vitality of a culture may be expressed, for example, in the state of its language. Throughout history about 10,000 spoken languages have existed. Today, about 6,000 languages are spoken, but more than half of those are unlikely to survive the next century (Dankelman and Ramprasad 1999).

Worldwide, some 300 million people still possess a strong sense of identity as members of an indigenous culture. There are at least 5,000 indigenous cultures in existence (Davis 1999) the people of which are asserting their

cultural identity and claiming their right to control their own futures. Not only are tools, diets, art, laws, language, and customs a manifestation of a specific culture, also present are visions of life and an understanding of the surrounding environment.

THE GLOBAL NATURE OF COSMOVISION

Cosmovision refers to the way certain populations understand life, the world, and the cosmos. The relationships between the social world, the natural world, and the spiritual world are central to people's cosmovisions. Cosmovision explains the ways in which natural processes take place and the roles played by supernatural powers. Philosophical and scientific premises are made explicit (Haverkort and Hiemstra 1999). Huizer (1999) describes it as a "*holistic awareness*", an inner civilisation from which we can learn.

For many rural, but also urban people throughout the world, their cosmovision still feeds many aspects of their life, including their spirituality, day-to-day actions, rituals, symbols and arts, food production, and relationships with nature and other community members. Cosmovision has a significant impact on the way people organise their lives.

Trying to understand people's cosmovision does not mean that we should romanticise it. There are positive elements in cosmovisions, such as their contributions to sustainable land-use, conservation, and wise management of resources, but there are also elements that can lead to social instability, inequity, or over-exploitation of resources. Whatever the effects are, cosmovision often forms an important (hidden) motivation for people's feelings, thoughts, and arts.

In India, the classical traditions as well as the popular or folk traditions are still very much alive. Generally they converge. Only occasionally do they diverge. The Vedic culture blossomed about 6,000 to 8,000 years ago. The Vedas are a collection of hymns, mantras, and prayers, written in Sanskrit, in which the sacred knowledge of the cosmos is communicated. The cosmos is seen as a great being, as a cosmic organism. The different parts of the world are identified as parts of her body. The primary natural elements, of all life forms (the *Pancha Mahabhutas*) are air (*vaya*), earth (*priti*), water (*jala*), fire (*agni*), and either sky or space (*akasha*). All living beings are born and evolve from these and return to these after their death. The Vedas see the world as a creation with a divine substratum. All creations are equal and are bound together by divine love. Humans have a particular responsibility, as they have been endowed with unique powers of discrimination, knowledge, and wisdom (Mahale and Sorée 1999; Sundar and Balasubramanian 1999).

In more traditional thinking the relationship between humankind and nature is central. No distinction is made between the sacred and the profane. Everything is sacred. It is every person's responsibility to live in partnership with nature. Many of these beliefs pertain mainly to agro-ecological practices. For several tribal groups, food crops like millet, rice, and grain are sacred, and a gift of the Goddess of the Earth.

In the Sri Lankan Buddhist tradition, at least eight different forces and powers are recognised:

- Power of the moment.
- Power of a specific location.
- Power of sound.
- Power of symbols.
- Mental powers of certain individuals.
- Power of plants (e.g., powers that go beyond the nutritional and pharmaceutical values).
- Power of place and space (e.g., where certain events have taken place); and
- Supernatural powers (e.g., spirits and divine beings).

It is not only important to understand these forces, but also to look for a balance and synergy among them.

In Ghana, Africa, the perspective is that there is a 'Triad' between the ancestors, the living, and the generations yet unborn. The universe has been created by the almighty God, who is represented on earth by many other Gods (earth God, rain God, tree Gods). Nature is a living being, with all parts interrelated and humanity as part of nature. Nature does not belong to mankind, but mankind to nature (Millar 1999a).

Essential elements of the Andean worldview are still alive and widespread. In the Andean cosmivision, the human, natural, and spiritual worlds are inseparable. They are in a constant dynamic interaction with each other. *Pacha* forms the central notion of life; *Pachamak* - the spiritual life; *Pachamama* - the material life, Mother Earth; and *Pachankamachana* - the social life (Rist et al. 1999; Zambrano et al. 1999).

DEITIES

All around the world people believe in the existence of natural and supernatural divine beings and spiritual forces: Gods, spirits, and ancestors. These forces can have a positive, creative power, which can help human beings and nature. Conversely, they can also be destructive or harmful. In India in most villages, the Gods and Goddesses of the Great Tradition are mainly worshipped by upper caste Hindus, while most village people honour their own village deities (often Goddesses), which ensure good crops, timely rains, fertility, and protection from diseases. In Latin America, symbiosis between the indigenous Gods and the Christian God and saints has taken place.

NATURE

*"We feel the Earth as if we are within our mother... To heal ourselves we must heal the Planet and to heal the Planet, we must heal ourselves... Our territories and forests are to us more than an economic resource. For us they are life itself and have an integral and spiritual value for our communities. They are fundamental to our social, cultural, spiritual, economic and political survival as distinct peoples"*³ (IAITPTF 1997).

In many cosmivisions nature, and all her constituents and products, is considered sacred.

The following is a list of examples of sacred items:

- Mother Earth - *Prithvi* and *Pachamama*.
- Sacred mountains and rivers (e.g., the Ganges).
- Trees (e.g., ficus, *mahua*, tamarind, mango).
- Plants (e.g., lotus).
- Crops (e.g., coconut).
- Animals (e.g., tigers, Indian bison, and cows, which are frequently taken to be a symbolic representation of the earth).
- Birds (e.g., peacock, pigeon); and
- Stones, caves, and rocks.

The sacred forests, which in India are known as *anum*, are inhabited by divine beings. Land and other natural resources are often seen as gifts of the God(s) to their ancestors of common property.

Ancient texts, such as the Indian Upanishads, emphasise the importance of trees. Tribal people believe that they are children of Mother Nature, and that she protects and guides them. In traditional Indian thought people were urged to adopt a 'live and let live' attitude, not only towards humans, but with all life (Shenoy et al. 1999).

In many parts of Africa, traditional philosophy has ascribed a sacred significance, especially to land. Femme Biligon, a Konkomba elder from North Ghana has stated:

"The common awareness that the earth we are part of has been entrusted to us and can in no way be considered as property or commodity to dispose of as we please (like the White man does) has always been deeply embedded in our traditional beliefs." (Millar 1999a).

Land is considered to be the property of the earth spirit and the giver of all means of life. An Ashanti chief in Ghana (Nana Sir Ofori Atta I) notes: "*Land belongs to a vast family of whom many are dead, a few are living, and a countless host are still unborn*" (Millar 1999a).

In several African regions large areas were demarcated as sacred. Sacred shrines and groves, woodlands and wetlands, were deemed spiritual habitats and the foundations of survival. The uses of these areas, such as grazing, hunting, felling trees, or collecting firewood, were strictly regulated (Gonese 1999a).

The people of the Peruvian Andes see themselves as sons and daughters of the mountains and as the brothers and sisters of animals, such as the condor and llama. The ritual relationship with *Pachamama* (Mother Earth) is still alive, as are traditional values such as joint labour for community purposes (*minka*) (Rist et al. 1999). People believe that potatoes have a spirit. "Spirit of the potato; this is your day; take care of the food; accept the alcohol and coca leaves" (Zambrano et al. 1999.) This kind of belief is common in indigenous societies (and historically, in early western societies such Greek society) in which the staple crop is the central focus of community life and is critical to the basic survival of the village.

ASTROLOGY, RITUALS, AND SYMBOLS

Not only does the earth and her creatures play an essential role in cultural spirituality, but so do the stars and planets. In the Vedas the Sun is seen as the soul of the universe, or the soul of time and the planets as reflectors or transmitters of light and solar energy.

Astrological observatories from thousands of years ago can still be found in Asia and Latin America (in Peru such observations are 3,500 years old) and the role of astrology is still prominent in many cultures. Astrological information is extensively used to determine the moments (days, hours) when different activities should or should not take place (cosmic influences). The astrological information guides social, natural, and spiritual activities.

Although they vary from region to region, a wide range of rituals are performed in order to please (or worship) the Gods and spiritual beings (deities). A ritual can be defined as a spiritual activity carried out in order to create the conditions for a certain material or social event people want to happen. Rituals are performed in all important social and productive activities, such as in agriculture and health practices. They have a protective, prohibitive, or promotional character offerings, or *poojas*, in India form important elements of the ceremonies.

Symbol, such as *Gondas* or chalk marks are used by *disaries* or *guniyas* to please evil spirits and to protect crops from humans, animals, and witch craft. Walls of houses also contain *gondas* that concern production systems, e.g., agriculture (Shankar 1999b).

KNOWLEDGE

Most of the cosmovision knowledge is taught to the young by elders orally. Much of that knowledge is preserved in the form of folk songs, proverbs, myths, and sages. Generally folk songs are mostly retained by village women, whereas the knowledge relating to the agricultural activities of men is often preserved in the form of dance and instrumental music. Instruments, such as the sacred drum and horn of the YaaGalbo in Kenya, are also used at special occasions by elders (Linguist and Adolph 1996).

Knowledge systems are important parts of local cultures. They are location specific, holistic, and relate to diversity. They can not be seen outside the context of the mode of production in which they function. Folk knowledge often reflects farmers' perceptions and understanding of ecology, crops, land, labour, and livestock, much of which is received from ancestors, and by experiences and strategies in day-to-day natural resource use and agriculture.

In the old Vedic traditions classical texts reflect scientific insights. The *Vrkshayurveda*, or Science of Plants gives a detailed description of different aspects of plant life. Nomenclature and taxonomy, collection, seed

selection, irrigation, testing of soils, (un)favourable meteorological conditions, and the use of plants as indicators (Sundat and Balasubramanian 1999).

For outsiders who have a background in the formal (natural) sciences, it is often difficult to understand the real meaning of indigenous knowledge. In most cases we see a mix of indigenous and outside knowledge systems. Some communities are influenced to a great extent, whereas others are still mainly governed by their traditions, which are not static, but change over time.

Indigenous knowledge is not, by definition, equally spread across communities. There may be some people within the community who monopolise, exploit, or misuse it.

AGRICULTURE

Many indigenous knowledge systems relate to agriculture and there is a close relationship between cosmovision and agriculture. Guided by cults, agriculture was shaped. The word *cultus* - or worship - is related to culture, and from this word the word cultivation is derived. The words cultivation, tillage, care, worship, and honouring are all related and find their roots in the natural environment (Nilson 1994).

Traditional agriculture in India is one of the oldest and most advanced forms of food production, which ensured food security and preserved biodiversity over centuries. The traditional practice was essentially an integrated system involving crops, trees, and livestock (including fish) that was eco-friendly (Singh et al. 1998). Cultivation was based on the astrological calendar and was framed with several rituals and offerings. The Vedas see agriculture as the area where humans and the divine can co-operate - the most honourable of situation. The Vedas also contained the so-called *Bhoomi Sukta*, or Earth hymns, and the *Anna Sukta*, or food hymns. Apart from the classical texts on the Science of Plants, the *Mutte* is a body of agricultural science, containing a wide range of agricultural practices written on palm leaves. Only traditional functionaries, like *disaries*, *poojari*, and *gunitya* could possess *Mutte* (Shenoy et al. 1999).

For more than 3,500 years in Andean culture, agriculture was the main activity, intimately connected to religion. The culture emphasises the relationship between society and nature in a certain *Pacba* (time and space). In astrology, the ritual calendar and agriculture are closely linked. The landscape has a symbolic value and the land-use system was based on risk minimisation. Decisions on farming were also influenced by weather predictions.

In traditional practices agriculture is often a community activity, where individual decisions have to fall in line with communal decisions, which are made by a village chief

TRADITIONAL INSTITUTIONS AND DECISION-MAKING

Traditional communities are often well organised and they and their functionaries, often play an important role in natural resource management decision-making relating to land, water, or biological resources. They regulate community administration, decision-making, elements of farming, and the rites and rituals related to cosmovision. These traditional functionaries often combine political power with spiritual skills.

In the Indian *Panchayat* system, village leadership, water, and land management are well organised (see Table 1, previous page). The village headman (naik) is often a farmer or well-known healer who is responsible for village administration, maintenance of order, and the settling of local land disputes. The *disaris* the medicine man of the village and he is responsible for spiritual-religious matters and has considerable knowledge of local agro-ecological practices and land management. He also fixes the dates for festivals and rituals. Religious protocols of the village and the performance of the rituals associated with agriculture fall under the responsibility of the priest or *poojari* (Shankar 1999a).

Table 1: Traditional institutions and their function in India, Sri Lanka, Africa, and the Andes.

Country/ Region	Institution	Local Name	Function

India	Village Headman	Naik	Administration, maintaining order, settling of local land disputes.
	Medicine man	Disari	Spiritual-religious matters, knowledge management, health; dates festivals/rituals.
	Priest	Poojari	Religious protocols, performance of rituals eg., associated with agriculture
Sri Lanka	Village Council		Administrative leadership villages
	Buddhist monks and priests		Extensive knowledge about eg., regarding agricultural practices and indigenous techniques
	Masters	Gurus	Teach astrology, ritualism, medicine
Africa	village chief		Political leaders, administrative and judicial functions
	Earth priests	Tindana	Spiritual power, power over land, control powers of the chief
	Soothsayers		Can act as medium: and as prediction
	Spirit Mediums		Can read messages sent through the animal world by the spiritual world, custodians flora and fauna
Andes	Three highest ancestral authorities	Alcades	Regulate allocation of land rights and land rotation; elected each year
		Jilakatas	Protect plots against negative influences; i.e. ensures that the community respects Pachamama
		Layas	Can read signs of nature
	Local healers	Curanderos	Healing
	Soothsayers		Makes prediction

In Sri Lanka, agriculture based on indigenous knowledge could also flourish because of its institutional backing. The villages are administratively led by a village council and village chief, but Buddhist monks and priests are well respected because of their invaluable knowledge about agricultural practices and indigenous techniques, and as teachers of religion and spirituality. *Gurus*, or masters, teach astrology, ritualism, and medicine (Upawansa and Wagachchi 1999).

In many African traditions the elders receive much respect. Chiefs are the political leaders and are responsible for the administrative and judicial functions in societies. The earth priests (*tindana*), however, have a great deal of spiritual power and power over land, as they can communicate directly with the God of the earth. They also control the powers of the chief and his accountability. Soothsayers can act as a medium, predict the future, and assess the wishes and intentions of the Gods (Millar 1999a). Spirit mediums can read the messages sent through the animal kingdom by the spiritual world and they are considered the traditional custodians of flora and fauna. This is true in Zimbabwe. Although they do not have a written literature, many of them teach how to live with nature (Gonese 1999a).

In the Andes, a mixture exists between the ancestral pre-colonial Organisation and the syndicate system (in which the production at the haciendas was arranged through co-operatives). Both are based on completely different visions and are not compatible, resulting in many conflicts. In the ancestral system the three *alcades* are the highest authorities who are elected each year. They regulate, for example, the allocation of land rights and land rotation. The *Jilakatas* protect the plots against negative influences and see that the community pays tribute to *Pachamama*. The traditional institutions also included *layas* who can read the signs of nature, local healers or *curanderos*, and soothsayers (Rist et al. 1999; Zarnbrano et al, 1999).

In many different cultures we see similar situations in which functionaries play administrative and judicial roles, and regulate land allocation, land use, agriculture, natural resources, and healing, religious, and spiritual matters. They are important sources of knowledge on these matters. The accountability of these people is difficult to judge and their power has certainly changed over time, but in dealing with decision-making in natural resource management, we have to be aware of these institutions and their influence.

GENDER

Studies have not, as yet, paid much attention to gender differences in cosmovisions and how they effect women's positions at the household level and in the community (NEDA 1997). In almost all indigenous societies, the position of men and women differs, not only at the household level, but also within indigenous institutions. The roles that women can play in spiritual and political leadership are very limited. For example, the female *gurumayi* or priest in Indian tradition is only allowed to attend and officiate at rituals and ceremonies relating to the family Goddess or spirits in which she is specialised. Notwithstanding their extensive knowledge of agriculture, seed selection, conservation, propagation, and local resources, most of the women are confined to contributory roles in rituals and sacrifices, such as preparing food, fetching water, and brewing local beer. Their entry into to sacred places is restricted (Shankar 1999a, Millar 1999b).

CHANGES IN CULTURES

As Erla Zwingle mentioned recently in National Geographic *"Goods move. People move. Ideas move. And cultures change."* (Zwingle 1999).

The majority of human cultures have evolved from hunter-gatherer cultures, in which people lived in "a giving environment" in close contact with nature and the spiritual world, to a culture of settled agriculture and animal husbandry, in which the differentiation between poor and rich, and urban and rural communities has become more apparent (De Groot 1999). After the first cultural wave of agriculture, and the second of industry, today a third wave — that of information — is taking place, leading to a differentiation between agricultural nations, 'smokestack countries', and now knowledge-based economies (Zwingle 1999). In village communities the contacts with merchants and the arrival of Christians caused rapid changes in religious practices, rituals, cultural values, and local institutions. Sacred woodlands were turned into game parks (e.g., in Zimbabwe by the colonists) and local people were only allowed to enter after paying the high tourist entrance fees (Gonese 1999b). This not only led to conflicts between villagers and outsiders, but it also resulted in disharmony within villages. Nowadays communities have frequent contacts with the mass media. This has resulted in major changes in local habits and beliefs, and these factors have had an especially major impact on the younger generation (there are 800 million teenagers in the world).

"The question is [not if ancient cultures should change or should not but] whether ancient cultures will be free to change on their own terms..." concluded the ethnobotanist Wade Davis (1999) recently.

With the erosion of biodiversity, there has been an accompanying erosion in the diversity of indigenous cultures, knowledge, traditional institutions, and cosmovision. Threats to cultures are also threats to unique ways of life (Dankelman and Ramprasad 1999).

A chief in the Frafra area in Northern Ghana mentioned to the coordinator of the non-governmental organisation CECIK (Centre for Cosmovision and Indigenous Knowledge; Tamale, Ghana):

"Long ago my people and I showed our concern about (the) disappearing trees. The (local) dam was constructed by consulting our ancestors through soothsayers, the ancestors told us that the Gods were protecting those trees, because for them, the trees were living creatures just like humans, and so needed protection. When the irrigation project came along, it did not give us the opportunity to consult our Gods, and went ahead and cleared the trees on the farming side. So all the trees for being annoyed walked away from the area: Never to come back again." (Millar 1999b).

THE ROLE OF OUTSIDERS

in many of the communities where the management of forests has been put on the development agenda, indigenous concepts of life, as part of the community's knowledge systems, are still very much alive and frequently influential. However, outsiders often fail to notice this and villagers have learned not to express themselves. The colonial and post-colonial economy has neglected their age-old life-support strategies. Many development activities are based on conventional systems of education and technology, neglecting - or even rejecting - the importance of the local cosmovision, culture, and indigenous knowledge, as if western science is too superior to take cognisance of locally developed science.

Even in methods, such as participatory technology development (PID), farmers have to participate in processes of technology development that have been defined by outsiders (Haverkort and Hiemstra 1999). Many development agencies and non-governmental organisations (NGOs) are unable to understand or deal with spirituality as a vital part of farmers' indigenous knowledge, because from the western scientific point of view, it is considered metaphysical and in-relevant.

There are organisations and outsiders who have documented the technically useful items of indigenous agricultural practices, but often that is done without reference to, or knowledge of, the symbolic or ritual matrices in which they occur (Mahale and Sorée 1999). On the other hand, a critical approach is always necessary. Farmers do not always have a thorough knowledge and insight into what they are doing or why. Customs, practices, and rites can also be applied purely because of habit, which we see in our own lives as well.

For development organisations there is a need to look more into endogenous development. That is development that is based on the strength of local knowledge, culture, and eco-systems, with the openness to discuss and experiment with traditional, as well as outside, knowledge and practices. A basic understanding of the diversity and dynamics of local-cultures, indigenous knowledge, cosmovisions, and institutions is a prerequisite for sustainable development and management of natural resources. A new strategy only has a chance of being adopted if respect and a certain equilibrium exist between the components of cosmovision: Nature, society, and the spiritual world.

RECOMMENDATIONS

in order to achieve the goal of natural resource management, it is essential that good communication and co-operation exist between development workers, environmental managers, and local populations. For that, according to Haverkort and Hiemstra (1999), the following is needed:

- Specific attitudes and skills to build a relationship with the local population and its traditional institutions. Outsiders need to show respect for, and interest in, local values. They need to consider how to make the local people understand their viewpoints, how to understand the local people's views, and how they relate to the spiritual powers and the cosmovision that the people represent.
- A decentralised, location specific development approach is required, which takes into account social and physical characteristics.
- Familiarity with the cosmovision and the culture of
- the area in relation to natural resource management, by studying previous studies.
- A non-bias, but critical relationship with the traditional and spiritual leaders, but also, and explicitly, with other members of the community.
- Help to strengthen community members' capacity to negotiate.
- An interest in folk culture (including music and symbols), traditional ceremonies and rituals, festivals, and endogenous methodologies (e.g., use of astrology, agricultural calendar, management regulations) in relation to natural resource management.
- An agreement on the goals and methods to be used for learning about indigenous knowledge.
- Participation in documentation leading to preparation of documentation in a form that it can be used by the population.

- Discussion and assessment of results with members of the community.
- Awareness of gender differences and other social stratifications, such as age, caste, and class. Women and other marginalised groups should be heard and involved. Their visions, perspectives, knowledge, and rules (also related to cosmovisions) should be considered; and
- A strong understanding of, and respect for, intellectual property rights. Piracy, not only of biological resources, but also of local knowledge (for example through a Code of Conduct), should be avoided.

Re-training and self-development is often necessary, as most outsiders have undergone training based on western concepts and paradigms. We must learn how to learn from communities, and, perhaps even more importantly, become aware of our own bias and prejudices.

Through a dialogue, we can opt together for a blend of traditional systems of governance and natural resource management with western concepts and local needs. The COMPAS team advised: "*Search for synergy between cultures. Avoid struggle and domination, as we can learn from each other. Agree with each other, or respectfully disagree*" (Haverkort and Hiemstra 1999).

CONCLUSION

In a world in which the local and global ecological crisis effects communities worldwide (Johnston 1994), we are all looking for sustainable and equitable solutions for natural resource management that support ecological and human life, now and in the future. As a person who has been trained in a western context, I can draw lessons from my experiences meeting people around the world, from the COMPAS programme, and from anthropologists, sociologists, and development specialists who know far more about the sociosphere. More time must be taken to look more explicitly for the roots of people's actions - their cultural backgrounds, their cosmovision, their visions, and their motivations. Questions have to be asked such as: Which places and natural elements have a sacred value to the people we work with? What do the trees and forests mean to them? How has the landscape changed during their lives and those of their (grand)parents?

Consultation is necessary to determine the right moment to implement common plans according to their intuition, knowledge, and astrological calendars. Which rituals and offerings should be part of our programmes? What symbols should be used? Why? We must aim to learn more about the scientific insights of the community and to share our knowledge and experiences. We must communicate with the village headman, the healer, the priest, but most of all, sit and work together with the local women - the reproducers of the land and its flora and fauna - with their knowledge and visions, cultural roots, and spirituality. They are the ones who are still so often unheard.

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Notes

¹Nijmegen University, University Centre for Environmental Sciences (At Nijmegen University we are working on a project simulating the integration of sustainable development in education (disciplinary and interdisciplinary), research, and management of all faculties and disciplines)

²Cosmovision: The way in which communities understand life, the world and the cosmos; in which the relationships between the social world, the natural world, and the spiritual world are central.