Petra Maass

The cultural context of biodiversity conservation

Seen and *unseen* dimensions of indigenous knowledge among *Q'eqchi'* communities in Guatemala

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Where is the life
we have lost in living?

Where is the wisdom
we have lost in knowledge?

Where is the knowledge
we have lost in information?

- T. S. Eliot -

CONTENTS

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Many thanks are due to numerous individuals and institutions who have contributed to the various stages of my research and the final texture of this thesis. Above and beyond the privilege of being freely admitted to participate in the lives of indigenous farmers and their families in several peasant communities of Alta Verapaz, the time in Guatemala was enriched by the sharing of these experiences with Sindy Hernández, to whom I owe a great dept of gratitude. Many thanks to her for the inspiring and instructive joint fieldwork and her rare courage to ignore disciplinary boundaries. My thanks to the *Escuela de Biología* of the *Universidad de San Carlos* for their collaboration and logistical assistance. I am also very grateful to my supervisor, Prof. Ulrich Braukämper, for constantly providing intellectual support and space to let me find my own way of realising this doctoral project through a terrifying complexity of themes, methods and paradigms within an interdisciplinary setting. I wish to thank my friend Vera Kalitzkus, who reminded me that anthropological engagement *per se* means to be *in limbo* and often implies the demanding task of moving beyond the frame to capture the entire picture. Admitting that there is no completely painless way to get through this venture, she continuously encouraged me to perceive the undertaking as a deeply transforming process of coming into consciousness. Whenever I believed to be lost in seemingly never-ending mental confusion evoked by too much paper and too little passion, she never tired of reassuring me that it is all worth the effort.

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In the vision of the Brazilian novelist Paulo Coelho, »*writing is one of the most solitary activities in the world. [...] writing is getting lost at sea. It's discovering your own untold story and trying to share it with others. It's realising, when you show it to people you have never seen, what is in your own soul.*«[1] I agree with him. But at the tiring time of writing, I realised that a carefully woven net of support and appreciation carried me through to the closing chapter, when I found myself *lost at sea* in search of an adequate form of literary reflection. This exceptional reward I owe to my parents. The most sincere thanks to both of them who enabled me to endure and to courageously establish a balance between intellectual commitment, social engagement and personal freedom as prerequisites to become deeply receptive to the life of others and thereby to discover *what is in my own soul*. This very special discovery and the endeavour to share *my own untold story* rest above all on the confidence I have been kindly given by women and men, children and elders in the Guatemalan communities when crossing their paths with annoying questions and limited ways to give in return. I deeply appreciate that they shared their experiences and narratives, concerns and laughter and taught me that

El camino sólo es camino cuando caminas por él. El camino se inicia en cada uno de nuestros corazones y todos lo tenemos que tomar acompañados de nuestra conciencia y nuestros ideales. Ya no podemos seguir viviendo aislados de nuestra hermana Naturaleza. Debemos aprender a no aferrarnos a las cosas materiales, pues sólo así estaremos en condición de hacer por otros y para otros, todo. [...] Nada de lo que está ocurriendo es casual, todo lo que sucede tiene un sentido y una dimensión profundamente educativa, pero sólo lo comprenden aquellos corazones abiertos que están dispuestos a cambiar.[2]

[1] From his essay *In search for my Island* (2005).

[2] The quotation is from a collection of *Q'eqchi'* stories edited by Queiros et al. (2000: 63, 68): »*The way only becomes the way when you walk it. The way begins in each of our hearts and we all need to enclose it in our consciousness and our ideals. We cannot keep on living apart from our sister Nature. We must learn not to hold on to material things, just as to be able to do everything for others. [...] Nothing of what happens is accidental, everything that succeeds has significance and a deep educational dimension, but this may just be understood by those open hearts, who are willing to change*« (translation by the author).

PROLOGUE

At the end of March 2003, while helping a *Q'eqchi'* farmer in a remote village in Alta Verapaz with harvesting his crop, I observed clouds of smoke in the sky. I asked about their origin and supposed the informant would attribute the smoke to extensive forest fires in the northern lowlands. Instead he expressed his concern about the conflict between the United States and Iraq. Having followed the events on the radio, he interpreted the smoke as an indication of the recent attacks on Baghdad. As the worldview of the farmer does not imply continental geographies, transatlantic distances and country boundaries, a war of global scope could easily influence directly even the local peasant's life in the countryside of Guatemala. Before this conversation between rows of maize, we had walked to the field, passing crop stands and areas in different stages of fallow and primary forest. On the way, the farmer shared his knowledge on almost 100 plant and tree species and talked about agrarian rituals practiced by his community to ensure growth and fertility of the numerous crops cultivated on their lands. Although the conflict in Iraq indeed had consequences for the local economy, it is beyond the intention of this study to discuss its impacts on the living conditions of rural communities in Guatemala. Neither does it concentrate on the role of modern media in traditional cultures, nor does it intend to analyse the influence of forest fires on the ongoing deforestation process in the study area. The intention of this work is to question the significance of indigenous people's spatial concepts and interpretations of phenomena occurring in their environment. It is about the relationships between people, places and ideas and aims to explore expressions of knowledge, thought and images through which humans understand their local world and which guide their actions. The basic idea is to illustrate that there are different ways of knowing and reasoning, seeing and endowing the world with meaning, which include material and interpretative understandings as well as emotional commitments with the natural world.

ABBREVIATIONS

ADICI	Asociación de Desarrollo Comunitario Indígena
AIDPI	Acuerdo sobre Identidad y Derechos de los Pueblos Indígenas
BIDAS	Asociación Biósfera y Desarrollo Agricola Sostenible
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung
CAFESANO	Caficultores Asociados del Norte
CBD	Convention on Biological Diversity
CONAP	Consejo Nacional de Areas Protegidas
FAO	Food and Agriculture Organization of the United Nations
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
ICDP	Integrated Conservation and Development Project
INAB	Instituto Nacional de Bosques
INTA	Instituto Nacional de Transformación Agraria
IUCN	International Union for Conservation of Nature and Natural Resources
ILO	International Labour Organization
IK	Indigenous Knowledge
IPR	Intellectual Property Rights
MINUGUA	Misión de Verificación de las Naciones Unidas en Guatemala
NTFPs	Non-Timber Forest Products
NGO	Non-Governmental Organization
PAC	Patrullas de Autodefensa Civil
PRA	Participatory Rural Appraisal
STS	Science and Technology Studies
TEK	Traditional Ecological Knowledge
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPROBON	Unión para Proteger el Bosque Nuboso
URNG	Unidad Revolucionaria Nacional Guatemalteca
USAC	Universidad San Carlos de Guatemala
USAID	United States Agency for International Development
WCPA	World Commission on Protected Areas
WHO	World Health Organization
WTO	World Trade Organization
WWF	World Wide Fund for Nature

1 INTRODUCTION – *from global to local*

In the context of global political governance, environmental issues have become increasingly prominent in the past two decades. Among other major international agreements that have been reached in the 1990s, the *Convention on Biological Diversity* (CBD) paid particular attention to the protection of the ›global commons‹. Based on the realisation that many areas of the world that contain high levels of biodiversity are anthropogenic landscapes inhabited by indigenous and local communities, the significant role such communities play in preserving natural resources was underlined in the convention. Article 8 asserts the crucial role of protected areas in achieving the objectives of the agreement. In particular, it calls for the acknowledgement and wider application of local knowledge systems as they may contribute to the protection of biodiversity in natural surroundings. Building on the recognition that the effective management of protected landscapes depends on the participation of local residents, current approaches have been refined, linking conservation initiatives with community-based development schemes. The emergence of such new political forms in response to conjunctions of global and local actors that cut across national boundaries became a discursive subject of growing interest and enhanced new interdisciplinary enterprises in the academic domain. The discourse on the relationship between economic, ecological and social issues in sustainable development and biodiversity conservation has gradually emphasised the re-discovery of culture. A widened, anthropological conception was introduced to encompass a whole complex of distinctive material and non-material characteristics of societies, based on systems of knowledge, values, traditions and beliefs. In this process, indigenous knowledge as a prime part of culture has come to play an important role in international debates on development planning and conservation strategies.

The initial objective of this study is to analyse the role of indigenous communities and their particular knowledge systems in the global environmental discourse. Based on the premise that any knowledge is embedded culturally, the study is concerned with the question of how to protect biodiversity in agreement with a people-oriented model of natural resource management. A primary aim is to move towards an understanding in the more encompassing sense of knowledge associated with social mechanisms, historical currents, political issues, cultural identities and interpretations by means of which people structure and comprehend their worlds. I examined these complex articulations in an ethnographic case study among *Maya-Q'eqchi'* communities living adjacent to protected areas in Alta Verapaz in Guatemala.

The operative paradigm that underlies the anthropological perspective indicates that a comprehensive understanding of the cultural context is essential to the success of any initiative designed to promote the sustainable use and conservation of biodiversity. It is also important to anticipate that human cognitive understandings of nature are culturally embedded, bound to locality and intertwined with the broader context. This implies a multidimensional reality in which diverse economic, social, political and historical aspects intersect. Above and beyond its analytical focus on the nexus between biophysical, socio-cultural and politico-economic domains, the study intends to document that indigenous knowledge depends not only on the relationship between humans and nature, but also on the relationship between the *visible* material and the *invisible* spiritual worlds. Especially, it aims to explore the significance of the internal dynamics of values related to local landscapes and beliefs in the intimate attachment of humans to nature, which are closely tied to subsistence activities and ritual practices that define perceptions of the environment. This *unseen* dimension that underlies natural resource use patterns tends to be underestimated in the international environmental debate on biodiversity conservation policies and is often dismissed in the praxis of protected area management. In developing this argument I will identify the distinct spheres and experiences of indigenous peoples that constitute decisive aspects of the cultural frame in which conservation efforts take place. The choice of contextualisation reflects my intention to create coherence and uncover interrelationships on diverse levels of human agency. *Context* derives from the Latin verb *texere,* which means ›to weave‹. Correspondingly, the related verb *contexere* carries the meaning of ›to weave together‹. In a metaphorical sense, I intend to discover the interwoven character of the political, discursive, material and symbolic dimensions of the human-environment relation and to weave together the *seen* phenomena and the commonly *unseen* meanings inherent in indigenous knowledge systems within the expanded frame of global conservation efforts.[1]

[1] This metaphor finds its iconographic correspondence throughout the thesis in the representation of *Ixchel*, the Maya goddess associated with the art of weaving.

1.1 The interdisciplinary approach

> *Human beings don't just look and see. Things are not just there. How we see, what we see, and what we make of what we see are shaped by the elements of our mental maps.* (McCarthy 1996: 6)

The present study is part of an interdisciplinary research project focusing explicitly on the CBD as signed at the 1992 *United Nations Conference on Environment and Development* (UNCED) in Rio de Janeiro, Brazil. Not until the agreement came into force was scientific attention drawn to interdisciplinary approaches to comprehend the driving undercurrents of environmental and social changes associated with global phenomena. Given the importance of biological diversity and sustainable development as central concepts in the global discourse, the academic challenge consists in moving beyond disciplinary boundaries in order to encounter the complexity of ecological, social, political and economic issues relating to the conservation of biodiversity. To capture these interconnected issues, more holistically conceived frameworks have been widely emphasised. In particular, new approaches that appreciate different research traditions and methodologies, especially in the fields relevant to the implementation of the CBD need to be developed. As an ambitious attempt to encounter this demand, a research programme was designed at the University of Göttingen, entitled *Valuation and Conservation of Biodiversity. Implementation of Nature Conservation Strategies within the Framework of the Convention on Biological Diversity*. Funded by the German Research Foundation (DFG), the three-year graduate programme, initiated in October 2000, involved 14 disciplines from eight faculties. Within this project, particular emphasis was given to the investigation of problems and perspectives arising from the implementation of the CBD. Thereby, the main attention centred on the establishment of protected areas as a significant tool of *in situ* conservation of biological diversity. Given this frame of inquiry, the scientific questions were related to different levels of analysis.[2]

Departing from economic and juridical perspectives, one working group questioned global dimensions and general issues of the CBD as a whole, beyond concrete considerations concerning national implementation strategies. Examining a national example, a second group focused on the implications of the establishment of the National Park *Unteres Odertal* in eastern Germany. The investigations included contributions from ecology, geography, political science, environmental history and rural sociology. The third working group, which my study is part of, combined equally various disciplinary fractions including agricultural economics, landscape ecology, conservation biology and environmental anthropology. Starting from these perspectives, local, regional and national perspectives on conservation strategies implemented in Guatemala were investigated. The study areas were located in the central highlands and northern lowlands of the department Alta Verapaz. The investigations took place in

[2] For a general account of the research programme and details on the individual projects and the findings of the specific studies developed therein, see the volume *Valuation and Conservation of Biodiversity. Interdisciplinary Perspectives on the Convention on Biological Diversity* edited by Markussen et al. (2005).

joint-ventures with Guatemalan research counterparts and were also supported by an institutional collaboration with various local NGOs.[3]

In addition to field research undertaken to deepen particular scientific understandings, the graduate programme involved a wide range of seminars, workshops, conferences and encounters with representatives from academic and public domains. On these occasions, discussions comprised multi-layered issues related to environmental protection, including theoretical, methodological and ethical implications. They involved especially the exchange of approaches and founding principles of the concerned disciplines. The transdisciplinary nature of communication and the many experiences informed by the collective endeavour to find a common language have influenced the scope of the present anthropological work and have led to insights that underlie the way the themes as presented in the following have been approached. Although not explicitly taken into systematic account, the communicative efforts have enhanced my understanding of epistemological implications inherent in cross-cultural and inter-professional ventures engaged with the production of knowledge through research. In addition to the differences in terms of varying frames of reference, the task to approach problems and perspectives arising from the implementation of the CBD from distinct disciplinary perspectives was challenged by the absence of a clearly bounded object of study. A result of insights emerging from encounters of different ›mental maps‹, the contextual design of the thesis is not only an attempt to document and interpret systems of natural resource use as observed among indigenous communities in Guatemala. The topical and theoretical concerns have also been configured by institutional affiliation. Beyond the ethnographic focus on conditions of cultural significance at the village level, the study frames a broader set of subjects and includes shifts across multiple sites of analysis from transnational movements and national institutions to scientific arguments in the academic discourse. Given this background, the thesis also addresses non-anthropologists involved in research on environment and development.

[3] For a documentation of the research of this subproject investigating the problems and perspectives of the implementation of the biodiversity convention in Guatemala, see Birner et al. (2003).

1.2 What's it all about?

> *[T]he unseen is as much a part of society as that what which is seen – the spiritual is as much a part of reality as the material. In fact, there is a complementary relationship between the two, with the spiritual being more powerful than the material.* (Posey 2002: 28)

In the above outlined scope ranging from environmental regimes on the global level to resource use patterns of indigenous communities on the local level, this study entails a wide spectrum of themes. It is about people and landscapes, national parks and rural economy, plants and beliefs, history and imagery, science and spirituality, values and conflicts, change and continuity, identity and memory, education and communication, migration and adaptation, power and resistance, respect and reciprocity, time and space, rituals and rainforests, transects and taxonomies, land and language, war and muteness, peanuts and paradigms, soils and dreams, temples and moon light, taboos and deities, holy caves and cell structures, ethnic movements and cardinal directions, illiteracy and ensouled geography, the ›West‹ and the ›Third World‹, NGOs and ICDPs, UNCED and AIDPI. It is also about *placelings* and *hotspots*, 13 sacred mountains and ›shadows in a box‹. Among others, these configurations combine to inform the *cultural context of biodiversity conservation*.

Here, context is not to be seen as a self-evident thing in itself. It is rather a set of expandable relations and as such, it is my interpretation. Correspondingly, the study is also about me, the person ›weaving‹ the text, through which she reflects upon professional assumptions and perspectives interwoven with personal experiences and convictions. ›Context‹ is one of the central concepts of anthropology and is relied upon as an indispensable part of methodological and theoretical concerns. It implies »a generalised set of connections thought in some way or other to be construed as relevant to the object or event under discussion« (Dilley 1999: 4). One of my primary purposes in invoking a number of these contexts has been to counter universalist context-free approaches of conventional natural science research concerned with biodiversity conservation. In many forms of economic and political analyses, the historical and spatial boundaries of human agency are also left unquestioned. In these analyses, *reality* is understood in terms of material conditions external to human beings and considered to be universal across time and space. In this anthropological work, I intend to question the division between *material* and *ideal* in favour of a concept in which humans construct their view of the world and understandings of phenomena in accordance with cultural practices, social interaction and symbolic means.

In its widest sense, the study is about the realms of *culture* and *nature*. The relationship between these two domains of reality has been a longstanding topic of philosophical debate. Since who we are depends in part on where we are, the question of how much influence natural environments have in shaping humans' lives and vice versa has been an issue raised repeatedly by cultural anthropologists. Due to the growing relevance of global environmental issues, such themes have earned increased attention and led to the formation of new disciplinary currents. Research in the field of envi-

ronmental anthropology rests on the tenet that human-nature interaction takes place via culture. Committed to the paradigm of cultural relativism, anthropologists view culture as an all-encompassing realm, the elements of which are intrinsically interrelated. Though a multi-layered concept, anthropologists generally agree in defining culture as »a socially transmitted system of information, where ›information‹ includes knowledge, beliefs and values, and which constitutes a blueprint for behaviour« (Oviedo et al. 2000: 9).

In pleading for an interpretative approach, Geertz considers culture not as »something to which social events, behaviours, institutions, or processes can be causally attributed« (1975: 14). For him, it is, rather, a context, something within which these events and processes can be intelligibly described. In his view, the study of cultures is directed toward the study of symbolic and signifying systems by means of which humans communicate, perpetuate and develop their knowledge about and attitudes toward life by means of which a social order is communicated and reproduced. By applying his concept of culture, which is essentially a semiotic one, I focus in the following on the ways in which social actors construct a pattern of meanings to their natural and social surroundings, their own identity and the practices in which these meanings are historically transmitted. If culture is ›a web of significance‹ humans have spun and through which they interpret their experience and which guides their action, its analysis is not an experimental science in search of general law but an interpretative one in search for meaning. Given this primacy of anthropology as an interpretative discipline, there are no ultimate laws that determine the ways people behave, for this is the result of complex interactions on the basis of cultural values. Thus, the question of how the values of indigenous peoples toward nature are expressed culturally needs to be addressed. Such values, which are highly variable and difficult to quantify, often contrast with values illuminated through conventional scientific paradigms, which are the foundation for most conservation initiatives.

Values are subtle and elusive things: they run like a fine thread through the fabric of culture, weaving through every form and action, but emerging only in the patterns. Yet, however intangible, they knit these forms and actions into a cultural whole, shaping the human environmental relationship and pulling people inescapably into particular kinds of interaction with their material world. While beliefs, values and cultural schemata may be group-specific, they are built upon the universal process of cognition through which all human beings ›learn the world‹. […] Beliefs and values received, inculcated and passed on through a process of socialisation that creates a culturally specific relationship with the environment. This process consists of several elements: the creation of categories, the learning of language, and the acquisition and dissemination of cultural knowledge. Each involves an interaction with the physical, social and cultural environment and contributes to the formation of individual and collective identity. All are vital to the inculcation of values; but, equally, they are intangibles of culture – elusive and invisible streams that carry culture forward. (Strang 1997: 173, 178)

As the main topic in the following deals with the relevance of cultural knowledge, I draw further on scholars like McCarthy (1996) and Barth (2002), who have argued for a perspective that recognises *knowledge* as a major modality of *culture*. Using knowledge as synonym for culture, it may be defined as what humans employ to interpret and act on the world. This caption involves all the ways of understanding we use to make up our experienced reality, including feelings, thoughts, attitudes and embodied skills. Accordingly, knowledge may be defined as »any and every set of ideas and acts accepted by one or another social group or society of people – ideas and acts pertaining to what they accept as real for them and for others« (McCarthy 1996: 23). The search for knowledge is inevitably a part of all human life. All societies have generalisation procedures that turn individual knowledge into culturally constructed knowledge. I assume that this has to be encountered as a social, historical and transitory product integral to the respective cultural system it has been generated in. It is thus understood within the broader category of culture, as an entire range of phenomena that include the manifold types of knowledges, symbols, and images used in the various domains of human life. Just as knowledge cannot be approached unrelated to other aspects of social relations, neither can conservation be separated from socio-cultural dimensions of societies, nor can perceptions of nature be explored without an understanding of the entire cultural realm. As initially outlined, this is a foundation of research in the field of *indigenous knowledge* that has gained increased attention.

A diversity of topics are being studied under this rubric and there are as vast a number of concepts and positions on how to approach the issue. As it is still a relatively new field, I endeavour specifically to give a survey of the multiple approaches in a review of current theory and practice. In conceptual terms, the discussion applies two main approaches as developed in *anthropology of indigenous knowledge* and *anthropology of landscape* to analyse indigenous knowledge expressions and perceptions of nature. In methodological terms, I combine discourse analysis with qualitative methods of ethnographic inquiry. In consonance with scholars like Long Martello and Jasanoff (2004), who argue that there is a need to integrate ethnographic and micro-focused accounts of local institutions and cultures with more systemic and macro-focused perspectives on globalisation, I assume that contemporary indigenous culture must be explained with reference to national and global structures. By focusing on factors that link local landscapes to global processes, the idea of a translocal connectedness through which global processes shape and are influenced by local spaces is presented. It involves an expanded view to broader explanatory cultural frameworks, following the idea that politics and economics are inherent to a definition of culture.

In essence, the qualitative research is about understanding human behaviour from the perspective of the particular people involved. My work draws on twelve months of field research carried out between May 2001 and March 2003 among *Q'eqchi'* communities located in rural areas of conservational importance in Alta Verapaz. To thoroughly explore local expressions of indigenous environmental knowledge, participant observation and semi-structured interviews with key informants at the household level

were the principal methods applied in the field. Guiding questions were: What are the important practices relating to natural resource management? What concepts and explanations do people use for these practices? What are the patterns of knowledge generation, transmission and transformation? How does indigenous environmental knowledge interact with external sources of knowledge? Through which means are the *Q'eqchi'* related to the elements of the ecosystems around them? During the research, the inquiry altered from resource use patterns towards internal dynamics such as inherent values and implicit symbolisms of human-nature relations. When talking about subsistence patterns, economics and ecology, informants recurrently used religious symbolism to describe their experiences and referred to spiritual features inherent in their way of life. They emphasised the importance of ritual practice and their belief in divine beings, sacred sites and principles of indigenous cosmovision. This led to the core questions of how nature is socially constructed, how religion and ecology relate to each other and how cosmological principles reflect the environment and connect with production methods. The field investigation revealed further that indigenous knowledge is in constant transition, which suggests the additional consideration of patterns of cultural change recurrently evoked by internal and external influences.

The theoretical assumptions have been shaped by the fieldwork experiences, which in turn have given the thesis a conceptual frame different from that initially envisaged. In this process, the venture to capture the interconnectedness of the *seen* und the *unseen* dimensions of indigenous knowledge became part of a broader landscape approach. This serves as a meaningful scheme that provides ways of revealing intertwining aspects and allows for applying a concept of environment that encompasses biophysical phenomena, social practice and cultural meaning. Most centrally, the present work emphasises implicit symbolisms of human-nature relations that tend to be disregarded in the international environmental debate on biodiversity conservation initiatives. By doing so, it contributes an extended perspective on the interaction between environmental issues and symbolic patterns that prompted recent anthropological studies to explore the links between knowledge and belief systems. The convergence of cognitive and symbolic anthropology assumes that all human populations apprehend the social in terms of the natural world and the natural in terms of metaphors drawn from the social world. The two are in Ellen's terms »intrinsically complementary« (2003: 50). The empirical and symbolic spheres studied by anthropologists retain their importance and have been used in the present work to make new connections. Although the determining role of beliefs and worldviews in indigenous cultures has been highlighted for a long time, their relevance for issues related to development and conservation has only recently emerged. Increasingly, it has been realised that the relationship with the natural world as envisaged by religious philosophies and the manner in which religious thought translates into everyday practice are important fields to be investigated.

The final aim is, in the words of Geertz, »to draw large conclusions from small, but very densely textured facts; to support broad assertions about the role of culture in the construction of collective life by engaging them exactly with complex specifics« (1975: 28). At the same time, I am convinced that the ways in which an issue is shaped in global discourses and politics provide important contexts for interpreting specific cases on the local level, while specific local experiences influence and shed light on global trends and processes. In this sense, it has been argued by Weber Nicholsen, that in order to deal with environmental problems,

we require localization of attention as well as the broad categories that identify general issues and large-scale processes. This is why local control, sense of place, and collaborative decision making have become such prominent themes in our efforts to deal with the environmental and social crisis. They represent efforts to turn attention back toward particulars and away from the mania of growth, expansion, and abstraction. [...] however, we must attend to both levels of scale, the global and the local (2002: 188).

1.3 Research perspectives

> *[T]he road lies like any genuine quest, through a terrifying complexity.* (Clifford Geertz, cited in Kaplan 2001: 97f.)

As has been outlined, this study is concerned with a wide array of themes ranging from legal aspects of global agreements to locally bound empirical and symbolically motivated criteria of indigenous knowledge. Due to the contextual approach, which implies the need to follow different discursive lines, the study draws on a large number of articles and books written in different anthropological currents and their revisionist postmodern variants. In particular, it has been informed by works from applied fields such as development and environmental anthropology, ethnoecology, political ecology and relatively new approaches emerging from landscape anthropology, symbolic ecology and anthropology of science and technology. The majority of recent works reflects a growing rejection of disciplinary divides and indicates a trend towards an integration of approaches from different research directions. Redrawing the boundaries of study topics results inevitably in overlap with the terrain claimed by other fields. Thus, the endeavour to arrange the multiple thematic sections informed by these interconnected fields has been complemented by contributions from other social sciences and related disciplines. These include sociology, geography, sociolinguistics, political science, environmental philosophy, philosophy of science, agroecology and conservation biology. Accordingly, most issues being discussed are associated with an immense body of literature. Given the heterogeneity of sources, this review concentrates on a few of the most essential works on which the dissertation is built upon. In addition, sources will be dealt with in the particular following sections.

In view of the latest trends of anthropological engagement with environmental issues, the substantial volume *The Environment in Anthropology. A Reader in Ecology, Culture, and Sustainable Living* edited by Nora Haenn and Richard Wilk (2006) allows for an initial overview of current issues. This also applies to the contributions compiled in *Nature Across Cultures. Views of Nature and the Environment in Non-Western Cultures* edited by Helaine Selin (2003) and *New Directions in Anthropology and Environment. Intersections* by Carole Crumley (2001). Another recent work focusing on the interrelationship between society, culture and environment is *The Logic of Environmentalism. Anthropology, Ecology and Postcoloniality,* written by Vassos Argyrou (2005). Closely related to scientific work in fields of environmental anthropology is the work underlying development anthropology. Due to the growing appreciation of endogenous development approaches, the role of indigenous knowledge is reflected throughout the latest anthologies, such as in *Participating in Development. Approaches to Indigenous Knowledge* by Paul Sillitoe et al. (2002) or *Negotiating Local Knowledge. Power and Identity in Development* by Johan Pottier (2003). Among a vast amount of publications, the volume *Indigenous Environmental Knowledge and its Transformations. Critical Anthropological Perspectives* edited by Roy Ellen et al. (2000) must also be mentioned. With regard to the translation of principles and theories into the applied realm, Louise Grenier (1998) has provided a helpful guide for researchers interested in *Working with Indigenous Knowledge.*

Likewise, the book *Culture, Conservation and Biodiversity* by Brian Furze et al. (1996) provides helpful suggestions concerning conceptual and methodological applications. In revealing *the social dimension of linking local development and conservation through protected areas*, the authors provide many useful insights into current approaches to protected area management drawn from numerous examples. The same applies to *Partnerships for Protection. New Strategies for Planning and Management for Protected Areas* by Sue Stolton and Nigel Dudley (1999). The authors address practical applications and combine research results with policy recommendations by means of an illustrative combination of case studies. Likewise, in his writings dealing with indigenous peoples and biodiversity conservation, Gonzalo Oviedo (2002) conveys an elaborated overview of the complex issue and draws conclusions that link research implications with practical recommendations. Based on an applied perspective, research tools have also been elaborated by Richard Howitt (2001). His book *Rethinking Resource Management. Justice, Sustainability and Indigenous Peoples* is not solely addressed to the academic community but explicitly directed to practitioners engaged in fields of conservation and development cooperation. The ideas he provides about the anthropological concept of landscape have given particularly valuable impetus to the present work. The contributions edited by Alan Ewert (1996) in *Natural Resource Management. The Human Dimension* emphasise the need to see humans as an integral part of ecosystems and document how cultural orientation functions as a lens through which people see the world.

In line with the authors who assume that one of the most fundamental lessons of indigenous knowledge is that worldviews and beliefs do matter, the thesis reveals the often implicit, intangible and less easily articulated values and undercurrents of symbolic meaning of traditional resource use practices. In this respect I was inspired by the considerations expressed by Fikret Berkes (1999) in his book *Sacred Ecology. Traditional Ecological Knowledge and Resource Management* and by the contributions compiled by Darrell Posey (2000) in *Cultural and Spiritual Values of Biodiversity*. This outstanding benchmark anthology combines a considerable number of perspectives from the social sciences on the manifold aspects related to biodiversity conservation. Further writings by Posey himself had a determining influence on the manner in which the present work has developed. Other considerable accounts with a more general scope that must be emphasised here are *The Way. An Ecological World-View* by Edward Goldsmith (1993), *Ecologies of the Heart. Emotion, Belief, and the Environment* by Eugene Anderson (1996) and *The Love of Nature and the End of the World. The Unspoken Dimensions of Environmental Concern* by Shierry Weber Nicholsen (2002). Of the vast amount of literature reviewed, these contributions offered revealing topical insights of particular use for the connections made in this work.

Regarding the theoretical frame, a source of substantial information has been provided by Arturo Escobar (1996). Departing from an antiessentialist *political ecology*, he questions the current biodiversity discourse that articulates complex relations between nature and society in global contexts of science, cultures and economies. His writings, which see biodiversity itself as a cultural product, as well as the thoughts on *Globalization and Environmental Governance* as presented by Marybeth Long Martello and Sheila Jasanoff (2004) have contributed to my understandings of the larger discursive context in which the debates on conservation and development in general and indigenous issues in particular are embedded in. Other valuable takes regarding recent trajectories of anthropological thought and research that contribute to the field of political ecology have been provided by Lisa Gezon and Susan Paulson (2005) in their commendable article *Place, Power, Difference. Multiscale Research at the Dawn of the Twenty-first Century.* In their endeavour to go *Beyond Global Discourse,* Maarten Hajer and Frank Fischer (1999) explore *The Rediscovery of Culture in Environmental Politics.*

Apart from these theoretical orientations, numerous ethnographic accounts of scholars concerned with environmental issues in different cultural settings have inspired my own explorations. Many of these case studies, among them *Uncommon Ground. Cultural Landscapes and Environmental Values* by Veronika Strang (1997), belong to a growing body of studies on indigenous adaptations to particular natural environments that emphasise the cosmo-political dimension of human-nature relationships by demonstrating the importance of integrating the natural and the social world into a single whole. The growing alliance of religion and ecology within the academic sphere has brought together diverse perspectives focused on attitudes and ethics toward nature with implications for environmental policies. *The Encyclopedia of Religion and Nature* recently edited by Bron Taylor (2005) gives an account of this field of growing aca-

demic interest. Although the determining role of specific worldviews in indigenous cultures has long been highlighted in anthropology, their relevance for conservational issues emerged just recently. This convergence grounded in the religion-ecology nexus has been addressed in the volume *Worldviews and Ecology* compiled in 1993 by Mary Tucker and John Grim. Roger Gottlieb (1996) also provides a substantial anthology, entitled *This Sacred Earth. Religion, Nature, Environment.* The more recent volume *Indigenous Traditions and Ecology. The Interbeing of Cosmology and Community* by Grim (2001) elicited potential paths that have enriched the present work. In particular, the examples drawn from contemporary Mesoamerican cultures presented thoughtful insights.

In reviewing the literature published on the Guatemalan context, I realised that a vast amount of writing concentrates on historical and archaeological themes related to the ancient Mayan world rather than on the present situation of the indigenous population. Modern Guatemalan ethnography emerged only half a century ago. Until the 1950s, research focused mainly on rather traditional ethnography. In the 1960s, interest moved towards the place of indigenous groups in the nation-state. Such works include Robert Carmack's volume *Harvest of Violence. The Maya Indians and the Guatemalan Crisis* (1988), which provides anthropological perspectives on the cultural dynamics taking place during the times of civil war. More current work by authors, who dedicated their attention to contemporary society, includes René Paul Amry (1999) on *Indigenous Peoples, Customary Law and the Peace-Process in Guatemala* and the reports by MINUGUA (2001) and Rodolfo Stavenhagen (2003).

In addition to early accounts provided by ethnographers such as Karl Sapper (1998[1904]), who worked in the Alta Verapaz region, several anthropologists have focused on the *Q'eqchi'* in the past decades. An early study that has to be mentioned was written by William Carter (1969). His account *New Lands and Old Traditions. Kekchi Cultivators in the Guatemalan Lowlands* is based on an ethno-ecological study conducted in the 1960s and contains basic insights for an understanding of the situation as encountered at present. The following historical gap can be traced to the long armed conflict that particularly affected the indigenous population and kept scientists from completing anthropological investigations in the area. Despite this difficulty, Richard Wilson (1995) and Hans Siebers (1996) undertook ethnographic fieldwork among peasant *Q'eqchi'* communities. Apart from their solid monographs and associated articles, valuable information on the cultural realm has been provided by authors, who focused on specific themes, such as Estuardo Secaira (1992) and Richard Wilk (1997). The work of the latter led to an analysis of *Economic Change and Domestic Life among the Kekchi Maya in Belize,* whereas the former concentrated on the local economy of *Q'eqchi'* communities in the highlands and lowlands of Alta Verapaz. His comparative account on indigenous knowledge in terms of agricultural systems and inherent conservational aspects has been influential to the way of approaching knowledge repertoires in the present context. Of special importance to my understanding of the symbolic dimension of farmers' knowledge have been the comprehensive studies of Inge Hatse and Patrick De Ceuster (2001a/b). Their analysis of the interwoven character of

agricultural practices and the indigenous worldview gives an account of extensive fieldwork recently undertaken in rural communities of Alta Verapaz. Another revealing study from anthropology, realised by Carlos Flores Arenales (1999), informs about the post-war situation as faced by the *Q'eqchi'* population. In documenting a collaborative filmmaking experience, his work is one of the first endeavours to perceptively examine the cultural effects of social change due to the political violence that has dominated the entire cultural setting in the past decades. He presents a commendable outline on the actual process of identity reconstruction. The theme of identity has also been pronounced by Almudena Hernando Gonzalo (1999), who takes a different ethnographic view by exploring cultural perceptions of landscape among the *Q'eqchi'*.

With regard to issues related to protected area management, it can be said that relatively few scholars have conducted studies in the area. In comparison to the northern lowlands, where much of the recent work has been undertaken, the *Q'eqchi'* heartland gained less attention. So far, no account focusing on the cultural context of biodiversity conservation has been provided that would integrate questions of global range with issues of national relevance and an analysis of local knowledge as realised in the present work. Given this gap, the study also intends to contribute to the ongoing discussion on conservational approaches by taking into account social and spiritual aspects of indigenous resource use systems. Beyond their mere documentation, the study explicitly emphasises the need to consider the impact of national policies in the historic context. In this sense, the applied approach is motivated by an *ex-centric* intention as it adopts a decentralised perspective on different knowledge dimensions.

1.4 The conceptual scheme

> *Unconscious values and hidden agendas will need to be brought into the light of critical review.* (Metzner 1993: 168)

In general terms, it has been stated by Richard Howitt that for many indigenous people, the landscape in which they live is a »seamless fabric of physical, spiritual and cultural threads« (2001: 173). Anthropological engagement attempts to unravel these multiple threads and to document how knowledge and its modes of representation connect into some larger whole. This venture presents considerable analytical difficulties, since the study raises questions of how people view, know and use their environment and touches on the most far-reaching ideas about *reality* and *meanings*. The challenging encounter with these highly complex phenomena informed the undertaking of ›weaving together‹ the multi-layered threads to address various spatial and temporal scales. In organising these threads, the structure of the thesis is intended to highlight the point that the study offers a significant way of linking levels of analysis. Research at each level feeds into, and illuminates findings of other levels. However, dealing with material and symbolic dimensions of social phenomena means inevitably to deal with complexity that often makes conventional narrative styles difficult to write

adequately about the diversity of interrelated themes. The following outline may provide a guide on how to follow the entire texture of the succeeding chapters, each of them identifying specific contexts within which people communicate by means of policies, discourses, representations of the environment and actions related to knowledge production and resource use.

The thesis consists of four major parts. Following the present introductory chapter, the second chapter sets the scene by dealing with the issue of biodiversity conservation and global environmental regimes. Within the *global context* in terms of policy discourse, the chapter compiles relevant provisions as specified within the CBD. It reflects on protected area management as a widely established conservation tool and highlights the initial starting point that focuses on the value of indigenous knowledge, which has been increasingly recognised as an alternative information source, providing insights for the sustainable use and conservation of biodiversity.

Although biodiversity has concrete biophysical referents, it has to be seen as a discursive invention of recent origins at the same time. Starting with this assumption, the third chapter moves to the production of academic discourse leading to questions of how the topics related to biodiversity, protected area management and indigenous knowledge have been approached from distinct perspectives in *environmental anthropology*. As to the role of anthropology in environmentalism, it has been argued that knowledge gained by physical or biological science is essential, but not sufficient to understand the driving forces underlying environmental change and biodiversity loss. Thus, discussions concerning the cultural dimensions of human adaptation to the natural ambit were addressed increasingly within different subfields of the discipline, which will be dealt with in the *discursive context*. Including methodological considerations on *multi-sited ethnography*, this chapter reviews conceptual lines recently developed within the discipline that establish the theoretical boundaries for the analysis of the data obtained during the field research. One of the main ways in which our discipline has contributed to environmental discourse is through constructive critique. By analysing basic suppositions and exposing contradictions, anthropologists have examined the credibility of arguments and key concepts that commonly remain unquestioned. In this way, critical assumptions on protected area management will be followed by considerations concerned with the question of *place* as it has been raised in recent years from a variety of anthropological perspectives. The view of landscape as cultural construction may be of importance for renewing the critique of eurocentrism in the conceptualisation of place-based models of nature, culture and politics. These findings derived from an emerging *anthropology of landscape* connect with approaches provided by scholars engaged in *anthropology of indigenous knowledge*. In particular, the concepts and ideas discussed in this last section lay out the main dimensions relevant for the adaptation of the research outcomes.

Chapter four moves from theoretical and conceptual reflections and understandings through anthropological perspectives and methods to the actualities of lived reality and situated social practice embedded in the *local context*. Considered from a na-

tional perspective, it is assumed that issues of environmental interest at community level are not to be separated from the larger social background. Thus, the chapter provides a historical, political and socio-economic backdrop for the data resulting from the fieldwork. Given these prevailing conditions, the chapter then moves to the sites of ethnographic inquiry and elicits methodological considerations arising from the specific locations.

Building on the diverse arrays of global, national, regional and local frames, the fifth chapter finally integrates the major findings of my field study concerned with *local expressions of indigenous knowledge*. It is divided into three major sections related to different dimensions of human-nature interaction as observed in the peasant communities. The first part on the *empirical dimension* explores forms in which the practical aspects of indigenous knowledge become most evident. As the focus altered during the investigation from the *seen* constituents to the inherent *unseen* meanings, the second part turns to the *symbolic dimension* and raises questions concerning perceptions of nature and social values linked to the indigenous worldview and expressed in ritual practice. Within this *context of meaning,* the construction of identity bound to particular landscape features will be emphasised, whereas the third part of the chapter is intended to reveal the processual dynamics of indigenous knowledge. The *context of change* deals with different forms of knowledge assemblies and patterns of knowledge transmission. By considering the foundational nature of historical events and their continued influence on the current environmental and social relations, underlying causes of transformational processes will be further explored. The chapter concludes with an integrated summary of the seminal outcomes, assessing various perspectives and dimensions discussed throughout the thesis. It combines concluding remarks and recalls theoretical premises framing the main arguments of the thesis. It is reflexive in that it considers assumptions underlying scientific thinking and turns back to the question of how locally derived findings and insights may be transferred to general questions concerned with *in situ* conservation and meta-narratives of the global environmental discourse.

As initially outlined, the fundamental question giving rise to the present study aims at understanding different ways of seeing, perceiving and endowing the world with meaning. Departing from this point, the attempt to weave together the multiple outlined threads is illustrated by photographs taken by the author during the time she spent in Guatemala.[4] They reflect the view that the visual should play a more prominent role in anthropological descriptions and analyses. The visualised moments I experienced may remind the reader that the study, although a contribution to social science and thus also made up of analytical schemes and theoretical abstractions, is committed to an indigenous world, which is not perceived in scientifically constructed categories such as ›structures‹, ›systems‹ or ›models‹. The study is not about ›meta-referential parameters‹ or ›cosmological paradigms‹ embedded in a ›cultural logic‹ entailing ›generative principles‹ realised through ›cognitive schemas‹ that promote ›inter-

[4] All but one of the photographs were taken by the author during fieldwork in Alta Verapaz.

subjective continuity‹ and are conditioned by ›unique contingencies‹ of life histories and ›structural positions‹ in political-economic systems as abstractly termed by authors such as Fischer (1999). I have written the thesis with the intention to document connections related to personal lives of people, who cannot be reduced to ›anthropogenic factors‹, ›stakeholders‹ or even objectified as ›human capital‹. They live within complex real-world relations made up of a dynamic entity of occasions and dialogues between human beings, nature and deities intimately related to each other.

Fig. 1.1 Traditional masked dance-drama performed in *Cobán*

2 THE GLOBAL CONTEXT – *international policies and local environments*

In recent decades, environmental issues have become increasingly recognised in international politics. In particular, the effort to protect the ›global commons‹ became a major theme of contemporary debate. Since the late 1980s, conservation and sustainable development appeared as key concepts in contemporary discursive strategies on the global agenda.[1] Within this frame, the term biological diversity, or biodiversity in its abbreviated form, gained significant weight and has determined discussions in the 1990s. In general, its notion encompasses the variety of life on earth, ranging from genetic diversity and the diversity of species to the diversity of ecosystems.[2] As a scientific concept, biodiversity originated in conservation biology. Biologists have drawn attention to the fact that biodiversity as a repository of genetic information is highly valuable. In conservationist thought, a basic conviction is that diversity benefits the

[1] According to the definition of IUCN, conservation may be understood as »the management of human use of organisms or ecosystems to ensure such use is sustainable« (Kalland 2000: 330). The term sustainable development was introduced in the Brundtland report *Our common future* presented in 1987 by the *World Commission for Environment and Development* as a concept, »which meets the needs and aspirations of the present generation without compromising the ability of future generations to meet their needs« (cited by Arts 1994: 328).

[2] A more detailed definition is provided by the international *Convention on Biological Diversity* (see chapter 2.2), which defines biological diversity as »the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems«. Ecosystem means »a dynamic complex of plant, animals and micro-organism communities and their non-living environment acting as a functional unit« (Gündling 2002: 35).

process of evolution; the more diversity there is, the greater is the chance that life forms will be able to adapt to changing conditions and that life itself will continue (Milton 1997: 74). Moreover, biodiversity contributes to the regulation of atmospheric chemical composition, temperature and hydrological cycles, as well as to soil formation, nutrient cycling, pollination, biological control, primary food production and other major ecosystem functions (Mittermeier & Konstant 2001: 11).

Since the environmental discourse entered the public domain, it has been widely assumed that the world's natural diversity in all its essential parts is declining rapidly due to anthropogenic impacts. The proximate causes have been examined in conservation literature and include habitat alteration, over-harvesting, species and disease introduction, pollution and the pervasive trend toward climate change. Of these impacts, the destruction of wild habitats is mentioned as the primary cause of biodiversity loss (Stedman-Edwards 1998: 2). Essentially, the modification of land cover for human use entails the fragmentation of complex ecosystems world-wide and the ubiquitous disappearance of plant and animal wealth. In particular, this process has been attributed to ongoing deforestation in developing countries, most of which are in the tropics.[3] Tropical forests account for nearly half of the world's remaining forests; the main forested regions being found in Central and South America, Central Africa and South and Southeast Asia (Jackson & Jackson 1996: 227). Although covering just seven percent of the earth's surface, these ecosystems are home to around half of the estimated five to thirteen million species (Goodland 1992: 416).[4] Over 90 percent of forest loss is occurring in the tropics, and nowhere more than in Latin America. Given the exacerbation of climate change as the primary global consequence of deforestation (25 to 30 percent of global warming is attributed to tropical deforestation), Hallum (2003) also points to the negative consequences at the local level, as deforestation leads directly to soil erosion and the sedimentation of waterways and flooding. Since tropical soils are generally poor in nutrients, such ecosystems are characterised by the fact that most nutrients cycled in the system are stored in the vegetation. Due to an almost self-contained nature of this cycle, the elimination of the vegetative cover brings about a decrease of soil fertility and thus diminishes the productive potential of these ecosystems.

[3] Ninety percent of the earth's genetic diversity is found in developing countries (GTZ 2001: 1). The annual deforestation rate in the tropics is thought to be 17 to 20 million ha, entailing an estimated loss of 10,000 species each year (Hellier et al. 1999: 869). Pointing the way forward, IUCN estimates that over 34,000 species of plants are currently threatened with extinction, which corresponds with 12.5 percent of the entire world's flora (Townsend 2000: 82).

[4] Most sources point to the increasing extinction rate as a clear indicator of biodiversity loss. However, it is impossible to assess accurately the number of species existing in the world. So far, 1.6 to 1.7 million species have been scientifically identified (Jackson & Jackson 1996: 230).

Fig. 2.1 Epiphytes are part of the highly diverse ecosystems of tropical rainforests

These observations and predictions, particularly in view of the significant forest clearance in the tropics, have given cause for international concern; the need to conserve biological resources has become widely agreed upon. As the world's biodiversity is not only restricted to wild flora and fauna, the growing concern also applies to the importance of plant genetic diversity as cultivated in agriculture and agroforestry. The phenomenon of biodiversity loss does not only take place in natural environments, biodiversity has also decreased in agricultural landscapes. Since the origin of agriculture some 10,000 years ago, farmers have maintained numerous varieties of important food crops.[5] Due to the ongoing alteration of ecosystems, the genetic base of many food commodities is rapidly eroding. Agricultural intensification has encouraged a severe depletion of varieties of domestic plants.[6] Altered patterns of consumption, climate change, civil strife, wars and the resulting migration are further causes of the loss of resources and associated knowledge. This erosion is increasingly curtailing access by present and future generations to the genetic material needed for adaptation through selective breeding; the associated risks are undermining local and regional food security (GTZ 2000: 4).[7]

[5] Diversification of crops and varied patterns of plant management tend to keep pest populations relatively low, even under conditions of intensive cultivation (Ellen 2003: 61).

[6] It has been assumed that the diversity of cultivated plants has declined by some 75 percent since the middle of the 19th century. This process accelerated in the course of the *Green Revolution* beginning in the 1960s, which encouraged the planting of high-yield varieties and fast-growing species dependent on fertilisers, pesticides and irrigation to increase productivity and enhance capacity according to a template of progress deemed universally valid. In disseminating science-based agriculture to developing countries, this ideology has led to the replacing of numerous species and varieties of crops, plants and trees with monocultures vulnerable to pests and diseases. Shiva (1994) critically sees in this deliberate replacement of biological diversity with biological homogeneity in forestry, agriculture, fisheries and animal husbandry a primary cause for the large-scale destruction of biodiversity.

[7] The number of seed varieties used in modern agriculture is diminishing and traditional varieties are increasingly becoming extinct. At present, it is estimated that global crop diversity is decreasing at one to two percent annually; likewise, endangered livestock breeds are vanishing at rates of about five percent a year (Christie & Mooney 2000: 321).

As suggested by Jackson and Jackson (1996: 230), the loss of agro-biodiversity through crop monoculture is a primary cause of concern as the world's population is dependent on only a minimal percentage of the 250,000 plant species as staple food crops. Thus, the conservation of genetic diversity found in related wild strains is essential to the continuing development of crop plant cultivars, in terms of disease- and pest-resistance and productivity.[8] Agro-biodiversity safeguards the potential for natural adaptation to changes in the environment and ecosystems and for adaptation to shifts in human nutritional requirements (GTZ 2000: 3).[9]

The recognition of an accelerating process of biodiversity erosion in all its dimensions has transformed the term biodiversity, which currently appears as a core element in national and international movements and politics. Like few other terms, it has become ubiquitous in scientific and non-academic writing. The effort to conserve biodiversity has become a major component of contemporary environmentalism and articulates, as Escobar (2006: 244) writes, a »master narrative of biological crisis« in the last decade. Although the conservation movement originally began with a focus on endangered species and protected areas, much of the emphasis in recent years has been on community development, conservation-oriented enterprises, education, public awareness and policy matters such as international treaties like the CBD (Mittermeier & Constant 2001: 24). Following the latest trend, which implies that environmental deterioration can best be reversed by involving the local population, community-based institutions are increasingly the focus of attempts to manage natural resources in developing countries.

On the global level, a host of institutions engaged in conservational politics have emerged. Among others, internationally operating conservation NGOs such as IUCN or WWF, funding agencies linked to the United Nations such as UNDP, UNEP or UNESCO and the FAO offer programming and financial support in many countries. Bilateral development organisations like the *United States Agency for International Development* (USAID) or the *German Technical Cooperation* (GTZ) also play an essential role in structuring development and conservation initiatives on the transnational level. Multilateral lending organisations such as the *World Bank* add to the list of institutions global governance structures are composed of. Although using different approaches, these organisations to be effective need to collaborate with national, regional and local counterparts, including state agencies and private associations (Brechin et al. 2003: 159f.). In this context, a growing global integration is emerging beyond national boundaries; local actors become involved in global circuits of goods and capital, communication and meanings via international policies, social movements and environmental transformation.

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[8] Basic human nutrition is dependent largely on seven domesticated species (rice, wheat, barley, oats, sorghum, millet and corn), all of which require continued genetic input from wild relatives to maintain their resistance to disease and pests (Mittermeier & Konstant 2001: 12).

[9] Orlove and Brush (1996: 342) distinguish four types of plant genetic resources: a) landraces of crop species, b) semi-domesticated (weedy) crop relatives, c) wild crop relatives and d) non-domesticated perennial species.

This chapter concentrates on two key issues relevant for anthropological analysis. First, it deals with the links between indigenous resource-use patterns and biodiversity conservation. It then proceeds to selected aspects within the framework of the CBD aimed at *in situ* conservation through protected area management and the acknowledgement of specific knowledge systems generated by local and indigenous communities whose existence is largely determined by their natural environments.

2.1 Biodiversity and indigenous communities

> *The core idea [...] is that the existence and the future course of biodiversity is dependent upon both biological and socio-cultural processes. [...] it is essential to see biodiversity in its multilevel process of conditions and impacts.* (Kamppinen & Walls 1999: 14f.)

As the highest densities of natural diversity occur in tropical forests, so called biodiversity ›hotspots‹ are found almost exclusively in marginal areas of developing countries in what used to be called the ›Third World‹. The great majority of these ›hotspots‹ are located in areas inhabited by indigenous and/or bordering farming communities (Christie & Mooney 2000: 321).[10] Access to these centres located at the peripheries of the global ›South‹ by the more industrialised ›North‹ has been conventionally justified by the »common human heritage« argument, which posits that biological resources are the legacy of all humankind. Such views, as argued here by Nazarea (1998: 115f.), are based on the notion that biodiversity, though being a product of evolution, reflects the combined influence of specific physical environments *and* human impacts. Flora and fauna make up not only the natural but also the cultural characteristics of a region in the way that they are used and domesticated over centuries or millennia. This line of reasoning suggests the widely acknowledged fact that »the concentration of biodiversity at the periphery of the global system is not accidental« (Dove 1996: 47). In particular, the significant spatial correlation of regions characterised by high levels of biodiversity and territories inhabited by indigenous communities are argued to be evidence of a close interdependency of natural resources and human ecology. In this respect, the role of indigenous cultures is widely discussed in the literature on biodiversity protection because of the different relationship that small-scale societies are said to have developed with the environment.

Before going further into the analysis of connections between biodiversity and human resource use patterns, the term ›indigenous‹ should be taken into consideration. Put simply, the term denotes »anything produced, growing, or living naturally in a particular region or environment« (Grim 2001: xxxvii). Yet, it is a highly contentious term. Having been discussed over decades within international law and human rights contexts, the question of how to define the term has become politicised and is still far

[10] For a general view of the global distribution of areas abundant in biodiversity, see the map provided by Mittermeier and Konstant (2001: 17).

from being clarified. The UN have undertaken to lance an approach passed on the widely accepted definition elaborated by José Martínez-Cobo:

Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing in those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal systems (cited in Oviedo 2002: 40).

The criterion ›self-identification‹ tends to be regarded as a central aspect that has been emphasised in other international agreements such as the ILO-Convention 169 that recognises indigenous rights to the use, ownership, management and control of traditional lands and territories.[11] This debate is not without meaning, as the term ›indigenous‹ implies a fundamental notion of »aboriginality« to a particular place, i.e. the »original belonging« or the »first presence«, which in turn leads to the recognition of »primary rights« for those found to be aboriginal, as outlined by Oviedo (2002: 4ff.). Referring to the context of biodiversity conservation, he has undertaken to summarise the essential characteristics of indigenous peoples. These include: historical continuity (traditional inhabitation of lands); strong link to territories (expressed in traditional management practices and in a sense of care for the land); distinct social, economic or political systems rooted in tradition (especially in terms of self-management, control, participation and government institutions); distinct language, culture and beliefs (including traditional ecological knowledge and cultural practices related to the management of homelands); belonging to non-dominant sectors of society (local-level interactions are therefore important, since national, dominant institutions are not necessarily reflective of their interests); self-identification as different from national society; traditional systems of control, use and management of lands and resources; predominantly subsistence systems that are largely dependent on a diversity of resources; collective rights over at least some of the resources available; traditional practices of decision-making on matters of their concern and traditional systems of redistribution.

On a global scale, it is estimated that at least 200 million people may be defined as indigenous, comprising about four percent of the world's total population, but 90 to 95 percent of contemporary cultural diversity (Howitt 2001: 27). Language is considered one of the major indicators of cultural diversity. As estimated by UNESCO, 4,000 to 5,000 of the 6,000 distinguished languages in the world are spoken by indigenous peoples (Posey 2000b: 3). An analysis of the correlation between biological and cultu-

[11] According to the ILO-Convention 169, groups are considered ›indigenous‹ if they are »regarded by themselves or others as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonization or the establishment of present state boundaries and who, irrespective of their legal status, retain, or wish to retain, some or all of their own social, economic, cultural and political characteristics and institutions« (cited in Posey 1996b: 54).

ral diversity has been refined by Maffi (2001). In examining the role of language in human-environment relationships, she discusses global cross-mappings of the world's biological and linguistic diversity, which indicate remarkable overlaps between these two different forms of diversity. Accordingly, ten of the twelve so called biological ›mega-diversity‹ countries figure equally among the top twenty-five for endemic languages (2001: 26).[12]

Apart from areas with high numbers of species endemism, indigenous peoples occupy a wide geographical range varying from the polar regions to the tropical zones in Africa, Asia, Australia and the Americas. In these areas of more than 70 countries, indigenous resource management systems have evolved over time as adaptive responses to the specific natural conditions of particular local settings (Beltrán 2000: 21). In this way, ecosystems in regions of particularly high conservation priority have been shaped by indigenous resource use related to subsistence patterns like agriculture, forest extraction, hunting and gathering practices. Living in close relation to complex ecosystems, indigenous communities have developed an understanding of the diverse reciprocal interactions of such systems. Thus, extensive knowledge related to local environments has often conserved and even enhanced biodiversity (Laird 2000: 348). As most indigenous ecological principles are largely attached to experience and prediction in relation to human subsistence, indigenous peoples living in small-scale cultures have been better able to maintain long-term, relatively resilient relationships with the natural environment than people living in larger scale cultures (Bodley 2002: 163). These principles also include values, norms and beliefs regarding the maintenance of the »balance of nature«, which imply specific conservation methods and practices, as noted by Slikkerveer (2000: 174) and lead to the notion that the world's cultural diversity is part of the broader biodiversity that must be protected (Chatty & Colchester 2002: 15). However, in discussing the widely emphasised ›inextricable link‹ between biological and cultural diversity, Posey (2000b: 6) admits that not all human impacts on the environment have had positive effects, as an increasing number of indigenous, peasant and local communities are abandoning sustainable traditions in favour of destructive activities. The acknowledgement of the positive links between indigenous peoples and biodiversity has been increasingly tempered by the recognition that under certain circumstances (i.e. high population densities, market pressures, unsuitable technologies, local disorganisation) indigenous resource use practices have depleted or destroyed valuables resources, often for individual profit (Booth & Kessler 1996: 241).[13]

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[12] Although a discussion of hypotheses concerning the co-evolution of cultures and ecosystems is not intended here, it is worth noting that the diversity of indigenous languages is undergoing severe erosion: 2,500 of the 6,000 spoken languages worldwide are considered to be in immediate danger of extinction (Posey 2000b: 3). According to DeWalt (1994), the cultural diversity of human experience is being eroded even faster than biological diversity. For details on language diversification, see also Harré et al. (1999) and Oviedo et al. (2000).

[13] Ellen and Harris (2000) warn of an over-idealised view of indigenous peoples. In discussions on indigenous environmental concerns, anthropologists have been prone to stereotyping and romanticism, creating a late-twentieth-century version of the ecological ›noble savage‹. This issue will be returned to in chapter 3.1.3.

Causes of progressive environmental degradation like deforestation, erosion, degeneration of soils and loss of wildlife habitat are commonly traced back to rates of population growth, pressure on scarce resources, extractive activities or even to ignorant attitudes of rural peasants being incapable of coping with external changes (Banuri & Apffel Marglin 1993: 4). Nevertheless, field-based research findings give evidence that in most cases, environmental degradation based on unsustainable resource use patterns are more likely to be traced back to social conditions such as inequality rather than to structural factors such as population pressure (Bodley 2002).

In her discussion on *Socioeconomic Root Causes of Biodiversity Loss* as crucial step in developing effective conservation strategies, Stedman-Edwards (1998) asserts that it is essential to understand what lies behind the mentioned proximate causes in order to understand why such an extensive environmental degradation is occurring. As a complex overlay of political, economic and social factors on a local, regional, national and international scale driving environmental change, she emphasises the need to take a broader look at these multi-layered conditions causally related to the process of biodiversity loss. Even in isolated areas, where the erosion of natural diversity is occurring, a number of circumstances beyond the local level are likely to be at work. Consequently, it is necessary to step back and look at the broad range of influences on local resource use in order to find successful conservation strategies that could reduce the pressure on biodiversity. The deforestation process in the tropics, for instance, is conventionally attributed primarily to the increased practice of shifting agriculture among other human activities such as the establishment of plantations for cash crop cultivation or the use of cleared forested areas for cattle ranching (Jackson & Jackson 1996).

A closer examination, as argued by Stedman-Edwards (1998), reveals much broader categories of root causes that need to be taken into account. Above all, these include factors such as demographic change, inequality and poverty, public policies, macroeconomic policies and structures, social change and development biases. According to Slikkerveer (2000: 17), the loss of cultural diversity in many countries is due largely to »unbalanced historical processes« of acculturation in which traditional and indigenous societies have been dominated by knowledge and technology from the ›West‹.[14] The underlying mechanisms of forest degradation have also been assessed critically by Laird (2000) in terms of broader socio-economic conditions and political impacts. More precisely, she points to the failure of governments and other institutions to recognise and respect the rights of forest-dependent peoples to their territorial lands and other resources. She also mentions the increasing problem of landlessness among impoverished peasants due to inequitable land tenure patterns and policies of state and private agencies that are geared to exploit natural resources for economic profit (2000: 354).

[14] In anthropology, the term acculturation was originally used to refer to changes in cultures as they came into contact with each other. It later became synonymous with the idea that indigenous cultures went into decline after contact with industrial ones (Gardner & Lewis 1996: xiv).

In this context, Wilshusen et al. (2003: 1) recall that most of the areas considered to be of high conservation priority are also social and political ›hotbeds‹. In addition to the disturbing ecological trends described above, the majority of developing countries in tropical regions face significant social, economic and political challenges that complicate both nature conservation and social justice. Located in countries such as Colombia, Brazil, Indonesia, Mexico, the Philippines, or the Ivory Coast, these areas feature high levels of poverty, insecure land tenure and landlessness, unstable political systems, social injustice and histories of state-sponsored repression. Due to historical circumstances, many indigenous peoples became subordinated to a marginal existence on the social and political peripheries of the dominant societies in the postcolonial nation states in which they live. The colonial interplay of social and religious transformation and economic exclusion fragmented many of these societies and enhanced the difficulty to maintain cultural identities. With the increasing globalisation of capitalist economies in the late 20th century and diverse forms of modern internal colonialism, indigenous peoples have come under another wave of pressures to assimilate into mainstream cultures and to open their homelands to resource exploitation (Grim 2001: xl). Based on the continuity of past and contemporary threats, the access and control over natural resources between indigenous communities and nation states have become a common arena of social conflict.[15]

2.2 The Convention on Biological Diversity

Although many governments have refused to recognise the interdependency of cultural and biological diversity and the legitimacy of indigenous systems of resource management in the past, the important role indigenous and local communities play as decisive stakeholders for initiatives concerning the protection and sustainable use of biodiversity has increasingly been recognised in the global environmental discourse. In particular, the contribution that local knowledge systems can make to conservation efforts has been widely acknowledged and has become a growing subject of national and international law. Among other agreements, the most important global policy framework for conservation strategies was negotiated at the *United Nations Conference on Environment and Development* (UNCED) held in 1992 in Rio de Janeiro, Brazil.

[15] The literature on biodiversity conservation and rural development makes extensive reference to ›communities‹. The term is also evident in the case of the CBD and is widely used in related documents and anthropological writings. The impression is evoked that communities somehow ›exist‹ as entities, that local people collectively share equal interests and consensual decision-making processes and agree on community membership and tend to be conservation-minded.

One of the major outcomes in underlining the role of indigenous and local communities in *in situ* conservation is the *Convention on Biological Diversity* (CBD).[16] As the most broadly supported legally binding international agreement in world history (Posey 2000a), the CBD has three general objectives: it aims at the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising from the use of genetic resources. The convention incorporates a comprehensive framework aimed at a global conservation strategy and proposes an integral approach recognising that people and their social and economic needs are to be seen as an essential part of ecological systems.[17] It includes a 23-paragraph introduction outlining its major motivations, 42 articles and several annexes addressing vital issues such as protection measures, conservation, investigation, incentives, access to genetic resources, technology transfer and biosecurity. It presupposes that sustainable development is only possible if economic, ecological and social aspects are reconciled. In its course, a concept of biodiversity conservation has evolved that appreciates the world's biological richness as having coevolved with human societies and that conservation must contribute to sustainable development by sustaining livelihoods, providing ecological services and ensuring the sharing of benefits (Oviedo & Brown 1999).[18] The UNCED has been described as a »global turn« marking a moment of growing awareness of the global dimension of the ›ecological crisis‹ (Hajer & Fischer 1999: 1). Since the conference in Rio, the CBD became one of the most widely ratified international treaties on any environmental issue and has contributed in establishing a political climate where biodiversity is seen as a key issue in environmental as well as in developmental terms (Walls et al. 1999: 2).[19] It is undergoing a continuous process of development and adjustment and has been followed up by succeeding conferences of global scope such as the *World Summit on Sustainable Development* in 2002 in Johannesburg, South Africa.[20]

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[16] *In situ* conservation implies the protection of ecosystems and the maintenance of species in their specific natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties. In contrast, *ex situ* conservation refers to the protection of components of biodiversity outside of their natural habitats, for instance in gene banks or botanical gardens.

[17] In the present context, the term *ecology* is used as a conceptual referent for human-earth interactions, rather than as a scientific discipline studying the interrelationships of organisms in ecosystems.

[18] The CBD also aims to promote the networking among the various institutions involved in the ambit of environmental conservation. These embrace different sectors including research initiatives acting on global to local levels. Article 12 calls its members to establish and maintain programmes for scientific and technical education and training devoted to the conservation and sustainable use of biodiversity and its components. At a national level, academic institutions should encourage research activities concerned with issues related to global environmental change. In doing so, particular account is to be taken of the special needs of developing countries.

[19] By January 2007, 190 parties have acceded to the CBD (168 signatures). For a current state of ratifications, see *www.biodiv.org/world/parties.asp*

[20] Since it only marks a starting point, the CBD will not be discussed in detail in the present context. For an anthropological perspective on the proceedings and outcomes of the UNCED, see *Ritual, Power and Ethnography at the Rio Earth Summit* by Little (1995). In particular, the relevance of power structures underlying the CBD negotiations has been approached critically by social scientists. For

2.3 *In situ* conservation and protected area management

Within the conservation framework of the CBD, the protection of biodiversity in its natural surroundings is given priority. The main strategy for *in situ* conservation is the establishment of protected areas. According to the convention, a protected area is »a geographically defined area, which is designated or regulated and managed to achieve specific conservation objectives« (Gündling 2002: 36). Article 8 of the CBD contains specific references to this issue and provides a general groundwork for the contracting parties. According to Gündling, the most important requirements for such a contract are: the establishment of a system of protected areas where special measures are taken to conserve biological diversity; the regulation or management of biological resources important for the conservation of biodiversity, whether within or outside protected areas; the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings; the promotion of environmentally sound and sustainable development in areas adjacent to protected areas; the rehabilitation and restoration of degraded ecosystems; the establishment and maintenance of means to regulate, manage or control the risks of living modified organisms; the control of the introduction of alien species and the protection of threatened species and populations; the regulation and management of processes and categories that have significant adverse effects on biodiversity (2002: 12f.).

Since the degradation of biological diversity in all its dimensions has become a major issue of international concern, the number of protected areas such as nature reserves, national parks, natural monuments, biosphere reserves, protected landscapes and world heritage sites has increased significantly worldwide.[21] Given the geographic overlap of regions of high natural value and indigenous territories, much of the land that indigenous people occupy has been designated protected areas. Oviedo (2002: 18) estimates that more than 50 percent of the existing protected areas have been established on ancestral domains of indigenous and traditional peoples. With reference to the Latin American context, Borrini-Feyerabend (1999: 224) claims that even more than 80 percent of the protected areas are thought to be inhabited by indigenous and local communities. Most protected territories are state or communal property and less frequently under private ownership. A common feature, however, is that the responsibility for the management is assigned to a single agency, which is either a public body such as a state agency, a ministerial department or at times, a delegated NGO.

this, see, for instance, *The Survival of the Fittest? The North-South Power Struggle in the Formation of the Convention on Biological Diversity* by Arts (1994).

[21] The global network of 30,350 protected areas extends over an area of 13.2 million km², which represents 8.83 percent of the total global land area (Green & Paine 1999: 20).

However, it is important to remember that while the establishment of protected areas is beneficial not only on a national but also on a global scale, the opportunity costs arising from the prohibitions or limitations imposed on the direct use of the natural resources they contain are transferred to local residents living in or near these areas. Restricted access to natural resources in protected areas has frequently resulted in conflicts between the efforts of conservation agencies and the necessity of local people to earn a livelihood. In most accounts, the underlying causes of such conflictual encounters are to be found in protected area management. Historically, the concept of protected areas emerged with the establishment of national parks in the United States at the end of the 19th century. It is based on the idea of a protected area as an uninhabited wilderness. Following this ideal, the further establishment of such areas in many parts of the world often resulted in indigenous and local peoples being excluded from the resources they needed for their development and even survival (Furze et al. 1996). Throughout the first half of the 20th century, conventional practice followed the early protectionist philosophy of an idealised pristine wilderness and implied the preservation of flora and fauna and the exclusion of people. Forced removal and compulsory resettlement were and still are common, often at great social and ecological cost (Chatty & Colchester 2002). Although this model of protected areas has been widely adopted, including the fundamental principle to protect the park or reserve from the damage local residents were supposed to inflict, an obvious shift has occurred in the past decades towards a less ›exclusive‹ philosophy of protected area management. According to Wilshusen et al. (2003), the 1982 *World Congress on Parks and Protected Areas* marked a turning point in conservation practice by encouraging approaches that pronounced greater local participation and sustainable use of natural resources. The link between resource management systems and the use and conservation of biodiversity gained increasing attention. *Top-down* policies were generally replaced in the conservation agenda in favour of more *bottom-up* approaches. Based on the growing awareness that protected areas cannot be treated as isolated islands, but must be viewed in a larger context, conservation strategies operate on the scale of ecosystems and the wider surrounding landscapes to protect biological *and* cultural diversity.[22]

At the same time that it was realised that biological diversity was becoming scarce, information about biological resources contained in local or indigenous knowledge systems was recognised as a valuable source to be addressed in the frame of more ›inclusive‹ conservation approaches. This conceptual turn is reflected in the provisions of the CBD that foster a new development paradigm based on ecologically sustainable strategies and the enhanced role of local communities. Within the provisions related to *in situ* conservation, clear reference is made to the significance of indigenous knowledge in environmental protection, which will be discussed in the following section.

[22] General issues and anthropological perspectives on the specific issue of protected area management will be further discussed in chapter 3.2.

2.4 Biodiversity conservation and indigenous knowledge

As indigenous communities inhabit many of the remaining significant areas of high natural value, they depend directly or indirectly upon the wealth of these ecosystems for their livelihoods. It has been widely acknowledged that the economies of indigenous peoples are closely adapted to the natural resources of their particular environments, of which they reveal a high degree of knowledge based on observation and long practice. In this way they have developed and maintained a cumulative body of knowledge representations based on extended histories of interaction with specific natural environments. This acknowledgement points to one of the most frequently discussed elements of the CBD with regard to indigenous peoples, namely the direction it takes on the central role of knowledge in the formation of local-global relationships. The preamble claims to recognise the close dependence of many indigenous and local communities on biological resources and gives expression to the desirability of sharing equitable benefits arising from the use of traditional knowledge relevant to the conservation and sustainable use of biodiversity. In several provisions explicit reference is made to the importance of such knowledge. Official commitments embodied in article 8(j) mark the starting point the present study is departing from. The section requires the contracting parties to take measures ›as far as possible‹ and ›subject to their national legislations‹ to

respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices (Gündling 2000: 8).[23]

With reference to *in situ* conservation, article 10(c) likewise calls upon the signing countries to »protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements«. Article 17(2) addresses the exchange of information. This includes the »exchange of results of technical, scientific and socio-economic research, as well as information on training and surveying programmes, specialized knowledge, indigenous and traditional knowledge [...]. It shall also, where feasible, include repatriation of information.« Article 18(4) states that parties shall »in accordance with national legislations and policies, encourage and develop methods for cooperation for

[23] Gündling (2000: 9) assumes that the term indigenous ›communities‹ as opposed to indigenous ›peoples‹ was chosen intentionally in order to avoid the debate over the concepts of ›people‹ and ›peoples‹, which has been under way for years in the international arena and UN institutions. Behind the concept of ›peoples‹ lies the notion of self-determination, following the *International Covenant on Civil and Political Rights*, as noted by Oviedo (2002: 4). Just as the term ›indigenous‹ lacks a coherent understanding, the term ›local‹ with its multiple meanings not only relates to questions of scale. In the CBD, there is neither a definition nor orientation as to what a ›community‹ is and how the phrase ›embodying traditional lifestyles‹ is to be understood.

the development and use of technologies, including indigenous traditional technologies« (Gündling 2002: 39ff.).[24] Although the CBD does not further specify the concept of knowledge, its notion becomes clear in other official documents such as the report *Traditional Lifestyles and Biodiversity Use* issued by the *World Conservation Monitoring Centre* of UNEP, which makes reference to »traditional biodiversity-related knowledge« (UNEP-WCMC 2003).[25]

As previously indicated, the significance of *knowledge, innovations and practices of indigenous and local communities* becomes most evident in the field of food and agriculture where it plays a fundamental role in sustaining local resource use practices, whether they be small-scale farming, hunting, fishing or gathering of wild produce. Almost 90 percent of the food requirements in the ›South‹ are met through local production and two-thirds are based on community farming systems (Christie & Mooney 2000: 321). It has been recognised that local crop populations are more diverse in such traditional farming systems than in agricultural areas dominated by agro-industrial technologies. The variety of cultivated plants has been framed in terms of agro-biodiversity as »that part of biodiversity which, within the context of agricultural production, delivers food, contributes to people's livelihoods and conserves habitats« (GTZ 2000: 3).

The slash and burn agriculture as practiced widely in tropical agro-ecosystems in parts of Africa, Asia, Latin America and the Pacific offers one example of a sustainable farming system based upon traditional knowledge and practice that enhances biological diversity (Nakashima & Roué 2002: 318f.). In these countries, small-holders have developed highly sophisticated knowledge on the selection and improvement of crops and in most cases have developed agricultural practices with few external inputs. Thus, agro-biodiversity has been fostered following traditional land use systems that created a genetic diversity including local cultivars and breeds of crops and animals best suited to specific local environmental conditions. Such knowledge in not restricted to subsistence activities, but includes detailed observations of population ecology and species interactions that arise from long-term association with a particular flora and fauna. And like biological diversity, such intellectual diversity enhances the evolution of cultures and their ability to adapt to a changing world (Kimmerer 2002). In this way peasant communities have maintained modes of production and plant inventories that contain crop and domestic animal diversity adapted to a wide range of environmental conditions and complex agro-ecosystems. Thus, peasant landscapes »are often de facto botanical gardens of incredible complexity – stores of biological diversity and natural compounds, providing sources of new hybrids« (Brush 1996: 1).[26]

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[24] For an analysis of provisions of the CBD as related to indigenous peoples, see Posey (1996a).

[25] Terminological and conceptual approaches will be discussed thoroughly in chapter 3.4.

[26] In Mesoamerica, for instance, since communities began to emerge about 6,000 years ago, maize was domesticated through selective breeding from a wild grain (Carrasco1990: xxi). Over the course of centuries, the largest number of maize varieties worldwide has been created by farmers inhabiting rural areas of present day Guatemala. Today around 600 local varieties are threatened by genetically modified varieties promoted by multinational seed companies. Government policies keep the price of locally produced maize varieties low while hybrid seeds are imported. Their use severely increases farmers' dependence on agroindustry (Gómez & Pacay Caal 2003: 204).

Fig. 2.2 Local maize variety cropped in Guatemala

Traditionally, farmers maintained their crop varieties by keeping household seed stocks and by obtaining seed through inter-generational and intra- and inter-community exchanges. Some of these customary networks have been disrupted or no longer exist (Grenier 1998: 5). In discussing major threats to agro-biodiversity, Guha and Martinez-Alier (1997) point to market extensions and the fact that decisions relating to rural production systems are taken to greater extent on the basis of priorities indicated by prices. According to the authors, the introduction of new varieties is considered an undeniable technical progress. Consequently, modern agriculture leads to biological impoverishment by replacing diversity with uniformity and security with vulnerability. Crop heterogeneity is a possible solution to the vulnerability of monocultural systems in agriculture. Although precise figures are often used, it is difficult to construct indicators of genetic erosion because the names of varieties used in traditional agriculture are often not recorded and the extent of farmers' reutilisation of seeds is unknown. Thus, agricultural diversity that has not yet been properly investigated and recorded will lose its potential for co-evolution as traditional agroecology vanishes (1997: 109).

Apart from its significance in the field of agricultural and agroforestry systems, the value of knowledge is well demonstrated in the pharmaceutical sector. The vast majority of the world's population is dependent upon health-care and traditional medicines derived from medicinal plants.[27] Worldwide, a total of at least 35,000 plant species are used for medicinal purposes and, according to estimates by the WHO, about 70 percent of the common modern pharmaceuticals are derived from traditional herbal me-

[27] Mittermeier and Konstant (2001) specify that traditional medicine in developing countries, practiced by at least three billion people, relies entirely on the diversity and availability of wild species. In Africa, for example, 70 to 80 percent of the population relies on traditional medicines and the role of medicinal plants in the healthcare system is enormous, as stressed by Nakashima (1998).

dicines originally generated by local and indigenous communities (GTZ 2001: 1). Just as biodiversity itself is in danger of disappearing, almost all local knowledge of medicinal plants as well as the plants themselves could disappear within just one generation (Christie & Mooney 2000: 321). In many cases throughout the world, the erosion of traditional knowledge systems has led to an impoverishment of local medicine and a dependence upon chemical pharmaceuticals (Laird 2000: 349).

Regarding its potential economic application, such knowledge is increasingly being seen by state societies as having major practical significance.[28] However, its transfer raises issues of justice and ethics. Principles of patent law and intellectual property rights (IPR), along with international agreements such as the CBD, oblige some form of compensation to such sources of knowledge (Kempton 2001: 53).[29] Discussing the crucial aspect of legal measures to protect indigenous knowledge, Shiva (1994) critically asserts that the crisis of biodiversity is not just a crisis of the loss of species that serve as ›natural capital‹, but also a crisis that threatens the livelihoods of millions of people in the ›Third World‹ countries. Even though references are made to ›global diversity‹ and ›global genetic resources‹, biodiversity is not a ›global commons‹ in the ecological sense that the atmosphere is, but exists in specific countries and is used by specific communities. She concludes that neither ecological nor livelihood sustainability can be ensured without a just resolution of the issue of who controls the resources. The globalisation of patent and intellectual property regimes is seen as an expansion of the economic paradigm that itself contributed to the global ecological crisis. Likewise, Posey has critically examined the »commodification of nature«, which he views as »one of the biggest threats to global security in the twenty-first century« (2003: 121). This implies that global trade and political initiatives are reducing the diversity of nature to mere products of biotechnology and commercial exploitation. Although international efforts to recognise indigenous and local communities are positive developments to be welcomed, they face strong forces of the globalisation of trade.

[28] Myer (1998) points to the economic value of biodiversity and the benefits of bioprospecting by the pharmaceutical industry, which is estimated to have earned almost five billion US$ from plant germplasm taken from the ›South‹.

[29] Apart from being negotiated within the frame of the CBD, the debate on IPR involves further international legislations, including the FAO and WTO. On a global scale, the agreement on *Trade Related Aspects of Intellectual Property Rights* (TRIPS) gained particular importance. However, Grenier (1998) claims that the existing IPR agreements fail to recognise the rights of indigenous and local communities to their own knowledges and innovations. Nor does the CBD define protection at the level of the community or provide mechanisms to control outsiders' access to indigenous bioresources. For further discussions on aspects connecting IK and IPR, consider Shiva (1994), Brush & Stabinsky (1996), Frieden (2000), Posey (2000a), Hahn (2001) and Zerda-Sarmiento & Forero Pineda (2002). With a broader scope on international law and policy regarding the rights of indigenous peoples, Mauro & Hardison (2000) discuss the ›soft law‹ context of declarations, agreements, ethical guidelines and policy frameworks that reinforce indigenous entitlements.

Despite recognition of the crucial role of peasant and indigenous groups who have used and conserved genetic resources since time immemorial, Guha and Martinez-Alier (1997: 115f.) remind us that the CBD does not explicitly ensure their ownership and rights to these resources. The authors raise the question of whether genetic resources, wild resources, or traditional and genetically engineered varieties should be commercialised or whether they should remain a ›world heritage‹. Such questions remain unresolved and a number of aspects of the CBD have generated considerable controversy and are subject of continuing intergovernmental negotiations.[30] With regard to its translation into practice, Gündling (2002: 11) remarks that the CBD will only be as effective as its implementation will be at the national and international level. Even if it explicitly mentions the application of national legislations, it has become a significant forum for discussions on indigenous issues and an important benchmark in view of which national regulations and legislations have been designed. In this way, the processes between the global and the local are mediated by national and regional processes. The CBD maintains formal liaison with other international agreements and treaties that touch on biodiversity issues, including provisions on local and indigenous communities and intellectual property rights. The *follow up* conferences are seen as important events in that they promote ongoing discussions on key issues and negotiations on policy directions for future developments.

In addition to the growing international attention and public concern over the proceeding global environmental change, particularly since the arising debates accompanying the emergence of the CBD, a similar apprehension emerged within academic debates. In general, the scientific challenge has been to develop interdisciplinary expertise drawing from both natural and social sciences, to approach the »powerful global environmentalist doctrine of biodiversity« (Marcus 1995: 105). Departing from the latter, scholars like Hajer and Fischer have argued that the ›global turn‹ of Rio is not to be interpreted as »the ›climax‹ of environmental discourse *per se*« (1999: 2). Although it appears a key moment in the determination of environmental problems, many terms remain unclear and need to be reframed in an effort to find new ways of dealing with the politics of environmental change. Essentially, the authors express their conviction that the discourse is characterised by the fact that it has been detached from the cultural dimension of environmental politics. They recommend reconsidering the cultural assumptions underlying operational practices. Among others, this is one topic to be discussed in the following chapter conceptualising claims and features of the discursive production within different strands of academic research in the social sciences.

[30] In the course of the negotiations within the executive body of the CBD, an *Ad Hoc Working Group* was founded to specify the implementation of Article 8(j) and related provisions. Reference to this particular issue also appears in other policies of global scope; an overview is provided by Long Martello and Jasanoff (2004: 10f.).

3 THE DISCURSIVE CONTEXT – *conceptual approaches from anthropology*

While the previous discussion introduced the issue of biodiversity conservation and the role of local and indigenous cultures and resource use patterns therein based on the political discourse, the present chapter turns to the field of academic discourse. Even before the 1990s with the arising of large UN conferences, research in the social sciences has demonstrated considerable cross-cultural variation in the ways human beings influence and are influenced by natural environments. An important question that has often been raised is whether the concepts of *nature* and *culture* are universal in human thought and thus present in all cultures, or whether they evolved out of certain types of human-nature relationships characteristic only of particular societies (Milton 1998: 90). Much recent work is based on the idea that any attempt to understand human interventions into nature must begin with an effort to rethink the terms by which humans have described how they place themselves within or outside it. This chapter reflects on anthropological discussions of environmentalism, which may be defined in its widest sense as »a broad field of discursive constructions of nature and human agency« (Brosius 1999: 278). This definition alludes to an initial assumption underlying current approaches that discourse matters and that environmental discourses are constitutive of reality, or, as Brosius specifies, of a »multiplicity of realities« (1999: 278).[1]

[1] The term *discourse* has multiple meanings as derived from linguistics and social theory, where its use has been shaped largely through the findings and writings of Michel Foucault. It is commonly assumed that language does not reflect social reality, but rather produces meaning and creates social reality itself. In social theory, it carries implications both of process and substance. In particular, discourse theory refers to the idea that the terms in which we speak, write, and think about the world

Thus, environmental discourse is not only communication about the environment but also the process whereby understandings of the environment are constituted through communication. It implies the view that the concepts and attitudes that we employ in relating to natural environments have an effect on how these are experienced. The analysis of environmental discourse, it has been argued by Escobar (1996), may serve as a basis for elaborating feasible concepts useful to reorient strategies in conservation practice. This implies that explanations and ways of thinking do not emerge from a universally shared ›logical‹ order but are ›constructed‹ over time and space. With the emerging of new forms of political negotiations on a global scale, scholars have been paying more attention to broadly defined relations of power and difference in interactions between human societies and their ambient worlds. In doing so, they have challenged dominant interpretations of the causes of environmental degradation and contested prevalent prescriptions for responding to such problems. Based on the axiom that resource management is organised and transmitted through social relations and that biodiversity conservation is largely a matter of human organisation, it was recognised that research on problem-solving efforts should take advantage of social theory and applied studies evolving from anthropological research concerned with environmental issues.[2]

By unravelling recent threads of discussion, two major strands of analysis may be differentiated analogous to the question of *material* vs. *symbolic* interpretations of social phenomena that lie at the heart of philosophical debates currently coursing in the social sciences: an *essentialist* approach that emphasises the biological aspects and universal values of nature and a *constructivist* one, which reflects a growing belief that nature is socially constructed, as argued by the authors cited above. As a form of idealism, constructivism implies that external contexts such as ›reality‹ only have meaning in terms of being socially constructed through human agency (Dilley 1999: 30). This proposition holds that social reality is not a social fact in its own right but is something produced and communicated, its meaning derived in and through these systems of communication. Just as most anthropologists position themselves somewhere between the extremes of materialism and idealism, most studies in environmental anthropology fall between the two positions, recognising that an integrated analysis must consider the mutual constitution of culture *and* nature, thus treating environment as an outcome of combinations of both biological and cultural factors. In consonance with scholars like Thin, who argues that environmental influences on human behaviour »are never purely material or ›natural‹, but are always in part cultural since they are mediated by the culturally determined ways in which they are perceived« (1996: 187), I have also chosen a way between objectivist and constructivist views. My argument is that both

are a reflection of wider relations of power and since they are also linked to practice, are themselves important in maintaining power structures (Gardner & Lewis 1996).

[2] In common usage, the term ›environment‹ refers to non-human influences on humanity. Like ›nature‹, it is shorthand for the biophysical context, the natural world in which we live. At the same time, it refers to human interaction with, and interpretation of, that context (Thin 1996: 185).

paradigms are limited in scope. Thus, my narrative seeks a contextualised synthesis as it aims to counter the polarised divide underlying theoretical debates and presumes a perception of biodiversity as an entity that is at once constructed and real.

Given this outline, a large part of this chapter involves the revisionist work of presenting arguments and key concepts as of relevance to this conceptual frame. As they are not derived from a single scholarly perspective, the following paragraphs centre on selected threads of anthropological research that gradually became relevant as the research progressed. The chapter opens with some preliminary theoretical and methodological concerns and an account of the emergence of *environmental anthropology*. By tracing some of the lines that led up to current approaches, it selectively reviews debates as presently carried out in *political ecology*. Departing from this field, which is one of the most important strands of recent social scientific thinking about environment and development, questions will be raised on how anthropologists have approached the contested nature of biodiversity conservation. Building upon this current, the focus then proceeds to what Slikkerveer calls »culture-bound philosophies of nature and the environment« (2000: 173). Following scholars interested in theorising nature who have called for a redefinition of the relationship between culture and nature, the section *conceptualising nature* retraces the recent treatment of different understandings and engagements with the ambient world. Linked to these notions that involve the idea that perceptions of nature do not simply reflect an *essential reality* of a biophysical environment but comprise a much broader *social reality*, methodological specificities become a subject of reflexive examination in the last section dealing with *multi-sited ethnography*.

Following these presuppositions, the discursive chapter further embraces three main related areas of inquiry. Given the decisive role of *in situ* conservation as formulated in the CBD, the second part explores anthropological *perspectives on protected area management* and presents critical considerations about conservational paradigms and policies. It gives an outline of the conceptual shift from the aforementioned ›exclusive‹ conservation philosophy towards a more systemic view that involves the inclusion of humans in ecosystems. This field of contested issues relating to the protection of particular landscapes connects with the next section dealing with the significance of spatial schemes as a basic means of human orientation as explored by scholars in the *anthropology of landscape*. The dissociation of landscape and place is a theoretical tool that serves as a mediating concept to guide ethnographic investigations and inform anthropological theory. It can be seen as part of a general movement in the social sciences distinguished by a turn away from materialist towards semiotic theories focused on the ways meanings are communicated and reproduced. Anthropological interest in the generation of meaning is based on the premise that the types of knowledge we use, the images and ideas they evoke, and forms of classification are intrinsic conditions of all social actions (McCarthy 1996: 21f.). This mode of exploration has given close attention to understanding the social fabrication of society and nature, along with the ways in which images of nature also construct self and society. Questions concerned with notions on identity and senses of place will be discussed, touching the

significance of cultural values and cosmological notions as expressed in religious worldviews. While common approaches in ecological anthropology have usually ignored the relationships between religion and nature, a current trend indicates a growing number of studies in environmental anthropology that encompass the decisive role of worldviews. Given the universal need of humans to explain the world and make it comprehensible, recent theorising further suggests that connections need to be made that also include the significant role of emotional traits.

The development of theory and ethnography of human-environment relations has contributed significant opportunities for applied anthropology and in particular for research in the field of environmental knowledge as acquired by indigenous communities. If recognising cultural conceptions of nature necessarily implies the existence of nature as a philosophical point of departure from which particular cultural deviations might be measured, it has been argued by Ellen and Harris (2000) that the same applies to the recognition of local knowledge. This is not surprising since the cultural construction of nature is the necessary condition for establishing knowledge as emanations of a particular worldview. This point will be discussed in the final part of the discursive chapter, exploring numerous facets of what has been explored in *anthropology of indigenous knowledge*. Essentially, it will be argued that indigenous knowledge and ways of understanding the natural world need to be placed in their own cultural frames informed by an array of historical, political, social and economic determinants.

3.1 Environmental anthropology

There is no separation between nature and culture. (Banuri & Apffel Marglin 1993: 15)

Interest in the relationship between people and their ambient world has a long history in anthropology. Since the beginnings of the discipline in the 19th century, scholars have been concerned with the ways in which societies interact with their environment and utilise natural resources, as with the ways in which natural processes are conceptualised and classified (Rival 1998: 1). Much of this interest centred on the study of subsistence patterns by which rural populations adapted to particular biophysical conditions. The foregoing approaches of the prevailing research genres engaged with environmental queries include studies in *cultural ecology*. In the 1950s, Julian Steward laid the foundation of the sub-discipline engaged with the analysis of cultural adaptation to natural environments.[3] He forged a comparative analysis based on the central objective to explain cultural similarities in light of environmental conditions, subsistence patterns, and economic arrangements. He rejected the dominant theoretical position of that time that cultural factors were sufficient to explain culture. Steward sought to identify those aspects of culture that were most influenced by the environment and delimited the ›culture core‹. While his thoughts were less deterministic than previous

[3] For an introduction into the field, see *The Concept and Method of Cultural Ecology* by Steward (2006).

environmental theories, he still concentrated on how nature influenced people rather than the reverse. Furthermore, he did not address the relationship between religion and nature (Sponsel 2005b: 545). As scholarly paradigms evolved in the latter half of the 20th century, research in cultural ecology was criticised for underestimating the role of cultural meaning, ignoring the relevance of social differentiation and power, and focussing too narrowly on local scales (Paulson et al. 2005: 20). In the 1960s and 1970s, the field became influenced by new concepts developed by anthropologists who largely structured their data based on ecological models. Among others, Roy Rappaport developed an ecosystem approach that treated human populations as one of a number of interacting species and physical components and transformed *cultural ecology* into *ecological anthropology*. He also became one of the best-known scholars to argue that in many cultures, religion encodes information and institutions basic to economy, ecology, and politics.[4] In the following years, anthropologist who had borrowed analytic concepts from other disciplines used them to critique then-prevailing understandings of human-environment relations, including the view that indigenous land-use systems were inferior to modern scientific models. Numerous research experiences by ecological anthropologists demonstrated the intimate associations between local communities and their environments and the extensive knowledge generated through these associations. The insights acquired into such resource use systems contributed to undermining orthodoxy in natural sciences. Of particular importance was that they showed that these systems were not always destructive for the environment. This was critical for the late-modern move away from a dichotomised conception of *nature* and *culture* (Dove 2001: 98f.).

Although the discipline has its origin in the study of small-scale societies, anthropologists began to consider human entities and their environments as located in complex social processes. Initially focussed on the study of isolated and ›stable‹ cultures, they developed new analytical concepts and models to study constantly shifting cultures. Greater appreciation of the complexity of social and ecological systems developed alongside a growing interest in interpreting the dynamics of ecological systems in terms of the dynamics of larger political systems. Beyond the study of subsistence communities, scholars enlarged their frame of reference to encompass global structures and situated the cultures they studied within the broader international political economy. The changes in ecological anthropology reflect a more general shift in anthropological research drawing attention towards the intersection of global, national, regional and local systems. New approaches emerged mainly in the 1990s concerned with the impact of markets, social inequalities, and political conflicts to analyse forms of social and cultural disintegration associated with the incorporation of local communities into a modern world system (Paulson et al. 2005: 23). It became a challenge for anthropology to study local environmental and social changes associated with glo-

[4] See for instance *Ecology, Meaning, and Ritual* by Rappaport (1979). For details on the impacts his work had on anthropological scholarship concerned with indigenous traditions and ecology, see Messer (2001). Consider also *The Ecosystem Approach in Anthropology. From Concept to Practice* by Moran (1990).

bal trends. Thereby, anthropologists have shown an extensive interest in questions of nationalism and identity, of focusing on the hybrid relationships between local integration and global politics, ›places-in-between‹, and on what has come to be termed ›modernity‹ (Lovell 1999: 20). While looking at the mutual processes of definition and appropriation that take place between what has been termed local and global settings, conceptual, spatial, and cultural scales expanded in academic discourse.

Yet, in analysing the discursive realm, it becomes apparent that concepts are highly malleable and cross over boundaries of mere territorial definition. A major difficulty in analysing the complexity of human-nature relationship is that no single social theory of environmental phenomena in human experience has been developed, just as there is a lack of methods and basic categories to study them (Arizpe et al. 1996). Finding an appropriate methodology to shed light on amalgamations between nature and culture is the prime challenge in cross-cultural investigation. The understanding of how nature is constructed and resource management is conceived in different cultural settings is not an easy task, for the questions raised and the answers sought lie along the margins of several disciplines. Referring to recent theoretical trends, Brosius writes of a rather »complicated scenario« that is informed by »a considerable degree of overlap between various areas of theoretical and empirical focus« (1999: 279). To address both the dynamics of culture and natural resources requires not only transcending disciplinary lines but also that natural and social sciences be brought together. The result, it has been suggested by Nakashima, may be compared to a »labyrinth through which one must navigate with caution« (1998: 8). This challenge has been taken up by a number of anthropologists with different scopes and research traditions. Out of the multi-layered engagement an *environmental anthropology* emerged.[5] While the ecological anthropology of the 1960s and 1970s was characterised by an interest in localised adaptations to specific ecosystems and by an ethnoscientific gaze, contemporary environmental anthropology is more attentive to issues of power and inequality, the contingency of cultural and historical formations, the significance of regimes of knowledge production, and the acceleration of translocal processes (Brosius 1999: 278).[6]

As it is threaded through all subfields of the discipline, environmental anthropology combines a multitude of prevailing perspectives and conceptual approaches in multi-sited contexts. Focusing on the interactions of local and global patterns of resource management, a growing body of contributions have appeared examining the dynamic linkages of human societies with their natural environments. The implication

[5] The recent collection of articles presented by Haenn and Wilk (2006) in *The Environment in Anthropology. A Reader in Ecology, Culture, and Sustainable Living* gives an account of the diverse forms of anthropological work concerned with environmental issues. Consider also the earlier volumes *Environmental Anthropology* (2000) by Townsend and *New Directions in Anthropology and Environment. Intersections* by Crumley (2001).

[6] In drawing a distinction between *ecological anthropology* and *environmental anthropology*, Brosius does not suggest that the more recent approach renders the insights of the former irrelevant. On the contrary, he believes that ecological anthropology laid the groundwork for much of the present consideration of indigenous knowledge and deserves credit for advancing efforts to promote community-based natural resource management.

of pluralist genres of research involves a wide range of orientations in the emergence of new disciplinary factions. The scale ranges from site-specific studies focused on local economies to perspectives aimed at questions of global scope. At the same time, accounts on environmentalism itself (Argyrou 2005) and environmental bureaucracies and agencies (Little 1995) appeared as objects of recent study.

The intersection of discursive lines also reflects the fading of clear demarcations between applied anthropology, which is focused on the translation of anthropological knowledge and research methodologies into practical issues, and an academic one that is directed toward gaining knowledge for the sake of predominantly theoretical interest. Given the assumption that environmental problems are not natural conditions but produced culturally by social inequality (Bodley 2002), anthropological engagement with these issues has been as much about finding practical solutions to environmental problems as about developing new methodological and theoretical approaches. This development, as delineated by Kottak (1999) in *The New Ecological Anthropology,* is located at the intersection of global, national, regional, and local systems. Research in the field blends theoretical and empirical research with applied, policy-directed, and critical work and is oriented towards political implications of ecological processes. In particular, current analyses carried out on multiple levels ranging from local epistemology to global policy have shown that competing representations of discourses about nature can have powerful impacts on environments and the people who live in them (Gezon & Paulson 2005: 6).

As Thin (1996) writes, environmental anthropology enhances the understanding not only of natural resources, human needs and uses of those resources, but also of the spatial arrangements by which resources are appropriated and managed. Cross-cultural comparison based on evidence from long-term studies of such locally adapted arrangements may promote better global understanding of the conditions under which resource management remains sustainable or else results in deterioration. Such work may also remind natural scientists that the concept of ›environmental degradation‹ is a »subjective judgement« that is related to the needs, values, and perceptions of specific interest groups (1996: 188). Anthropologists have played an important role in arguing against those who assume that state control or privatisation of resources are the only means of ensuring sound environmental management. They have increasingly questioned simplistic notions about society and nature by exposing the social and ecological ramifications of political, economic, and cultural power in the ›Third World‹. This line of reasoning has been pursued decidedly by scholars in *political ecology*, who criticise tendencies among government and agencies to address ecological problems with technical solutions and ignore ways in which non-local policies and capital flows influence resource use patterns at local levels. In response, political ecologists have sought to expand the scale of analysis to address national and global processes that transcend geographically separable locales.

3.1.1 Contributions from *political ecology*

> *There can be no discourse between cultures which does not reflect the process by which nature is appropriated.* (Seeland 2000: 10)

In general terms, political ecology can be seen as an overarching frame of inquiry for exploring the politics of natural resource access and use on multiple levels. Its ambition arises from efforts to link social and physical sciences to address environmental changes and conflicts and thereby seems less grounded in a coherent theory as such than in different areas of inquiry. The main question posed by political ecologists concerns the political interactions and outcomes associated with environmental management, particularly in ›developing‹ countries (Wilshusen 2003: 41f.). By providing an analytical framework linking ecological with political-economic phenomena across diverse areas of analysis, political ecology became to be the most often applied approach in current studies in environmental anthropology. Political ecology melds approaches and methods that take account of environmental influences and focus on socio-economic constraints. Scholars attempt to understand cultural adaptation by taking into account other societies as part of the environment, as well as features of the biophysical environment such as climate or terrain (Townsend 2000: 51). The role of culture in defining and shaping resource use patterns is emphasised in much of this work.

The idea that the role of political and economic *power* is central to determining who has access to resources is a fundamental and distinguishing principle of political ecology. An extensive treatment of this issue appears in the writings of Escobar.[7] He presents a conceptual framework for an ›anti-essentialist‹ political ecology. By questioning modes of reasoning that are commonly taken for granted, he seeks to uncover the multiple social constructions of nature that result from human interaction with the biophysical reality. As with any field of social interaction, conservation features numerous causal narratives that are embedded in wider discursive frames. Escobar, who aims to understand the ensemble of forces linking social change, environment and development, defines the field as »the study of the manifold articulations of history and biology and the cultural mediations through which such articulations are necessarily established« (1999: 3). For him, there cannot be a *materialist* analysis which is not, at the same time, a *discursive* analysis. In his view, the analysis of discourse is »a theory of the production of social reality which includes the analysis of representations as social facts inseparable from what is commonly thought of as ›material reality‹« (1996: 46). Brosius sees political ecology as »an enterprise concerned with understanding the ways in which the environment serves as locus for the enactment and perpetuation of patterns of inequality« (1999: 280). Early political ecologists, for instance, sought to demonstrate links between land-tenure regimes or social marginalisation and environ-

[7] See for instance *Constructing Nature. Elements for a Poststructural Political Ecology* (1996), *After Nature. Steps to an Antiessentialist Political Ecology* (1999), *Culture Sits in Places. Reflections on Globalism and Subaltern Strategies of Localization* (2001).

mental changes such as soil erosion and deforestation. However, as Gezon and Paulson (2005) note, they failed to explore the complex and overlapping ways in which landscapes are negotiated and affected by actions on diverse levels. At the same time, they underestimated the extent to which meaningful constructions of the world, the cultural contexts, influenced action. Contemporary political ecologists engage in experimentation and debate around questions of how to link analyses ranging in scale from a single household, a community, to the state and the entire globe. Some currents of thought on ecological sustainability and biodiversity conservation have privileged the global and moved attention away from studying local biophysical processes as well as the socio-political practices and knowledge involved therein.[8]

In the past two decades, this branch of critical social theory has advanced through research and applied practice across disciplines that include anthropology, geography, philosophy of science and political science. In this initiative, as Paulson et al. (2005) write, analyses of social relations of production and questions of access and control over resources are applied in order to understand forms of environmental degradation and to develop prospects for conservation and sustainable environmental alternatives. The authors define *political* as to »designate the practices and processes through which power, in its multiple forms, is wielded and negotiated« (2005: 28). By exploring ways in which power circulates among and between different social groups, resources and spaces, they point out that all kinds of human relationships have political connotations, often manifest in the use of position, knowledge or representations to gain differential access to resources. Thus, *the political* encompasses beyond formal politics all kinds of everyday interactions. In their view, there are two vital questions that guide contemporary political ecology: »How can we frame, carry out, and analyse research that stretches across different spaces, scales, and social groups? And how can we better conceptualise the political in studies of environmental changes, problems and issues?« (2005: 25). Referring to recent efforts of political ecologists, the authors give voice to further questions, such as »how do we situate ourselves in the circuits of power, knowledge, and practice that we seek to understand?« (2005: 31).

The awareness of power relations that link ways of knowing with greater access to social and physical resources has encouraged the development of more participatory, collaborative and reflexive research methods that aim to translate the knowledge of marginal people into power, respect and rights. Political ecologists have insisted that attention to practical engagement with different stakeholders and the search for solutions to social-environmental problems have to be part of a methodological commitment to understanding how the environmental conditions are affected by larger economic and political systems as well as by discursive and cultural constructions of the environment. These studies move away from a reified concept of ›global‹ and ›local‹ as separate but sometimes intersecting scales of analysis. Rather, ›the global‹ is conceived as one aspect of a localised site, to the extent that people in any given realm act within

[8] For an analysis of different directions within the field of political ecology, consider Bryant (2001).

the parameters of policies, authorities and material conditions that have their source outside the reach of immediate local networks. This understanding of local-global relationships points to the importance of studying ›the local‹ not only through rural or marginal spaces but also through spaces in which far-reaching decisions are made. Following the understanding of discourse as »an area of language use expressing a particular standpoint and related to a certain set of institutions« that emphasises some concepts at the expense of others, Peet and Watts are concerned with a more equitable distribution of resource risks and benefits, highlighting the »liberatory or emancipatory potential of current political activity around environment and resources« (1996: 2). In the controversy over biodiversity conservation, political ecology emerged as criticism of the capitalist view arising from an urban-industrial system that constructs biodiversity as a natural resource of information for agricultural and pharmaceutical research in the sense of mere biological raw material. It goes beyond »closing and self-legitimating doctrines«, and opens the society-nature construct to new forms of pluralism and co-evolution (Gari 2000: 258f.).[9] Given the uneven distribution of biodiversity and the immense potential profits to be made in its exploitation, it has been claimed by scholars such as Myer (1998) that the dominant discourses on the subject deserve further examination.

3.1.2 Biodiversity as transcultural discourse

> *[N]ature is always constructed by our meaning-giving and discursive processes, so that what we perceive as natural is also cultural and social.* (Escobar 1999: 2)

A growing focus on the politics of discourse has raised questions about the way in which nature is conceived and represented in global environmental governance. Among others, Escobar, who defines discourse as »the process through which social reality inevitably comes into being« (1996: 46), sees biodiversity as »a construction constituting a powerful interface between nature and culture and originating a vast network of sites and actors through which concepts, policies, and ultimately cultures and ecologies are contested and negotiated« (1998: 75). Following this constructivist interpretation, biodiversity does not exist in an absolute sense as an object that science uncovers, but rather as a historically produced discourse that articulates a relation between nature and society in global contexts of science, economies and cultures. The current scientific approach to biodiversity, he asserts elsewhere, »is geared not toward ›theorizing biodiversity‹ per se but towards assessing the significance of biodiversity loss to ecosystem functioning, and to ascertaining the relation between biodiversity

[9] According to Rival (2001), the growing importance of political ecology to the study of the interaction between society and environment results directly from the impact of global economic forces on the world's tropical rainforest areas, particularly in Central and South America. For a case study from the Americas, see *Culture and Global Change. Social Perceptions of Deforestation in the Lacandona Rain Forest in Mexico* by Arizpe et al. (1996).

and the ›services‹ ecosystems provide« (2006: 243). Others like Redford et al. comment: »Biodiversity is a social invention; people are its inventors as a meaningful concept« (2006: 237f.). Like few other terms in contemporary ›Western‹ society, Bamford considers biodiversity as an issue that has emerged as »a key symbol of late twentieth century techno-scientific thought« (2002: 36).

By referring to conservation as a science-based activity, Milton (1997) argues that scientific knowledge defines biodiversity and supplies the criteria and the technology measuring it. From a sociological perspective, Peuhkuri and Jokinen remind that global conservation strategies are principally based on the ecological knowledge of science. In this process, the scientific community has achieved a central position in defining the nature of environmental issues: »Scientific knowledge is increasingly used as the main source of arguments in environmental debates and policy making« (1999: 134). In spite of all its power, it has been stressed by Berkes (1999) that scientific resource management is unable to halt the depletion of resources and environmental degradation. In this line of thought as well, Takacs (1996) has undertaken to assess the foundational premises of *The Idea of Biodiversity*. He has shown that even within conservation biology there is no coherent understanding of biodiversity and the role and significance of single species in ecosystems. Despite his critical view on strong constructionism, he argues that ideas can act as forces of nature; they can reshape how we view, value and treat nature. His book is about the dialectic between two natures:

nature, the real world that surrounds us, and ›nature‹, how we portray that world. Or, rather, it is about the dialectic between biodiversity, the notional totality of life on this planet, and biodiversity, the term biologists have concocted as an approximation for that totality: a scientized synonym for nature, imbued with the values biologists cherish (1996: 105f.).

Another line of work examines the globalisation of environmental discourse and the new languages and institutional relations of global environmental governance and management. In their analysis of transnational environmental rhetoric, Harré et al. (1999) critically view the scientific discourse that dominates the global debates, which they demonstrate to be insufficient as a means of understanding many aspects of the environment. They express their concern about monocultural ›Western‹ modes in terms of *Greenspeaking* and argue in favour of a global exchange of perspectives on the natural environment. That the discursive process of conservation comes along with a new vocabulary has also been stated by Sundberg (1998). She refers to a standardised discourse that becomes most visible in documents produced by international institutions. Examples include terms like ›ecosystem‹ or ›natural resources‹ that become terminological expressions of the global movement. This is based, according to Escobar (1996), on an economistic approach towards nature that is foreign to many indigenous populations. Elsewhere, he argues that

cultural models of nature are constituted by ensembles of meanings/uses that, while existing in contexts of power that increasingly include transnational forces, can neither be reduced to modern constructions nor be accounted for without some reference to grounds, boundaries, and local culture. They

are based on historical, linguistic, and cultural processes that without being isolated from broader histories nevertheless retain a certain place-based specificity. Ethnographically, the documentation of these ensembles of meanings/uses should be situated in the larger contexts of power and articulation with other nature regimes and global forces more generally (1999: 11).

As already mentioned, Escobar sees biodiversity, although with concrete biophysical references, as a discourse of recent origin. This discourse fosters a complex network of diverse actors and movements, from international organisations to local communities. Its trans-cultural character is demonstrated by the activities of some of the most powerful environmental NGOs such as the IUCN or the WWF. It has resulted in an institutional apparatus that systematically organises the production of forms of knowledge and types of power, linking one to the other through concrete strategies and programmes. International institutions, botanical gardens, universities and research institutes, pharmaceutical companies and the great variety of experts located in each of these sites occupy dominant positions in the network. As they circulate through the network, ›truths‹ are transformed and re-inscribed into other knowledge-power constellations. These sites of translations, negotiations and transfers are more than ›local‹ places and defined by processes that take place within such networks, where the boundaries of technoscience and other domains are never stable (Escobar 2006).

Hajer and Fischer (1999) have at the same time questioned the global ›discourse coalition‹ whose key actors are seen to have framed the issues, determined the language and pre-defined the direction in which solutions are to be sought. In order to be heard, one needs to comply with the terms of this pre-given discourse. The authors try to move beyond the dominant ›techno-managerial‹ discourse and its recommendations by conceptualising it in terms of *cultural politics*. They emphasise the need to return to an analysis of the broader cultural implications of environmental discourse, termed as »culture of progress«, which is characterised by »an insistent reliance on the idea that problems, once recognized and publicly acknowledged, can be handled by the institutions of science, technology, and management« (1999: 3). In their contribution to the debate on *Globalization and Environmental Governance,* Long Martello and Jasanoff (2004) are more optimistic that environmental regimes such as the CBD have admitted the need to promote indigenous knowledge and community participation so as to improve people's lives in the developing world. No longer seen as merely victims of the ecological crisis, local populations are instead assumed to hold some part of the solution to the environmental problems the world faces today.

The institutions and processes designed to manage the world system not only accommodate diverse national interests and facilitate cooperation; they help to construct a politics that at once crosses geopolitical borders and transcends them. Forums such as these are creating supranational norms and regulations and, in the process, helping to redefine agency, authority, leadership and even citizenship in a new domain of supranational politics. [...] The willingness to seek global solutions to problems of the human environment is one of the big – and as yet only partly told – stories. (2004: 3)

More critically, scholars like Myer (1998) have pronounced that science portrays the loss of biodiversity as a phenomenon occurring mainly in the ›South‹. Consequently, a solution for the problem deserves the intervention of international institutions, most of which are guided by ›Northern‹ interests. As in many dialogues of power, the dominant discourse is creating problems for which it alone can provide solutions. Commenting on the complex process of ›internationalisation‹ of the environment, Escobar writes: »What is problematized is not the sustainability of local cultures and realities, but rather that of the global ecosystem, ›global‹ being defined according to a perception of the world shared by those who rule it« (1996: 51). He further criticises:

Ecosystem analysts have discovered the ›degrading‹ activities of the poor, but have seldom recognized that such problems were rooted in development processes that displaced indigenous communities, disrupted people's habitats and occupations, and forced many rural societies to increase their pressures on the environment. Now the poor are admonished not for their lack of industriousness but for their ›irrationality‹ and lack of environmental consciousness. Popular and scholarly texts alike are filled with representations of dark and poor peasant masses destroying forests and mountainsides with axes and machetes, thus shifting visibility and blame away from the large industrial polluters in North and South, and the predatory way of life fostered by capitalism and development, to poor peasants and ›backward‹ practices such as slash-and-burn agriculture (1996: 51).

By arguing against a discursive ›globalocentrism‹, Escobar contends that the sustainable development discourse purports to reconcile economic growth and the preservation of the environment without significant adjustments to the market system. This reconciliation is the result of complex discursive operations involving capital, representations of nature, management and science. In this context, »nature is reinvented as environment so that capital, not nature and culture, may be sustained« (1996: 49). Following his considerations, the discourse may be seen as a »tale that a disenchanted (modern) world tells itself about its sad condition« (1996: 54).

The perception that there are only ›global‹ environmental problems and thus their solution can only be ›global‹ has also been questioned by Shiva (1993). In discussing *The Greening of the Global Reach*, she examines discursive articulations and looks more closely at what the concept of the ›global‹ conceals, how it builds relations of power around environmental issues and how it transforms the environmental crisis from being a reason for change into a reason for retaining the status quo. She argues that the ›global‹ as it emerged in the debates around the UNCED was not about »universal humanism« or a »planetary consciousness«, but rather constituted a »political space in which a particular dominant local seeks global control, and frees itself of local, national and international restraints« (1993: 149f.). In her view, the erosion of biodiversity is a domain in which control has been shifted from the ›South‹ to the ›North‹ through its identification as a global problem. It has occurred because of habitat destruction in biodiversity-rich areas, by dams, mines and highways financed by institutions such as the *World Bank* for the benefit of transnational corporations and by replacing diversity-based agricultural and forest systems with monocultures of *Green*

Revolution in order to create markets for the seed and agro-chemical industries. What at present exists as the ›global‹, she asserts, is not the democratic ensemble of all local and national concerns worldwide, but the imposition of a set of interests from a few nations on a world scale; the most powerful countries control global affairs, based on their own interests that remain narrow, local and parochial. Equally, the *World Bank* is not really a bank that serves the interests of all communities in the world; its decisions are instead guided by the economic and political power of the donors. Such large institutions have a transformative effect on the discursive contours of the issues they are designed to address. By creating certain kinds of subjects they lay the foundation for their own interventions. In this view, the ›North‹ is the ›globalised local‹. Through its global reach, it exists in the ›South‹, but the ›South‹, since it has no global reach, only exists within itself. Accordingly, the ›South‹ can *only* exist locally, while *only* the ›North‹ exists globally. The problem of ecology is transformed into a problem of technology, technology transfer and finance. What is absent from the analysis is that the assumption that the ›South‹ needs technology and finance from the ›North‹ is a major cause of the environmental crisis and a major reason for the drain of resources from ›South‹ to ›North‹. Today the language of the environment is itself being appropriated and made the reason for strengthening ›global‹ institutions and increasing their global reach. Through a shift from present to future, the ›North‹ gains a new political space in which to control the ›South‹. ›Global‹ concerns thus create the moral base for »green imperialism« which implies that the ›global‹ in global reach is »a political, not an ecological space« (1993: 155).

Although such criticism as expressed by Shiva has always existed, it gained broader recognition in the 1990s with the faltering of growth in the countries of the ›Third World‹. Authors such as Hajer and Fischer (1999: 5) have argued that, after all, ›the ecological crisis‹ is a consequence of capitalism's essential features, such as the continued reliance on economic growth and the desire to create new markets, as well as its use of such growth to create space for political interventions (thus avoiding active redistribution of resources). Behind this, there are various key practices of modernity working to further this political-economic dynamic: the dominance of scientific rationality and expert knowledge, the strong reliance on – and belief in – technological innovation as the agent of progress, the implicit legitimisation of the use of violence and the central tendency to see nature as an exploitable resource or as an externality. Another recurring assertion attributes global environmental deterioration to the dominance of the modern system of knowledge expressed through an instrumental and reductionist attitude towards nature. The view that the modern interpretation of the human-nature relationship is based on »the axiom of unlimited human potential for control or mastery over nature«, as Banuri and Apffel Marglin (1993: 21) criticise, is widely shared among social scientists and will be further treated in the next section concerned with the cultural construction of nature.

3.1.3 Conceptualising nature

[N]ature is simultaneously semioticised and real. (Roepstorff & Bubandt 2003: 26)

The general theoretical trend that emphasises an epistemological deconstruction of central concepts of anthropology also allowed for an increasing pluralism in the academic understanding of *nature*. In environmental discourse, culture and nature have been conventionally distinguished from each other as if they were two separate realms of reality. An important theme of recent debate in environmental anthropology is the critique of this divide as a dominant element of the ›Western‹ philosophical tradition, which is seen by Descola and Pálsson as »the key foundation of modernist epistemology« (1996: 12).[10] From this process of reconsideration, it has been argued by scholars interested in theorising nature such as Roepstorff and Bubandt (2003) that nature – very much like culture – emerged as a historical, cultural and social construct with political, moral and emotional associations. The argument here is not that the biophysical environment does not exist. It rather implies that ideas actively shape human perceptions and uses of nature; their contested definition is thus a matter of great importance (Bryant 2001: 162).

Although the view of science as bias-free and disembodied from the social, political and economic realms of human existence is still widely held, critics have increasingly undermined its perception as a privileged way of producing an objective, reliable and value-free body of ideas. Since it is a social construction of our own society, knowledges as discursive formations are burdened with presuppositions derived from our own culture. This recognition implies that the natural and the social sciences operate as systems of meaning within culture and create and transmit cultural conceptions themselves. In particular, the theoretical dualism inherent in the predominant scientific worldview, in which an intensified dichotomy of reality separates not only culture from nature but likewise, subject from object, mind from body and social sciences from natural sciences were questioned by anthropologists after they realised that the nature-culture dichotomy was an inadequate tool to account for the ways in which the people they studied were referring to their respective environments. In discussing the emphasised ›inextricable link‹ of culture and nature, Posey (2000b) has criticised the predominance of scientific values and biological and economic prerogatives inherent to the current biodiversity discourse. He means the functionalist anthropocentric philosophy underlying science that reduces nature to a mere ›object‹ for human use and exploitation. Similarly, it has been argued by Grenier that international science is reductionist: »It categorizes specialities according to a hierarchy, manages these com-

[10] The relationship between culture and nature has been a longstanding topic of philosophical debate. To go further into this debate and the development of scientific thinking is beyond the scope in the present context. For this, consider the study *Ecology of Knowledge* by Wojciechowski (2001), who delineates the development and the nature of ›Western‹ culture with its particular mode of rationality that has been determined to a large extent by cultural framework of the ancient Greeks and by Judeo-Christian hierarchy of values.

ponents separately, and separates the natural and the physical world from the human world« (1998: 51). Among others, Kimmerer (2002) asserts that the adoption of a single mode of thinking based on a predominantly materialistic view of nature has contributed to the environmental degradation humanity faces at present.

Given a growing number of such voices arguing that the ultimate causes of the contemporary ecological crisis lie in the perceptions, attitudes and values determining how humans interact with the ambient world, historical tendencies that engendered scientific paradigms came to be considered. Since the early 17th century, scientific investigation had been informed by the dominant belief that there is an objective reality to be revealed and that natural phenomena can be discovered, understood, predicted and controlled. Enlightenment philosophy saw all minds to be structurally similar, truths to be universal and knowledge potentially the same for everyone (Peet & Watts 1996).[11] The *Cartesian* paradigm, often termed ›rationalism‹ or ›positivism‹ (which affirms that only the empirically observable, verifiable and measurable is scientifically real) is based on the search for universal truths. It entails human domination over nature, follows reductionist methods of analysis and views nature as segmented into parts. It further assumes that places are only »momentary subdivisions« of a homogenous space to be dissociated from the bodies that occupy it and the particularities that those bodies lent to the places they inhabit (Escobar 2001: 143). Increasingly, the limitations of these influential notions that have dominated conventional resource management and conservational thinking until recently are being questioned.

In this Cartesian view, everyday reality has ceased to contain the supernatural, and complex metaphors and ancient symbolism have been superseded by modern rationalism and literal explication. Spiritual beliefs have been pushed to the outside margins of knowledge – to the larger, unmanageable questions of morality and infinity. The separation of the spiritual and physical universes reconstructs the environment in material terms, presenting the world as a set of generic resources, an arrangement of molecules and atoms that humankind can potentially manipulate. The deconstruction of the universe has brought with it an obsession with measurement, precision and quantity. (Strang 1997: 266)

The perception of the ecological crisis in the ›West‹ that is even traced back to the Judeo-Christian cosmology of »man's mastery over nature« has also been called into question by Kalland (2000). From his point of view, postulating a close fit between perceptions and behaviour led to a tendency to romanticism and idealisation of indigenous people and their relations with nature. He asserts that it is common in both environmentalist and anthropological discourse to project conservational motives onto the practices of peoples living ›in nature‹, who have developed profound understandings, which allow them to live ›in harmony‹ with their environment. In referring to the increasing scepticism many people in the industrialised world have of the heu-

[11] Haila (2000) emphasises the role of Descartes in laying the theoretical foundation for the nature-culture dualism by distinguishing between *res cogitas* and *res extensa*, differentiating between an inner (individual) and an outer (environmental) reality. Originally, the term *nature* referred to the essential quality and character of something. It was only in the early modern era that the term acquired the meaning of an ›external reality‹ that it has at present.

ristic power of the scientific paradigm – and of economic development as such that so far has been the base of most management regimes designed and imposed by national and international bodies, he reminds to proceed cautiously when inducing ecological practices from philosophical traditions and demands that the connection between people's perceptions of nature and their behaviour in nature must be subjected to rigorous analysis (2000: 319ff.). Elsewhere, he argues that although it has been criticised by anthropologists, the myth of the *noble savage* persists and might even have gained in popularity as a consequence of the search for paradigms »to replace the modernist project« (2003: 164).[12]

The distinction between ideology and action is also a topic emphasised by Milton (1998). Concerned with varying terminologies within the environmental discourse imbued with statements about the way indigenous societies relate to their environments, she moves towards an approximation of *nature* that »is perhaps the most ambiguous term, referring sometimes to that part of the environment that is separate from human activity, sometimes to an all-encompassing scheme of things that includes human beings along with everything else, and sometimes to a quality of human and other beings that is assumed to be innate rather than acquired« (1998: 88). Just as ambiguous and contradictory as ›Western‹ concepts of nature are environmental perspectives embraced by a wide range of ecological practices of indigenous and traditional societies. As to anthropological views on the concept of nature in such cultures, Milton also critically approaches the widely established myth that such societies have a ›oneness‹ with nature as expressed in official proceedings and documents such as the aforementioned Brundtland report by the *World Commission on Environment and Development*, which makes reference to »the harmony with nature and the environmental awareness characteristic of the traditional way of life« (1998: 86). From her point of view, the ›environmentalist myth‹ obscures the reality of human-environment relations and hinders a deeper understanding of the relationship between culture and ecology. She reveals that the »most important distinction to be drawn is between beliefs about the way indigenous and traditional peoples *act* towards their environment […] and beliefs about what they *think*, *feel* or *know* about it« (1998: 87; emphasis added). She further writes:

People who behave in non-destructive ways that enable them to live sustainably do not necessarily respect their environment. Their material requirements may be such that they simply do not need to stretch their environment's capacity to support them. Conversely, people may respect their environment but still act in ways that damage or destroy it [...]. Thus, to say that a community has an ethic or an ideology of respect for their environment is different from saying that they act in environmentally benign ways (1998: 87).

[12] The view of indigenous people living in harmony with nature is not an invention of recent origin. In colonial times, the *noble savage* was a shorthand term used for the idealised European vision of the inhabitants of the ›New World‹. Among others, Bamford (2002: 44) argues that the ›naturalisation‹ of indigenous peoples, which has a long-standing history in Euro-American thought, continues to inform contemporary conservation rhetoric and inherent perceptions of ›self‹ and ›other‹. See also the findings as expressed by Redford (1993) in *The Ecologically Noble Savage*.

In their introduction to the volume *Nature and Society. Anthropological Perspectives,* Descola and Pálsson (1996) point to the limitations of former anthropological models dissociating nature and culture; the dichotomisation remained unfruitful, particularly since it did not correspond with ethnographic evidence. Human-nature interaction everywhere is based on different social structures, and their mutual relationship varies across cultures. An analysis of such differences has revealed features of how the conception of nature is shaped within varying social practices. Ethnographic studies unveiled significantly different ways of thinking about, relating to, constructing and experiencing the natural. Such conceptions vary according to cultural and historical conditions. Escobar even writes of *natures* that can be thought of as »hybrid and multiform, changing in character from place to place and from one set of practices to another« (1999: 2). Although there is no unified view on what characterises such ›cultural models‹ constituted by ensembles of meanings, the notion is commonly shared that they do not correspond with the ›occidental‹ view of nature as conceptualised in a dichotomous relation to culture or society. Ethnographic case studies have explored a close attachment to land conceived as a multidimensional entity emerging from many types of practices and relations. As defining characteristic of indigenous and farming communities, land is not perceived as something to be expropriated, neither is the natural environment viewed as a ›resource‹, but rather as a living space that is even being endowed with ›sacred‹ meanings that define the existence and identity of the people.

According to Seeland (2000), people make use of natural resources, and this very consensus is a representation of the whole of its social and cultural performance. Thus, ›resources‹ are more than just a practical asset; they have a symbolic dimension and mark the social life of production and consumption of products and services. In this sense, there are no *natural* resources; they are natural in the sense that they form part of a naturally growing and perhaps renewable natural wealth, but from a perspective of natural phenomena management, it is the social process that determines their use within the economy of a society. In his account on *Indigenous Peoples, their Environments and Territories,* Gray writes: »As with nature, indigenous peoples also argue that the concept of biological diversity is alien, because it separates the phenomenon of non-human diversity from their knowledge and livelihood« (2000: 62). Such ›nondualism‹ or perspectives of interdependence, Massanari (1997) argues, provide a different worldview context, one that assumes a fundamental interconnection of ultimate reality, humans and nature. Ethical questions are intimately tied to knowledge or awareness of the self as interdependent with nature and ultimate reality.

Because of the assumed superiority of humans over nature, humans are justified in controlling and exploiting nature for their benefit and interests. However, without a theological referent and mandate, humans are on their own within an alien and meaningless environment that must be domesticated and humanized for the sake of humans. Environmental ethics within such a context of separation, whether grounded in rights, utility, or justice, remains anthropocentric. (Massanari 1997: 271)

Given the historical legacy of views of the culture-nature dualism, Haila's main argument is that the assumed inevitability of the dualism needs to be challenged because of its »debilitating influence on environmental thought« (2000: 156). For him the distinction is continuously reproduced on the level of ideology and philosophy, but it can be disintegrated on the level of context-specific analysis: »Contextuality is a common denominator among the paths toward decomposition of the nature-culture dualism« (2000: 168). This undertaking requires concrete analyses of socio-ecological complexity. He concludes his considerations on recent discussions of the relationship between humanity and nature with the expectation that »a nuanced, multistranded and historically imaginative picture of culture, nature and their interactions will emerge as time goes by« (2000: 171). Similarly, Descola ambitiously points the way forward:

Once the ancient nature-culture orthogonal grid has been disposed of, a new multi-dimensional anthropological landscape may emerge, in which stone adzes and quarks, cultivated plants and the genome map, hunting rituals and oil production may become intelligible as so many variations within a single set of relations encompassing humans as well as non-humans (1996: 99).

Except in the scientific tradition, Descola argues, representations of non-humans are not commonly based on a coherent and systematic corpus of ideas. They are expressed contextually in daily actions and interactions, in lived knowledge and body techniques, in practical choices and rituals. Anthropologists reconstruct these mainly non-verbal mental models of practice from all sorts of apparently insignificant acts and disconnected statements, which they weave together so as to produce meaningful patterns. The author then questions whether these meaningful patterns are represented as guidelines for behaviour in the minds of the people anthropologists study, or whether they are mere blueprints for ethnographic interpretation. He favours the first option as human societies appear to conform their practice to a basic set of underlying patterns, although most members of any given community will find themselves unable to state explicitly the elementary principles of their cultural conventions. These underlying patterns are not universal structures of the mind, which operate independent of cultural and historical contexts (1996: 86f.). Equally, Roepstorff and Bubandt (2003) emphasise the way practices and images of nature are part of such particular circumstances. The authors intend to avoid the latent mentalism of much recent academic thinking in which *nature* appears primarily a matter of ›classification‹, ›perception‹ or ›invention‹. They argue that humans do not live enclosed in »mental soap bubbles«, neither individually nor socially; rather it appears that people establish among themselves entities that cannot be captured exclusively as states of the mind or as entirely physical things in the world around them (2003: 25).

3.1.4 Multi-sited ethnography

> *To look at the symbolic dimensions of social action – art, religion, ideology, science, law, morality, common sense – is not to turn away from the existential dilemmas of life for some empyrean realm of deemotionalized forms; it is to plunge into the midst of them.* (Geertz 1975: 30)

The emergence of pluralist perspectives and approaches in environmental anthropology also applies to new directions in terms of methodological trends that involve the adaptation of long-standing modes of research practices to more complex issues of study. In this way, the present work not only draws upon a range of different discursive threads of social analysis but also incorporates expanded horizons in spatial, temporal and institutional terms. As it emerged within an interdisciplinary context, it draws on multidirectional linkages across global, national and local scales. Even the study itself is inherently interdisciplinary and considers different contexts across a wide range of divergent scales. Spatial scales run from the community level to institutional encounters at regional, national and international levels, whereas the overall frame is defined by the intersection of *global* environmental policies and their implications on cultural dynamics at the *local* level. On the one hand, the ways in which environmental issues are treated in global discourse may provide a framework for interpreting specific conditions on the local level. On the other hand, case-specific experiences on the local level may shed light on how environmental issues can be handled globally. Thus, the approach focuses on a global phenomenon so as to allow for a movement in a hermeneutic circle between global and local scales.

The understanding that global flows are embedded in local processes implies a consideration of ›place‹ not merely as an »isolatable physical space« but as »a dimension of historical and contemporary connections«, as argued by Gezon and Paulson (2005: 9). This research mode, which moves beyond the common concept of single-site location and considers the application of multiscale research styles that bring together local spaces and global flows of policy and discourse, may be attributed to what Marcus (1995) has framed as *multi-sited ethnography*.[13] This type of ethnographic research moves from its conventional focus on subaltern or marginal subjects at single-site locations, contextualised by macro-constructions of a larger social order, to examine the circulation of cultural meanings, objects and identities in ›diffuse time-space‹ of multiple sites of observation and participation that cross-cut dichotomies such as the ›local‹ and the ›global‹. It acknowledges macrotheoretical concepts and narratives of the world system, but does not rely on them for the theoretically constituted holistic

[13] As the discipline is an empirical science based on observable data, ethnography is a process of recording, describing and interpreting ways of knowing, valuing and organising the world. Conventionally, ethnography meant both the study of a culture from the perspective of those who live it and the text written by the ethnographer, usually known as monograph. Participant observation has been the foundation of ethnographic research since the pioneering work of Malinowski (1884-1942), in which the anthropologist seeks to immerse him- or herself as fully and as unobtrusively as possible in the life of a community under study (Gardner & Lewis 1996: xiv).

frame that gives context to the contemporary study of peoples or sets of subjects observed by the ethnographer. It, rather, becomes integral to and embedded in discontinuous multi-sited objects of study (Marcus 1995: 95ff.). This implies that

any ethnography of a cultural formation in the world system is also an ethnography of the system, and therefore cannot be understood only in terms of the conventional single-site mise-en-scene of ethnographic research [...]. For ethnography, then, there is no global in the local-global contrast now so frequently evoked (1995: 99).

Admitting the influence of ideas and concepts of so called post-modernism, Marcus asserts that the mode of multi-sited ethnography is a response to empirical changes in the world and therefore to transformed locations of cultural production; empirically following the thread of cultural process itself implies a shift towards multi-sited ethnography. In this course, accounts of cultures have to be composed in »a landscape for which there is yet no developed theoretical conception or descriptive model« (1995: 102). Multi-sited ethnography is intellectually constructed in terms of the specific discourses appearing within interdisciplinary arenas, using the diverse theories that inspire postmodernism to reconfigure the conditions for the study of contemporary cultures and societies. Within these fields, concepts for reconfigured objects of study do not come from detached theoretical exercises but from »vital and active research efforts in progress« (1995: 102ff.).

Applied to the present context, the answer to the question of »what, and where is the ›field‹?« as raised by Howitt (2001: 198) lies in the methodological approach as described above. As already indicated in the introductory outline, the study is explicitly not an exploration in the sense of a single-site investigation that is focused exclusively on local knowledge of indigenous farmers in Alta Verapaz. It instead has a broader scope, encompassing levels of interaction across an enlarged field. Nevertheless, it is an ethnographic contribution that is in the sense of Marcus »predicated upon attention to the everyday, an intimate knowledge of face-to-face communities and groups« (1995: 99). Although its configuration has been shaped by multi-sited experiences and observations at different geographic locations and in various contextual settings, the thesis essentially is an outcome of an intensively-focused field research that took place in peasant communities in Guatemala. Within the multiscale scheme, primary attention was paid to the ethnographic method of participatory observation. Initial questions, conceptual considerations and reflections on the final form and content of the study are admittedly a result of the fieldwork embedded in local terms. Simultaneously, basic insights have been shaped by encounters of an academic and public nature that took place beyond the village level. Beyond the discussions within the interdisciplinary frame and observations made at international conferences, other occasions to study discourse and policy aimed at biodiversity conservation evolved at numerous different sites. In Germany for instance, workshops were organised in cooperation with representatives of the *German Technical Cooperation* (GTZ) and other governmental institutions such as the *Federal Ministry for Economic Cooperation and Development* (BMZ).

Such experiences continued to shape the work in Guatemala. Although the fieldwork was accomplished thanks to cooperation with local NGOs, it became extended by means of encounters with ministry officials of institutions such as the *National Council for Protected Areas* (CONAP) and joint workshops organised at the regional level with agencies engaged in the field of nature conservation in Alta Verapaz. These encounters also included occasional meetings at biological stations, health posts and classrooms with field workers of local organisations, staff members of park authorities, teachers, tourists, priests and members of scientific institutions such as the University of *San Carlos*. Within all these situations informed by cross-cultural and interdisciplinary endeavours of communication, the functional scope underlying the anthropological contribution involved the cultural translation from one idiom or language to another, which remains, according to Marcus, essential to multi-sited research. He further writes that it »is designed around chains, paths, threads, conjunctions, or juxtapositions of locations in which the ethnographer establishes some form of literal, physical presence, with an explicit, posited logic of association or connection among sites that in fact defines the argument of the ethnography« (1995: 105). In this sense, I constantly moved even physically between different locales and observed different agents interaction.

Another significant topic to be mentioned when discussing methodological issues has been referred to by Kamppinen and Walls (1999) who write that a constitutive idea in the ethnographic case study is that social conditions and impacts relating to biodiversity conservation are processes and the full social meaning of these processes is revealed only through *time*. This revelation requires active presence and participation in order to be understood. The challenge in dealing with »socio-politico-economic-cultural« aspects of resource management, as Howitt (2001: 201) states, is to deal with complexity. In his view, the most critical issue in thinking and writing about complexity is time; leaving inadequate time for the writing and the thinking required is a recipe for inadequate results. These comments, just as the concern Sillitoe expressed about the fieldwork experience that »all anthropologists know how time consuming and painful it can be to achieve a sympathetic understanding of another way of life« (2002b: 132), all turned out to engender my research. The interdisciplinary context required methodological compromises. Given the overall structure of the three-year research programme, a difficulty resulted from limitations given by the different time frames of the other disciplines involved. Moreover, the project required my personal presence in Germany during the months from October to May in order to pursue the commitments constituting the interdisciplinary research agenda. Correspondingly, the prevailing circumstances did not allow for an extensive ethnographic site-specific case study, which conventionally implies at least a one year cycle to follow the seasonal course of agricultural activities. Apart from the imposed temporal restrictions, which shortened the field terms, the concerted search for a study area was a time-consuming prelude to my first stay in Guatemala in 2001. Common fields of interest had to be identified by the research team members and contacts with local NGOs and state

agencies engaged in the field of conservation and development had to be initiated. Having achieved institutional involvement, the ethnographic research venture was conducted by qualitative methods like participant observation and semi-structured interviews to identify and understand the cultural complex of environmental interaction. In addition to secondary data review and inquiries in archives and libraries, the methodology applied has been extended by community surveys and participatory methods such as transect walks with key informants and workshops at the regional and local level.

The field research was divided into two phases. During the first stay from May to October 2001, it took place in four farming communities in the *Sierra Yalijux* in the eastern highlands of the department Alta Verapaz. Through the NGO *Unión para Proteger el Bosque Nuboso* (UPROBON) the investigation became involved in efforts to preserve the cloud forests close to the community of *Chelembá*. Through *Eco Quetzal,* another NGO that had been working in the area improving living standards by means of promoting soil conservation techniques, diversified crop production, artisan marketing and eco-tourism, the work became extended to the village of *San Lucas*.[14] While these two communities are located in the margins of private nature reserves, the two other villages, *Xucaneb* and *Mestelá,* are located in an area of conservational significance as it contributes to the water supply of the department's capital *Cobán*. Besides its importance for watershed management, the region is also subject to efforts to protect the remaining cloud forests in the area. Access to the latter two communities was made possible through CAFESANO (*Caficultores Asociados del Norte*), another NGO that had been implementing development programmes mainly in the field of health care in the area. As the organisation planned to widen its activities towards an integration of gender specific issues, I was asked to realise a brief gender analysis and to investigate women's needs and priorities in terms of the improvement of their living conditions. In order to accomplish a short baseline study, I was accompanied by a female key informant who also translated the interviews I conducted. Together we initiated a meeting of all women of the village, who came together for the first time with the purpose to share and discuss their particular needs and interests. The final outcome of this encounter became a draft of recommendations for the NGO. Although the survey carried out in *Xucaneb* only allowed primary insights, it contributed to an understanding of general life patterns in the highland communities.

Given the primary goal of getting an approximate idea of principal patterns, the research was initially based on an ontological research design, which means that it did not follow an explicit definition of what was to be investigated in terms of clear objectives or expectations concerning the outcomes. Although the overall conceptual framework was given by questions relating to cultural aspects of biodiversity conservation, it was assumed that the research process and the findings themselves would re-

[14] The project started in the 1990s with the primary objective to protect the habitat of the third largest *quetzal* population found in the country with a survey conducted by German biologists. The area was chosen for our research because of the cooperation of these scientists with the *Centre for Nature Conservation* at the University of Göttingen. At the time of our stay, the NGO was working with 34 communities. For an account on these activities, see BIDAS & Eco Quetzal (1999).

veal relevant topics to focus on in a more detailed investigation of specific themes in the following. Instead of using a predetermined set of techniques for data collection, hypothesis testing or the isolation of determinants in social behaviour, I preferred to adopt an open-ended approach to unravel the complexities of actions and meanings. During the second stay from May to October 2002, the work became more focused and shifted from the highlands to the northern lowlands of Alta Verapaz. There the fieldwork evolved in two peasant communities in the surroundings of the National Park *Laguna Lachuá*. Although the findings of the study are based on the fieldwork conducted in both areas, the chapters presenting *local expressions of indigenous knowledge* highlight the investigations carried out in the lowlands.[15]

Multi-sited fieldwork is always conducted with an awareness of »being within the landscape«, as Marcus writes, and as the landscape changes across sites, »the identity of the ethnographer requires renegotiation« (1995: 112). Moving between official and subaltern contexts presupposes the ability of an intellectual identification with variously situated subjects in terms of *reflexivity,* which he regards as a dimension of method. In viewing the role of the ethnographer as »circumstantial activist«, he follows that the conventional ›how-to‹ methodological questions of social science seem to be embedded in or merged with the political-ethical discourse of self-identification developed by the ethnographer in multi-sited research. The movement among sites and levels of society lends »a character of activism« to such an investigation and indeed, while traversing through the multi-sited space as portrayed above, I found myself confronted with »all sorts of cross-cutting and contradictory personal commitments« (1995: 113). Though it is not intended to further discuss the reflexive self-presentation in contemporary ethnography with an emphasis on commitment, activism and ethics, it has to be reminded that the researcher herself is never just an observer but has rather to be considered an integral active part of the field of study, personally informing events occurring during the research process and influencing the final construction of the ethnographic text. Given the understanding of culture in Geertz' terms (1975) as ›a web of significance‹, the ethnographic venture to discover the circulation of meanings, objects and identities is not so much concerned with objective representations of reality than with the more elusive topics of perception, cognition and expression of reality. When it comes to perceptions of nature, Milton (1998) argues that searching for cultural concepts is not just a matter of identifying words that can be translated as ›nature‹. The issues people take for granted in their everyday lives seem to be the hardest parts of their culture to identify since they are not articulated in words and may be difficult to infer even from action. She reminds to consider that anthropologists' accounts of indigenous cultures can never be ›neutral‹: »they are inevitably filtered through their own analytical frameworks. So we also need to ask what ›nature‹ means in the minds of the anthropologists whose work we are consulting« (1998: 89).

[15] Details on the study sites in the lowlands and further methodological considerations are provided in chapter 4.4.

In the end, Ellen recalls that the sources of ethnographic data are also seamless and fragile webs of information:

We speak of ›gathering‹, ›collecting‹, ›sorting‹, ›processing‹ and ›recording‹ data, as if it were out there waiting for us. Of course it is not: ›data‹ is only a convenient summary term for the documented and memorate results of conducting research, either based on our own first-hand experiences or based on those of others set down in texts. [...] we can never escape from the philosophical dilemma as to what it is we really ›observe‹, how categories affect what we observe and what is ›fact‹ and what ›interpretation‹ (1984: 213f.).

3.2 Perspectives on protected area management

Environmental and social concerns are inextricably woven together. (Jeanrenaud 1999: 133)

With regard to the role of anthropology in research on biodiversity conservation, it can be observed that the implications of protected area management as a significant instrument in achieving the objectives of the CBD concerning *in situ* conservation gained new relevance as a field of study. In the past decade, writings on this topic have grown exponentially.[16] Anthropological interest in the field emerged in the 1970s and draws on a diversity of theoretical backgrounds. In addition to the fields of ecological and economic anthropology and studies of local management of common property resources, it includes major lines of thought from political ecology. Detailed examination of policy issues between states and local populations and in social movements have also been developed in *applied anthropology* and *advocacy anthropology* (Orlove & Brush 1996: 333). Based on wider scale issues of environmental and social change, advancing contributions from this area analyse the impacts of the global expansion of policies and economics at local level interrelationships of resource users with regional, national and international actors. More specifically, many accounts focus on policy issues such as competing claims over territory inherent in relationships between nation-states and local populations and place-based conflicts over natural resources within protected area management regimes. Within this frame, the underlying approach places the concept of *interaction* above that of *intervention* (Slikkerveer 2000: 172) and devolves more responsibility and power in decision-making to local communities. It implies the adoption of new participatory concepts and methods in conservation and development practice. Thereby, it has been claimed that ›participation‹ is not to be seen as a means to achieve externally desirable goals but must rather be based on an interactive long-term process of concerted dialogue, negotiation and conflict resolution to understand how local livelihoods are constructed by people's own meanings and priorities. In this vein, much recent academic work reveals the social dimension of linking conservation efforts through protected areas with local level development.

[16] See for instance Wells & Brandon (1993), Furze et al. (1996), Stevens (1997), Stolton & Dudley (1999), Beltrán (2000), Oviedo et al. (2000), Brechin et al. (2003) and Berkes (2004).

3.2.1 Conservation paradigms and local livelihoods

It has been suggested by Furze et al. that the imposition of protected areas, »while obviously concerned with managing ecosystems, is fundamentally about the management of people, their aspirations and their relationship with nature« (1996: 36). The necessity to expand perspectives towards integrated conservation strategies that would combine nature protection objectives with human development issues has been featured increasingly, as the aforementioned conventional practice of protected area management generally overlooked the presence of local communities and their cultural dependence upon the ambient world. Based on the notion of a protected area as an uninhabited wilderness, the living conditions and concerns of residents were frequently ignored and their specific knowledge systems underestimated. Many protected areas had been created without prior consultation with communities living in or close to these areas (Oviedo & Brown 1999: 99). In most cases, the fundamental operational principle even assumed that natural resources had to be protected from local people who affect the physical environment negatively (Chatty & Colchester 2002: 3). As a result, restricted access to natural resources frequently caused conflicts between the efforts of conservation agencies and the necessity of local residents to earn a living. Such conflicts of interest frequently led to illegal and destructive encroachment and entailed some of the most serious failures in managing protected areas. Oviedo (2002. 20) writes that protected areas in many cases turned out to be another form of deprivation and social exclusion for local populations, entailing opposition and even violent protest. Although they play a crucial role in maintaining biological diversity and ecological integrity, Wilshusen et al. (2003: 5) remind to take into account that their creation tends to reflect the political environment in which they are embedded. The history of nature protection often emerges out of colonial and authoritarian rule as instruments of natural resources control. Historically, the designation of protected areas commonly occurred via authoritarian policies in which rural communities were forced off their lands and denied access to resources essential to their economic and cultural well-being. Balick and Cox (1997) refer to this practice as ›ecocolonialism‹. Based on the notion that natural resources were to be considered property and thus subject to either private or state ownership, postcolonial administrations created most existing tropical rain forest reserves by declaring public land to be protected or by purchasing land from private owners. While this strategy used previously in North America and Europe was effective in preserving the land, it was primarily focused on meeting national needs rather than the concerns of local residents.

In regarding these conventional principles of nature conservation, a number of critiques became pronounced in the discursive frame. Basically, they assessed the founding premises of the protectionist approach that justified the removal of local residents from national parks and reserves and questioned the inherent ethnocentric assumptions that had been transferred to local settings with no regard to the complexity of human-nature interactions and without concessions to the experiences and knowledge repertoires of local people. Despite calls from anthropologists that the sci-

entific credibility of such notions be recognised, the common logic of conventional conservation management continued to deny the complexity of interfering factors that contribute to any given environmental situation. Howitt argues that the weakness of many resource management systems is »their failure to address the social, cultural and political complexity as competently and comprehensively as they tackle ecological and engineering complexities« (2001: 71). In pursuing simplicity, he writes, scientific thinking underlying conservational practices »minimises the extension of interaction to a relatively narrow range of direct causes and effects« (2001: 69). Likewise, Berkes (1999: 10) refers to the limitations of scientific paradigms inherent in conventional resource management, which are based on an instrumental attitude towards nature. In the same way, Chatty and Colchester (2002: 7) assess the *positivist* or *rationalist* principle of conservation science that assumes the existence of only one single reality. This approach, they argue, reduces complex aspects of problems into discrete parts to be analysed with the goal to discover, predict and control this reality and to summarise the obtained knowledge in universal laws or generalisations. These expressions concerning the inadequacies of scientific thinking and inherent ethnocentric values underlying conventional conservation practice came along with the quest for an »entirely new ecological paradigm« (Kalland 2000: 321) to identify and promote social processes that enable local communities to conserve and enhance biodiversity as part of their livelihood systems. In the search for alternative conservation and development approaches, it became increasingly clear that protected areas had almost always been created on the top of areas inhabited and used by existing populations. This perspective involves the growing awareness that the biodiversity that parks are designed to protect is in fact a »social good« (Redford et al. 2006: 240).

3.2.2 From conflict to cooperation

In their account on *Building Alliances with Indigenous Peoples to Establish and Manage Protected Areas*, Oviedo and Brown (1999) observe that significant changes in the way protected areas are currently conceived, established and managed indicate the emergence of the claimed new ecological paradigm. Apparently, as a result of changing political perspectives within the environmental movement, there has been a broadening of understanding with regard to cooperation in natural resource management over the past decade. As it became increasingly clear that conservation and development initiatives that pay attention to local perceptions instead of merely being imposed from above were more likely to be relevant to people's needs and to generate sustainable intervention, the major international conservation agencies responded increasingly to the call for collaborative approaches in the planning and implementation of protected areas.[17] This way of thinking is mirrored in the definition of a protected area as provided by

[17] Among other multilateral lending organisations, even the *World Bank* has recognised the crucial role of community-based and people-oriented approaches as key issue in sustainable development and environmental protection, as Davis (1993) indicates.

the IUCN as »an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and *associated cultural resources*, and managed through legal or other effective means« (Phillips & Harrison 1999: 14; emphasis added). Principles and guidelines were adopted for instance by the WWF and the *World Commission on Protected Areas* of the IUCN (Beltrán 2000) with emphasis on the need for joint agreements based on the effective participation of local populations.[18] As summarised by Oviedo and Brown (1999), the agencies recognise that protected areas will only survive if they are seen to be of value to the nation as a whole and to local people in particular, if territorial and resource rights of local communities are respected, if it is acknowledged that their knowledge, innovations and practices have much to contribute to the management of protected areas, if governments and protected area managers incorporate customary tenure, resource use and control systems as a means of enhancing biodiversity conservation and if indigenous peoples have the right to participate effectively in the management of the protected areas established on their lands or territories.

The emergent directives reflect the extent to which conservation organisations have reframed their perceptions of environmental issues relating to local communities over the past decades. The revised directions in conservation policy include the concept of *Integrated Conservation and Development Programmes* (ICDPs), which have the dual objective of conserving biological diversity and promoting improved conditions of life and meeting the necessities of communities living in and around protected areas. As there are always likely to be conflicts of interest between such communities and the management of protected areas, ICDPs are based on the principles of mitigating or reconciling such conflicts to balance competing objectives by generating alternative income sources and education programmes (Wells & Brandon 1993: 161).[19] The concept that has also been framed by other terms such as *community-based conservation* (Berkes 2004) or *people-oriented conservation* (Jeanrenaud 1999) is based on the assumption that if local people have a *stake* in protected area management and their livelihoods were linked to conservation strategies, they would likely cooperate and comply with restrictions. Another popular term labelled a key concept in natural resource management is *collaborative management*. According to Borrini-Feyerabend, the co-management approach aims at »a situation in which *some or all of the relevant stakeholders*

[18] In order to increase attention to the role of protected areas in achieving conservation and development goals and to provide international standards, the IUCN undertook to designate a global classification system in 1994. For details on these categories that recognise a gradient of human interaction, see Holdgate & Phillips (1999: 7ff.) and Stolton & Dudley (1999: xiv).

[19] Although not a point of interest in this study, it is worth mentioning that eco-tourism has become a popular and much debated issue in recent years. As it has been recognised that it may be a means of conservation and sustainable use of biodiversity, nature-based tourism, which often takes place in protected areas, entered the CBD context. A basic issue within the ongoing debates is how interests of tourism can be accommodated with protected area management and the needs of local residents who may earn a living from such activities.

in a protected area are involved in a substantial way in management activities.«[20] A core idea of this concept is that the agency with jurisdiction over the protected area develops a *partnership* with other stakeholders, primarily local residents and resource users, which specifies and guarantees their respective functions, rights and responsibilities with regard to the area. However, it is difficult to identify clear demarcations between various levels of participation in collaborative management activities. As this process itself is complex and highly context-dependent, the author concludes that the approach can neither be operationalised in terms of rigid guidelines nor is it to be seen as a *panacea*, because a number of costs and potential obstacles need to be evaluated in advance, before embarking on such specific processes (1999: 227ff.). A number of such obstacles that need to be considered as basic prerequisites to successful conflict resolution have been discussed by Hough (1988). He identifies eight key issues: the institutional environment of national parks; the lack of trust between national park authorities and local people; the difficulty of effective communication between all parties involved; the number of stakeholders with different perspectives; the difference in power between state agencies and local people in rural areas; the degree of risk and uncertainty involved in entering into discussions aimed at conflict resolution; the problem of binding or enforcing any agreement; the alternatives, for all the stakeholders, to participating in the process.

By analysing the politicised nature of conservation programmes, Wilshusen et al. (2003) explore how conflicts and resistance often develop in response to the designation of protected areas. They argue that even those approaches labelled ›people-oriented‹ conservation generate complex political challenges that may hinder biodiversity protection efforts and detract from sustainable human development. Nevertheless, the outlined development may be interpreted as part of a general process of decentralisation toward devolution of power to the local level and has been described by Oviedo and Brown (1999) as a trend away from *exclusive* management models of protected areas towards more *inclusive* models that allow for a high level of participation. Referring to future policy trends, the authors expect that systems of management and protection will become more decentralised, progressively transferring power to local entities. Moreover, they predict an ongoing movement towards ›bioregional models‹ of conservation that will be developed on a larger scale of ecosystems. Following this scheme, the emphasis will move from complete protection of isolated areas towards a more comprehensive and dynamic concept of conservation and management of ›working landscapes‹ that values the interactions between people and nature and assumes resource management activities as a critical aspect of protection (1999: 100ff.). In discussing the latest phase of conservation planning, this overarching model has

[20] The term *stakeholder* is used widely to refer to the various institutions, social groups or individuals who possess a significant and specific stake in the protected area. This may originate from an institutional mandate, geographic proximity, historical association, dependence for livelihood or economic interest. In particular, these include governmental agencies, administrative authorities, local businesses and industries, research institutions, NGOs and above all the local residents who live within or close to protected areas (Borrini-Feyerabend 1999: 225).

also been favoured by Wilshusen et al. (2003). From an ecological point of view, they argue that the protection of ecosystems will be best achieved at the eco-regional or landscape level. Given that conservation programmes do not take place in a social and political vacuum, the authors call out to explore the complex human dimensions that underlie protected area management in questioning who decides how conservation will occur, at what social cost and who benefits from biodiversity conservation.

3.2.3 From principles to practice

In general, the assumption expressed by Schaaf that »any type of intervention activity will be all the more sustainable the more it takes into account local traditions and socio-cultural conditions« (2000: 342) has been widely affirmed by both practitioners and scientists. Similarly, it has been acknowledged that natural resource policies and directives need to take into account customary resource use practices and traditional land tenure systems in the design and implementation of protected areas as a means of enhancing biodiversity conservation. Although such expressions indicate a process of rethinking and give clear evidence that conservation strategies have shifted from protectionist models to the notion of sustainable development and participatory approaches, Chatty and Colchester (2002) remind that emergent policies related to indigenous peoples and principles of integrated protected area management need to be translated from theory into field-based practice. Borrini-Feyerabend points to the gap between conceptualised models and conditions of reality, as she observes that »more often as one may think, there is a schism between policy and practice« (1999: 228). The question whether the international community is going through a profound change in perspective or whether the consideration of local participation in conservation and development cooperation is a mere rhetorical shift with little commitment to practice has also been raised by Chambers and Richards, as they argue:

The awareness, attitude and behaviour of many development practicioners have changed less than the language they have learnt to use. Many have acquired the easy skill of using words like ›participation‹ and even ›empowerment‹ but without changing the way they see poor people or the way they feel development should be undertaken. The language has become bottom-up but the inclination remains top-down (1995: xiii).

Although an obvious development towards a cross-cultural conservation ethic has taken place in the past decade, many questions remain unresolved, especially on effective mechanisms for negotiation and conflict resolution in protected area-people relationships. In particular, the common claim of ›local participation‹ is a popular but inconsistent term. It remains undefined and often reflects the expectations of those designing the plan of management rather than the views of the local people themselves, as the above-noted comment of Chambers and Richards indicates. This may also explain the observation made by Schaaf (2000) that many well-meant conservation and development projects fail once external funds have ceased to flow.

Wells and Brandon (1993) have critically examined numerous field-based experiences with the ICDP approach. In general, they observe that most of the initiatives emphasise participatory approaches, although only very few specify exactly what is really meant by participation or how participation in conservation projects may contribute significantly to reduce threats to protected areas. According to their review of the constraints, which have limited the effectiveness of implemented projects, the critical link between development and conservation is often missing or unclear, and most ICDPs have been designed without adequate understanding of the specific local socio-economic context. As they treated local people as passive beneficiaries of activities, most of the surveyed projects even failed to involve people in the process of decision-making related to their own development. Another outlined barrier to local commitment is the reliance on existing authority structures in many societies that inhibit participation in decision-making. However, the authors realise that some of the projects could at least make important progress in gaining the confidence of local residents and eliciting the participation of community members in project-initiated activities. As there seem to be no reasonable alternatives, they argue in favour for ICDPs to be further reinforced and expanded. Following an understanding of participation as »empowering people to mobilize their own capacities, be social actors rather than passive subjects, manage their resources, make decisions, and control the activities that affect their lives«, they conclude that the relationship between local residents and park authorities remain essential to the conservation of biodiversity und thus to sustainable development (1993: 160ff.).[21]

3.2.4 The remaining quest for participation

Jeanrenaud reminds to distinguish between participation »as a means and an end« (1999: 130). In the former sense, it serves as a more efficient tool for realising predetermined objectives set by outsiders, whereas direct involvement is seen in the latter sense as a fundamental right of local people to influence the course of events, which implies a process of empowerment, critical to the goal of self-determination. Thus, contexts of decision-making raise fundamental questions in participatory development and conservation. It is important to understand how participation works in particular cultural and political contexts. When reference is made to participation, Jeanrenaud writes, it is often assumed that it is the task of projects to encourage the local population to participate. She suggests that the concept may be turned around and the question be raised of »how does a conservation organization participate in local people's projects?« Conservation organisations need to consider systems of »environmental brokerage« in which diverse values and interests are negotiated and they should be prepared to accept concepts of nature and conservation as defined »from below, as

[21] Chatty and Colchester (2002) have undertaken to delineate a typology of participation related to protected areas from *passive participation* in the 1970s, to *participation by consultation* in the 1980s and *interactive participation* in the 1990s.

well as from above« (1999: 131ff.). The importance of cross-cultural negotiations, which imply the acceptance of a plurality of interpretations, meanings and approaches, has been discussed by Clay et al., who write that the success of long-term sustainable use and conservation efforts will be enhanced only »if indigenous peoples feel that they have ownership of a project« (2000: 14). However, a basic necessity, as suggested by the authors, is that communication takes place and that this endeavour needs time and trust. With regard to the indicated ›empowerment‹ of local communities, Redford et al. question the common assumption »that there is such a thing as local people who operate in a cohesive community fashion« (2006: 237). The recognition that groups of people are not homogenous has also been referred to by Jeanrenaud, as she clearly points to the questions of how to define groups to which people belong: »What is a community? Who is local?« (1999: 127).

Borrini-Feyerabend has attempted do answer the first question in her definition of communities as »complex entities, within which differences of ethnic origin, class, caste, age, gender, religion, profession, and economic and social status can create profound differences in interests, capacities and willingness to invest in the management of natural resources« (cited in Redford et al. 2006: 237). According to a definition provided by Laird, a local community is »a group of people having a long-standing social organization that binds them together, often in a defined area« (2002: 458). Beyond specific conditions to be taken into consideration at the local level, Redford et al. (2006) assume that an understanding of the biological and social history of a given site, together with the particular political circumstances of its creation, is essential in creating feasible conservation programmes. They specify their argument by asserting:

Each site is linked to regional, national, and international scales through agricultural, trade, and colonization policies and the politics of conservation, development, and local peoples. These connections can interact with one another and create conditions that impact threats, partnerships, and policies. Moreover, there is no ›right scale‹, but a set of cross-scale dynamics important to biodiversity. When crafting local approaches, it is vital to understand the proximate and ultimate driving forces that have influenced and will continue to influence conservation actions (2006: 239).

The authors remind to take into account that conflicts concerning a given conservational setting shift over time, involving different threats, interest groups and social values. When developing ways of resolving these conflicts, it is important to understand these contexts and not compromise the long-term viability of the protected area itself in the belief that resolving a given conflict will provide an ultimate solution. Protected areas are necessary, but not sufficient for the conservation of biodiversity. They must be seen as an integral part of a larger national or eco-regional scheme that will effectively address conservation issues within, as well as outside park boundaries. Park-based conservation will not survive in isolation, but rather must be integrated with subordinate efforts focused on agriculture, forestry, pollution, water diversion and urban areas in order to ensure a compatible future for human societies (2006: 240f.). Assuming that non-intervention is not an appropriate option to encounter the

accelerated global loss of biodiversity, the main question that surfaces in response remains, according to Wilshusen: »How can conservation interventions minimize conflict and negative social impacts and maximize social justice?« (2003: 56).

The portrayed shifts in paradigms towards the insight that *in situ* conservation needs to be adapted to particular settings and cannot succeed without the involvement of the concerned population finds equivalent notions in other related fields, as will be shown in the following. Local perspectives, in the literal sense of *ways of seeing,* continue to play a role in the succeeding chapter concerned with culturally defined perceptions of nature. To capture the encounter of such perceptions and to approach wider aspects of human-environment interactions, Myer (1998) suggests that anthropologists place their studies within a broader context based on a holistic *landscape* orientation as analytical framework. This claim will find particular consideration in the following as the idea of *cultural landscapes* providing a meaningful way to organise ethnographic data has increasingly come to the fore in anthropological interest. Inherent in this approach is the view of landscape in the sense of a natural space that has been shaped by human use, with interactive political, economic, social and biological aspects. It offers an access for ways of seeing and thinking about nature, integrating the cultural dimension into protected area management. By recognising the continuity between past and present, it explores senses of place and identity and may serve to bridge the dichotomous conceptualisation of nature and culture that is still underlying conventional conservationist thinking.

3.3 Anthropology of landscape

> *The whole secret of the study of nature lies in learning how to use one's eyes.* (George Sand, cited in Kaplan 2001: 239)

As a contribution to the aforementioned shift towards a ›new ecological paradigm‹, recent anthropological interest that focuses on the cultural construction of landscape offers conceptual considerations. Since the 1980s, anthropologists began to work increasingly on the ways, in which people's concepts of themselves and the world they live in, are created by spatial constraints. In this way, an *anthropology of landscape* came up as a new way of approaching perspectives on place and space. Operating at the junction of history, geography and politics, social relations and cultural perceptions, the concept of landscape in anthropology goes beyond conventional disciplinary boundaries and challenges to create an area of study for cross-disciplinary approaches that take into account landscapes as *places* »imbued with multiple cultural meanings, diverse human experience and ecological dynamism« (Howitt 2001: 173).[22] From this

[22] Important contributions emerging from this field are the volumes *The Anthropology of Landscape. Perspectives on Place and Space* by Hirsch and O'Hanlon (1995), *The Archaeology and Anthropology of Landscape. Shaping Your Landscape* by Ucko and Layton (1999), *Landscape, Memory and History. Anthropological*

perspective, landscapes are regarded as ›socially constructed‹ in the sense that they are natural spaces formed by human resource use patterns and characterised by belief systems as culturally conditioned experiences and understandings. It has been widely asserted that many so called *natural* landscapes are in fact *cultural* or *anthropogenic* landscapes that may be seen as a primary source of involvement for the establishment of human belonging and emplacement. As such, they are a means of referring to physical entities and particular ways of expressing conceptions of the world; the same landscape can be seen in different ways by different people, often at the same time. This implies, as Layton and Ucko have indicated that »there is no environment, only landscape« (1999: 3). In current political contexts of globalisation, where the interface between localised understandings of belonging, locality and identity often conflict with wider national and international political, economic and social interests, the exploration of how such explanations are culturally constructed seems particularly relevant to scholars like Escobar (2001). Given the primacy of embodied perception, he argues in his article *Culture Sits in Places. Reflections on Globalism and Subaltern Strategies of Localization* that we always find ourselves in places: »We are, in short, placelings« (2001: 143).

The concept of landscape, as it is presented in the following, provides one tool among others by means of which interrelationships between humans and nature are produced and reproduced through systems of local practices and beliefs. In this sense, it does not stand for an ›absolute‹ geographical site. Rather, it becomes tangible through social practice interwoven with worldviews, which social scientists came to recognise and understand through fieldwork and ethnographic description and interpretation. While one of the common tropes of ethnographic enquiry has always been that of ›setting‹, new insights into the theorising of landscape also include notions on intertwining aspects such as identity, memory and history (Stewart & Strathern 2003). It has been suggested that landscape provides a wider context in which notions about place and community can be situated. It proves to be a concept for bringing together *materialist* and *symbolist* perspectives, approaches that stress politics and economics and others that stress cultural meanings. In anthropological landscape analysis, these factors are brought together and shown to be interrelated. By attempting to further specify the term, Stewart and Strathern suggest that landscape refers to the perceived settings that frame humans' senses of place and community.

A place is a socially meaningful and identifiable space to which a historical dimension is attributed. Community refers to sets of people who may identify themselves with a place or places in terms of notions of commonality, shared values or solidarity in particular contexts. Landscape is thus a contextual horizon of perceptions, providing both a foreground and a background in which people feel themselves to be living in their world. While we may tend to think of this in rural terms or as an aspect of ›nature‹ it may apply equally to urban and rural sites because they are all equally moulded by human actions and/or by human perceptions. (Stewart & Strathern 2003: 4)

Perspectives by Stewart and Strathern (2003) and *The Anthropology of Space and Place. Locating Culture* by Low and Lawrence-Zúñiga (2003).

Beyond its significance for studies of identity, the landscape approach serves as a meaningful scheme that provides alternative ways of revealing intertwining aspects of *landscape* and *language*. Concerned with the role of language in human-environment relationships, Maffi (2001) has shown that language and ethnicity have a spatial dimension that is intimately related to the natural world. As communities interact closely with local environments over time, modifying it as they adapt to life in specific ecological niches, the knowledge they acquire becomes encoded and transmitted through the local languages. From this perspective, landscapes are linguistically woven networks of places of knowledge and thus can be said to be anthropogenic, not only in the sense that they are *physically* modified by human intervention, but also because they are *symbolically* brought into the sphere of human interactions by words, expressions, stories, legends and songs that convey human relationships with the environment and inscribe the history of those relationships onto the land. Linguistic expressions of human attitudes toward the environment are not only found in the words people use to name natural forms, floral and faunal species and geographical features of the landscape; it is also spread in subtle ways throughout the linguistic system, in all aspects of grammar and language use. The nature and dynamics of the interactions between biodiversity and human languages may be best studied through the observation of the ways in which languages encode local ecological knowledge about plant and animal species, nonliving features of the landscape and their mutual relationships, as well as concepts about human-nature interactions (Maffi 2001: 28ff.). Similarly, Whiston Spirn (1998) argues that landscape *itself* is language. Landscape was the original dwelling of humans and thus the first text, read before the invention of other signs and symbols. In this sense, the language of landscape may be seen as »a habitat of mind«. For her, the terms *environment* and *place* may seem more neutral, but they are abstract and ignore the assumptions *landscape* reveals. Landscape as a continuous whole connotes »a sense of purposefully shaped, the sensual and aesthetic, the embeddedness in culture« (1998: 16f.).[23] In his reflections on the spatial order as an active medium through which society is reproduced, Cajete writes that understanding orientation to place is essential in understanding what it is to be *related*. Employing the term »geographic imagination«, he asserts that humans have always oriented themselves by establishing direct and personal relationships to landscapes with which they have interacted. This sense of place or »geographic sensibility« is ever evolving through the life and relationship of all its participants. Referring to the Americas, he writes of an »ensouled geography«; the relationship of humans to this geography embodies a sacred orientation to place that reflects the very essence of what he calls a »spiritual ecology«. A sacred orientation to space and place is a key element of the ecological awareness and relationship indigenous people establish with their territory (2001: 621ff.).

[23] Whiston Spirn indicates that landscape etymologically associates place *and* people. The term (Danish *landskab*, German *Landschaft*) combines two roots. ›Land‹ means both a place and the people living therein; the suffixes -*skab* and -*schaft* as in the English -*ship* carry the meaning of ›to shape‹, but also mean ›association‹ or ›partnership‹ (1998: 16f.).

3.3.1 The polysemic texture of landscape

Much depends on how the seer sees. (Massanari 1997: 276)

As the concept of *sacred land* can be found in many indigenous societies, Howitt (2001) concludes that the geomorphic landscape reflects the same cosmological truths that shape the relationships within the living community. This implies that much is inscribed into and recorded upon the landscape, be it physically or symbolically, which affects resource management practice. In reading such landscapes as »cultured places«, he affirms that even the most learned outsider is reduced to »illiteracy«; the absence of literacy in complex multicultural environments follows as a common source of misunderstanding and conflict (2001: 172ff.). He further writes:

Yet in the worlds of technocratic and scientistic dreaming which characterise so much of the Realpolitik of resource management, there is little room for ›sense of place‹ beyond the application of sophisticated Geographical Information Systems to document exactly what is there to be utilised. Such systems aim to capture local geographies (at whatever scale) in a tight Cartesian framework, where grid references, physical descriptions and quantitative measures of vectors, direction and size suffice for most purposes (2001: 165).

In all resource management systems, Howitt asserts, the perceptions, attitudes, values, ethical standards and aspirations of those involved are fundamental to its structure and operation. By referring to Blay[24] who suggested that the most important element in the ecology of an area to be considered is the state of mind of the persons who use it, the author draws attention to different *senses of the place* that most often underlie geopolitical conflicts. When different stakeholders meet in cross-cultural conservational settings, misunderstandings and tensions may arise due to the encounter of the »geometries of resources« inherent to the above mentioned *Cartesian* framework with the more complex »topographies and topologies of places of the heart« of indigenous peoples (2001: 175). The mentioned ›illiteracy‹ in reading landscapes often impedes processes of communication and can also be seen as an explanation for the difficulties to identify underlying obstacles that hinder the successful implementation of even participatory approaches in development programmes and conservation initiatives. To some extent, Howitt considers, what one *sees* reflects much of what one already *knows* or *expects* to *see*. Potentially, each viewer will perceive and understand different things in each image and in each place. As the relationship between humans and landscapes proceeds from cultural experience, it cannot be inquired into via questionnaires or short term field visits. It is a process that implies the ability to ›read‹ landscapes, not just as if they were texts but as complex records of interaction and interrelationship constantly changing over time and space. As social and spiritual concerns are embedded in the land, this reading cannot be a passive experience; it is, rather, a dynamic ac-

[24] John Blay, *Part of the Scenery* (1984).

tivity that encompasses the landscape. Thus, the process to develop a »multidimensional sense of place«, which most often takes place in a frame largely devoid of verbal communication, requires situated engagement and involves »all the senses and facilities of human experience« (Howitt 2001: 165). Similarly, Whiston Spirn (1998) mentions that a person *literate* in landscape sees significance where an *illiterate* person notes nothing. Ironically, the professionals who specialise in reading certain parts of landscape more deeply than other parts often fail to understand landscape as a continuous whole. That the polysemic nature of landscape cannot be recognised easily by outsiders has also been emphasised by Posey (2002) who reminds that knowledge, beliefs and practices related to sacred places and sites of certain historical significance in many cases are kept secret. In viewing landscape, it is easy to revert to a naïve common sense as the basis for interpretation and judgement. For many observers, a landscape can appear empty when the artefacts of their own culture's presence cannot be seen. Nevertheless, he affirms elsewhere, studies that document the cultural aspects of landscapes can overturn the ›empty land‹ concept and begin to recognise the role of indigenous and local peoples in *in situ* conservation (1996b: 56).[25] Relating to the idea of different ways of envisioning landscapes, Sillitoe gives an example from development practice, which illustrates different environmental perceptions that also tend to come together in intercultural conservational settings:

If we take several people looking at a wooded hillside, they all see the same natural landscape but they may perceive it, know and think about it, entirely differently, according to their culturally conditioned understanding and experiences. A shifting cultivator will see potential swidden sites, assessing their value by a range of criteria such as species composition indicating fertility status [...]. A local entrepreneur might see a tourist location [...]. A forester may see a mature standing crop, calculating its value according to whether it is harvested sustainably or clear-felled, with attendant erosion risks. A western conservationist might see a beautiful natural environment that demands protection against any human depredations, as the habitat of endangered wildlife. When those with different views come together [...] they have to negotiate some shared understandings of each others' perspectives of the hillside or whatever, and reach some consensus about it, with power relationships influencing the outcome (1998b: 206).

The notion of different spatial perceptions, which implies that all lies in the eye of the beholder, may be applied to an example of changing landscape features in the Guatemalan highlands. Even the same landscape at different times of the year may evoke different associations in the same observer (Fig. 3.1 and 3.2).

[25] Posey is referring here to the concept of *terra nullius* used in the past by colonial administrations as a legal doctrine to dispossess indigenous populations of their ancestral lands. This was accomplished by declaring the territories as uninhabited and thus unowned prior to colonial rule. For post-colonial governments, the *terra nullius* concept offered an ideal basis for the establishment of state-owned protected areas on traditional lands based on a public ownership model, which became the cornerstone of protected areas legislation (Oviedo 2002: 27).

Fig. 3.1 A landscape shaped by human resource use in the Guatemalan highlands

Fig. 3.2 The same landscape a few months later

The finding that different perceptions, values and ways of seeing underlie many of the geopolitical conflicts that have shaped and continue to shape social experience on all levels has been discussed by Oviedo and Brown (1999). Referring to protected area management, they stress the aforementioned sacredness of natural sites as an issue of particular importance to be acknowledged. In general, the sacredness of natural sites is

a religious or mythological expression of the recognition of its vital functions. Similarly, social regulations determine active management when degradation occurs and exclusion rules in terms of *taboos* tend to be established in relation to especially valued species and other elements of nature, thereby creating a sense of respect and care.[26] With emphasis on biodiversity conservation, the role of restrictions in regard to the use of sacred sites has also been referred to by Schaaf (2000). As they have served as important reservoirs of biodiversity, preserving species of plants, insects and animals, *taboo* associations attached to particular trees, groves, mountains, rivers, caves and temple sites should continue to play an important role in the protection of particular ecosystems by local people.[27] As inextricable elements of the cultural landscape, such places are widely found in societies throughout the Americas, in Australia, as well as in Asian and African countries. Schaaf suggests that they may provide an alternative and innovative approach to environmental conservation. Due to access restrictions, such sanctuaries serve to maintain ecosystems in landscapes that people otherwise would have transformed into agro-ecosystems. As they contain important reservoirs of genetic and species diversity and often play a major role in safeguarding the hydrological cycle of watershed areas, they can help to protect ecosystems against environmental degradation. In this way, the transdisciplinary nature of the interface between cultural perceptions and scientific rationale in the effective protection of bio-cultural diversity found in sacred sites provides compelling models for integrated conservation-development programmes (2000: 341f.).[28] This observation might also have led Mauro and Hardison to apply the term »ecocultural landscapes« (2000: 1263).

Taking into account the above considerations on the untenable distinction between nature and culture and the polysemic texture of landscape, a concept for bridging the gap between the natural and the cultural has been developed aiming at the conservation of »bio-cultural diversity« (Oviedo et al. 2000). With an emphasis on *in situ* conservation of biological *and* cultural resources as interdependent phenomena, it indicates »the crucial complementarity for achieving an alternative, less exploitive philosophy of nature and the environment for improved sustainable natural resource management and conservation« (Slikkerveer 2000: 174).[29]

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[26] *Taboo* is derived from the Polynesian context, where the concept was established to protect resources considered particularly vulnerable; overfished reefs, orchards of unripe fruit or overharvested wild plants and animals would be declared *taboo* until they had recovered to be harvested again.

[27] This point has been made by a number of authors. See for instance Gadgil et al. (1993), who provide numerous ethnographic examples in their account on *Indigenous Knowledge for Biodiversity Conservation*. Although sacred sites undoubtedly contribute to biodiversity conservation, Laird (2000) questions whether the complex conditions that have created and maintained such areas may be operationalised as conservation tools.

[28] In particular, Schaaf relates to a programme initiated by UNESCO aimed at *cultural landscapes* and their link with the conservation of biodiversity. Established in 1992 within the *Convention Concerning the Protection of the World Cultural and Natural Heritage*, this category recognises the complex interrelationships between humans and nature in the construction, formation and evolution of landscapes.

[29] Anthropologists not only focused on differing representations of landscape in the frame of resource management, but also extended discussions towards the accounts by colonial administrations of how they perceived local landscapes through ›imperial eyes‹. For an example, see *Misreading the Af-*

3.3.2 Environmental imagery and identity

As human engagement with landscapes is rooted in historically constituted social relations, landscapes also form part of the way in which identities are created. Not only are economic, social and environmental systems deeply implicated in cultural landscapes but also those in which human identities are shaped. By analysing the relationship between identity and space, Hernando Gonzalo (1999) argues that landscape refers to symbolically constituted spaces that are conceived only through personal experience. In this sense, space forms part of the basis of identity and individual personality; colours, smells, sights and sounds define space in our childhood and thus become part of ourselves and provide a vital but unconscious source of security and protection. It is essential to understand the cognitive and affective bases that define models of self-consciousness in other societies in order to be able to evince our own cultural and historical reality. Like the aforementioned authors, she concludes that land or space cannot be differentiated from landscape. As space is experience, all nature or land is landscape. That the relationship with the landscape is essential, giving substance to human relationships, has also been noted by Lovell (1999). In her introduction to *Locality and Belonging*, she underlines the idea that belonging to a place is instrumental in creating identities:

Belonging to particular locality evokes the notion of loyalty to a place [...]. Accounts of how such loyalties are created, perpetuated and modified are of relevance to an understanding of identity at individual and, more importantly, collective levels, since belonging and locality as markers of identity often extend beyond individual experiences and nostalgic longing for a particular place. Belonging may thus be seen as ›a way of remembering‹ [...]. Locality and belonging may be moulded and defined as much by actual territorial emplacement as by memories of belonging to particular landscapes whose physical reality is enacted only through acts of collective remembering (1999: 1f.).

Drawing on Appadurai[30] who argues that identity may also appear deterritorialised through experiences such as migratory movements or forced displacement and thus may be located between places rather than being bound to particular homelands, Lovell writes that locality may become »multivocal«, and belonging itself can be viewed as a »multifaceted process« (1999: 5). That home may be multiple has also been noted by Stewart and Strathern (2003). For them, it may not be just one place, but numbers of places that show correspondences of association and relationships attached to them.

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rican Landscape by Fairhead and Leach (1996). In their analysis, they found that colonial stereotypes of supposedly destructive land management had long guided the formulation of research questions and the interpretation of findings. Beyond such discussions on the ›imperial eye‹, including accounts by conquerors and explorers of what they ›saw‹ in colonial settings, anthropologists have developed landscape studies to map the politics of unequal encounters in contemporary contexts. Among other recent works, Chapin and Threlkeld (2001) examined projects on mapping indigenous land use. Based on the notion that mapping lands and land uses is a necessary step in the process of assisting indigenous people to secure rights to both land and resources and in maintaining ethnic identity, it is argued that participatory mapping, because it is a political process, also enhances the chances that they will have both the ability and the will to engage in sustainable resource management.

[30] Arjun Appadurai, *Global Ethnoscapes. Notes and Queries for a Transnational Anthropology* (1991).

The sense of community that is established through emplacement may encompass the living and the dead as well as the spirit world. This embeddedness within local, mythical and ritual landscapes is bound to an inner emotional landscape that merges the perceived experience of the place with the imagined symbolic meaning to the individual. This ›contestation‹ of landscape depends on images that are based on memories and associations that feed into ideology but are based primarily in subjectivity and experience. Everything depends on how ›the heart‹ sees them as ›inner landscapes‹ (2003: 8f.).

The above assumptions of an intimate and complex set of inner and outer place-oriented relationships also imbue the work of Strang (1997). In her study concerned with cultural landscapes and environmental values, she considers landscape as a medium through which social issues and ideas about identity are formulated, illustrating how socio-spatial placement contributes significantly to the construction of values that people inculcate and express. The question of identity – in the sense of personal and collective identity – is central to the socio-spatial equation, and the ›placement‹ that people feel is one of the strongest influences on their environmental beliefs and values. However, identity is a complex concept. It is grounded in relations with others; it grows through interaction with people, places and things, and through forms of self-expression, responsibilities, creativity and knowledge. It feeds on beliefs, values and ideas and it is rooted in particular places, by birth, family or professional involvement, spiritual attachment and sentiment. It is fluid, multifaceted and, above all, an essentially social product (1997: 59). With reference to indigenous perceptions in the Australian context, Strang argues that identity arises specifically from the spiritual and historic ties to a particular place and the affective response that these engender. Through the collection and analysis of ethnographic data, she explores the dynamics of environmental relations, using the concept of landscape to examine the ways in which an emotional response to the land is culturally constructed. By applying this concept she shows how different values are located in the land according to social, cultural, historical and ecological factors. Visible methods of land use and the spatial ordering of people and landscape are only outward manifestations of a dynamic interaction with the land in which underlying social structures and cultural concepts are as crucial as economic and environmental pressures. Indigenous identity comes primarily from the land linked through ancestral connections. The nature of this identification with land creates an »unparalleled collective sense of belonging« (1997: 159f.). Thus, for aboriginal people, *who* they are and *where they are from* are not divisible. Strang raises crucial questions about how people *make* different places, how the human environmental relationship is constructed, about environmental values and in particular, what encourages or discourages the development of affective values inherent in a specific vision of the land. According to her, the intimate, long-term relationship between aboriginal people and their country may be the only kind of interaction that could possibly lead to a complex and thoroughly integrated use of the physical environment as a central medium and, in consequence, to a high degree of affective concern for the land.

This ›withinness‹ has been identified by Weber Nicholsen (2002) as a prerequisite for contact; no contact is possible if one is not within the same context. Further questions concerned with experiences of identification with landscape have been discussed thoroughly by the author. In her book *The Love of Nature and the End of the World. The Unspoken Dimensions of Environmental Concern* she explores the emotional and sensorial significance of the experience of nature, which the next section will turn to.

3.3.3 Of emplacement and emotional involvement

> *The way we conceptualise nature and the manner in which we manage our relationship with the natural world reveals a great deal about ›who we are‹.* (Nakashima 1998: 22)

In contrast to the aforementioned authors, Weber Nicholsen takes a different view, looking beyond considerations of ›cultural constructions‹. From a philosophical point of view, she discusses human relation to the natural world in terms of a »void that is beyond«. This is specified as an encompassing feeling of belonging to the land that is saturated with a sense of continuity through time, which she views as an unformed space that is spiritual rather than material. Instead of conceptualising ›mental models‹ or ›imagined geographies‹, she develops ideas about a »deep receptivity to the nonhuman world« which is experienced »as a merging with other life« (2002: 23). This relation evolves in an unspoken way: »We may speak of other human beings or to ourselves about our encounter with the natural world, but the encounter itself does not transpire in the medium of language« (2002: 19). She further specifies this encounter:

We can meet nature in its creative vitality only with our direct presence, only by opening our interior selves to it. [...] When we open to the depths within us, we become receptive to the language of nature. Nature speaks to us and we hear her. [...] To hear nature speak in this way is not a matter of understanding the specific cries of the animal or bird. Nor is it a matter of mere superstition or of conventional symbolism. Rather, in perceiving the creature, we enter into a confluence with a deeper mystery in which both of us participate (2002: 26f.).

Like Strang, Weber Nicholsen argues that the feelings of attachment and identification humans experience early in their lives, which give rise to the sense of belonging, become the basis for later recognition of kinship and form the matrix from which the self develops. The world of home extends back through family to the ancestors; in this way the home*land,* for which humans feel nostalgic, is saturated with a sense of continuity through time; i.e. nature enters our experience in childhood in the form of place. The world of childhood is a place to be, a place to become a self. It is a world of people, dwellings, fields, birds, streams, trees, hills and clouds. And that world becomes us, literally. By surrounding us and gathering us inside itself, it gets inside us, providing the very ground of our being as a felt sense of interiority. We take the world of childhood in through all our senses, as a place that contains smells, textures, warmth and coolness as well as sights and sounds. But this vivid world is largely lost

to us as adults (2002: 35ff.). The role of culture then is to provide opportunities for apprenticeship, to offer receptacles for the repertory of stories and occasions for their renewal, to remind humans to attend to their dreams. Such cultures, which maintain the link with the interior, she writes, allow for »a greater degree of maturity« (2002: 4). Like the aforementioned authors, she also mentions the importance to recognise different ways of seeing. Though, she specifies that *vision* is not mere seeing but an activity of the embodied senses:

Vision, indeed all perception [...] is not a matter of a subject perceiving an object but rather something more complex – a chiasmus, a movement from outside to inside and back again, on both sides, in both directions. [...] Vision happens when the exterior things resonate with their internal trace [...] in the body (2002: 68).

If our relationship to the natural world is one of familiar relatedness, Weber Nicholsen argues, reciprocity is then what connects kindred beings to one another. She describes reciprocity as »mutual recognition and influence that involve not only individual separateness but also a relating based on an embodiment in which psyche and senses, internal and exterior worlds, are engaged« (2002: 63). Reciprocity is the mutuality of an intimate relationship, which is closer to a love relationship than a commodity exchange. Through a symbolic relationship of reciprocity, it has been widely argued by anthropologists such as Nigh (2002), many indigenous peoples essentially establish a ›social relation‹ with the elements of the inhabited landscape. In *Constructing Natures. Symbolic Ecology and Social Practice*, Descola, for instance, comments that reciprocity defines the relations between humans as well as the relations between humans and non-humans that are characterised by »a constant exchange of services, souls, food or generic vitality« and respectively imply the debt of humans towards non-humans, notably for the food the latter provide (1996: 94). Howitt compares the intense and intimate relationship between indigenous peoples and their country even to a »kinship relationship« that includes responsibilities and obligations of nurturance (2001: 54).

Similarly, by emphasising that effective resource management and conservation have a rational but also an emotional component, Anderson (1996) takes us to the symbolic dimension and the relevance of religious beliefs as crucial determinants. In doing so, he does not refer to religion *per se*, but rather to the use of »emotionally powerful cultural symbols to sell particular moral codes and management systems« (1996: 166). All traditional societies that have succeeded in maintaining local resources well, he argues, have done this in part through religious or ritual representation of resource use practices. Though they may appear to be irrational, these practices are actually grounded in intimate and long-term observations of nature over years and generations of experience. Case studies have shown that belief systems were accepted and propagated if they seemed to fit empirical reality, and if they fit well enough with the rest of the culture to seem consistent or coherent with it. The common theme of traditional resource management ethics is not ›spiritual harmony‹ with some disembodied and abstracted nature, but personal and emotional involvement with the actual land-

scape and its non-human inhabitants. In comparison to ›Western‹ societies where religion is usually relegated to a small part of life, religion, worldview and resource management strategies are often inseparable in such societies. This occurs in two ways. First, religion provides overarching moral sanctions and encodes environmental knowledge. Such sanctions are invoked directly to support conservation and join such knowledge to the more classically religious issues such as reassurance, social sanctioning and cosmology. Second, people are emotionally involved with their natural surroundings. The emotional involvement may reach the level of actually incorporating natural elements in society. Culture influences human emotions; we are taught how and when to feel particular emotions. In questioning how people process information and what the real ends of human action are, he asserts that we use resources to satisfy not only our needs for food and shelter but also our needs for love and security: »in conservation as in other moral matters, *human beings make sacrifices for what they love*, not for what they regard as merely a rational means to a material end« (1996: 72).

We may expect to find that traditional subsistence-oriented cultures will encode a tremendous amount of intensely emotional and personal material about animals and plants, and that this material is highly structured and organized into a simple, memorable worldview that is dramatically highlighted in myth and ritual. (Anderson 1996: 72)

Consequently, environmental problems and their solutions must be attributed to a blend of reason and emotion. A moral code based only on emotion or only on practical reason, Anderson argues further, will not work. To succeed, a moral code must have something to do with reality, it must be strongly *believed*. But belief, in this sense, does not mean dogmatism. In practice, cognition and affect are not separate and should not be analytically separated. This perception leads him to claim that most social science theories tend to deal with »highly intellectualised and passionless actors« and are thus »incomplete« (1996: 155). One major problem for modern resource management is that urban life decouples most of us from direct experience with ecological reality, just as overspecialisation decouples from a broad ecological view. Considering that emotion and value are inseparable, Schroeder proposes to view ecology, commonly understood as a science that studies relationships between organisms and their environments, in a broader sense as a »matter of the heart« (1996: 19). By including humans as an integral part of ecosystems, he continues, more kinds of interaction must be taken into account. If we want to understand how people are related to their environments, we need to understand how they experience these environments. These experiences contribute to the quality of people's lives and lie at the heart of many resource management issues.

Understanding these experiences is more than just a technical task of social science data collection. It is also a creative, human process, which requires us to open ourselves to perspectives other than our own. [...] we need to use our imagination. We need to be able to bend our own view of the world [...]. We need to be willing to experiment, to play around and see what the world might look like and feel like from different points of view. (Schroeder 1996: 26)

In this way, research concerned with the human dimensions of places may help to reveal how people are emotionally related to their environments. Schroeder's finding that human experience depends on how they conceptualise the world, i.e. on worldview, will be reflected on in the last section of this chapter. A growing body of writings confirms that one of the recurring themes in recent discussions is the mutual relevance of religion and nature, or more specifically, of spirituality and biodiversity.[31] Increasingly, this theme has been highlighted by anthropologists engaged with environmental issues. Sponsel, for instance, denotes that religion, when an integral component of the socio-cultural system, can serve as »a mechanism for symbolically and ritually encoding the uses of biodiversity for sustainable subsistence and conservation practices« (2005a: 180). In his view, the impoverishment of nature is largely caused by »the progressive objectification and commodification of biodiversity, ecosystems, and landscapes as economic resources with the concomitant desacralization of nature« (2005a: 181). He reminds that cultural diversity also includes diversity in religions. As religion is often the single most important force providing social cohesion, changes in religion can precipitate transformational effects in the system and may even impact ecological relationships. Thus, he concludes, the promotion of biodiversity conservation depends to a considerable extent on genuine respect for religious freedom together with the maintenance or restoration of traditional spiritual ecologies including sacred sites in nature.

3.3.4 A matter of worldview

> *Context gives perspective, determining perception, meaning and interpretation. And cosmovision, or worldview is context.* (Sahtouris 2002: 61)

Although the determining role of worldviews in indigenous cultures has long been highlighted in anthropology, their relevance for issues related to development and conservation have just recently emerged. Increasingly, it becomes recognised that the relationship with the natural world as envisaged by religious philosophies and the manner in which religious thought translates into everyday practice and interaction with the ambient world are important fields that need to be investigated.[32] In this line, Sullivan writes in his preface to the anthology *Indigenous Traditions and Ecology* that »no understanding of the environment is adequate without a grasp of the religious life that constitutes the human societies which saturate the natural environment« (2001: xiii).

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[31] *The Encyclopedia of Religion and Nature* edited by Taylor (2005) gives evidence of the multiple facets of this field of emerging interest.

[32] For readings on issues related to religions and ecological perspectives, consider the essays on views of nature from the world's religions in *Worldviews and Ecology* by Tucker and Grim (1993) and the volume *When Worlds Converge* by Matthews et al. (2002), who combine different perspectives on the interface of science and religion. At this nexus, another new subfield engaged with the study of environmental ethics in the world religions emerged referred to as *ecotheology*. For this, see Hallum (2003).

In the struggle to sustain the global environment as viable for future generations, he argues that environmental studies have left the role of *religion* unprobed in contrast with the emphasis placed on the role of *science* and *technology*. The author denotes that worldviews draw the world of nature into a wholly other kind of universe that only appears in the imagination. As they are all-encompassing, worldviews frame the mindset within which all sorts of ideas intermingle. For this reason, their role in *ecology* must be better understood. They provide human beings with a view of the whole and at the same time with an image of their own position as beings in the cosmos who possess the capacity for symbolic thought (2001: xii). Many biologists, despite operating almost exclusively within the framework of science, variously recognise the mutual relevance of biodiversity and religion. As Takacs writes in his book *The Idea of Biodiversity*:

By activism on behalf of what they call biodiversity*, conservation biologists seek to redefine the boundaries of science and politics, ethics and religion, nature and our ideas about it. They believe that humans and the other species with which we share the Earth are imperiled by an unparalleled ecological crisis, whose roots lie in an unheeded ethical crisis. [...] An elite group of biologists aims to forge a new ethic, in which biodiversity's multiplicity of values will be respected, appreciated, and perhaps even worshiped* (1996: 9).

Much has been written in anthropology about religion as a fundamental element of human life, in which people »put their world together« (Hefner 2002: 357). Commonly, the *sacred* has been focused on as a domain that was often contrasted with the *profane*.[33] For Sponsel (2001: 178f.), religion deals with the ultimate meanings, realities, powers, elemental questions of life and death and concerns about the place of humans in nature. It provides the primary source of guidelines for ideal and moral behaviour, including prohibitions and proscriptions. In *Worldviews and Ecology,* Tucker defines religion as »a means of orientation in the midst of the powers of the universe and a means of relationship in the midst of human affairs« (2003: 117). In her view, religions

mediate between the patterns of nature and the individual by creating stories of our origins, rituals and practices of cultivation to insure continuity through the various stages of life from birth to death, and codes of behaviour which aim to maximize harmonious relations and thus survival itself. In its simplest form, then, religion consists of worldviews embracing cosmology and cultivation. These are linked by patterns (or rituals) connecting self, society, nature and the larger field of being in which they exist (2003: 118).

Elsewhere, the term *worldview* has been defined as the »underlying logic and guiding assumptions of a culture, regarding categories of experience such as time, causality, nature, society, and the self« (Winthrop 1991: 324). Among others who have sought to undo the artificial barriers that have been erected between science and spirituality for historical reasons, Sahtouris (2002) introduces the term *cosmovision*. But like many of the concepts the present study deals with, the term lacks definitional and conceptual

[33] In particular, the use of these terms in anthropology has been associated with Mircea Eliade's *The Sacred and the Profane* (1961).

concurrence.[34] In general, it has been suggested by Posey (2003), it can be understood in the sense of organising spiritual and conceptual models used by indigenous peoples to integrate their society with the world. For Slikkerveer, it points to the encompassing way »in which the members of a particular culture perceive their world, cosmos or universe. It represents a view of the world as a living being, its totality including not only natural elements such as plants, animals and humans, but also spiritual elements such as spirits, ancestors and future generations« (2000: 171). In his paper dealing with alternative epistemologies for *in situ* conservation, Ishizawa refers to cosmovisions simply as »ways of being in the world« (2003: 2), whereas Schroeder writes of »experiences in which people's values originate« (1996: 21). Geertz provides an understanding of the term as people's »picture of the way things in sheer actuality are, their concept of nature, of self, of society«, which »contains their most comprehensive ideas of order« (1975: 127).

Following these understandings, cosmovision cannot be reduced to a part of a religious system, nor does it correspond to the term *spirituality*, which other authors give preference to, or does it manifest itself in an abstract realm. Rather, it manifests in daily life and forms in which peoples act and express themselves. As a frame of explanation and orientation, cosmovisions constitute the larger context of social and economic life and orient individuals towards a symbolic, ethical and affective relationship with their worlds. These assertions imply that cosmovision does not strictly correspond to an ordered and unique discourse in the sense of *cosmology* as defined by Howell as »the theory of the universe as an ordered whole, and of the general laws which govern it« (1996: 129). In anthropology, cosmology is used, according to Reichel, as

an analytical construct to refer to the overarching cognitive and behavioural templates which are reiterated, transformed and used by a society to comprehend its role within: humanity, life, the world (planet Earth) and the cosmos. A cosmology involves explanations of the past, present and future of a society within these levels of encompassment, and is part of its understanding of cosmo-eco-ethno genesis. It deals with origins as well as with the finality and destiny of humans and other forms of existence (2005: 421).

All societies have cosmologies, religious or non-religious, which function as means to interpret a society's situatedness in the universe, earth, biosphere and in humanity. Within current debates on such »meta-referential parameters«, the paradigm of relativism is commonly favoured by scholars, which insists that »all cosmologies are socially constructed designs, manufactured to give meaning to existence« (2005: 421.).[35]

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[34] The term is derived from the Greek word *kosmos* and means the world or universe as an ordered system or order, harmony or a harmonious system (Howell 1996: 129). The term *cosmovision* is not exclusive to writings concerned with the Americas, but is used in a wide range of works with a general focus on indigenous cultures.

[35] Cultural relativism is a standard anthropological working principle. It assumes that cultural beliefs and practices just can be understood in their own terms, in relation to their cultures. This is not to say that there are no universal physical and psychological needs and drives that underlie human action. According to Barfield (1997), the study of cosmological notions has strengthened self-criticism

In further attempting to define the terms of reference, Tucker (2003) distinguishes between worldview and cosmology. Although the terms are used interchangeably, she sees the former to be a less precisely defined term encompassing a broad set of ideas and values that help to formulate basic perspectives of individuals and societies, while the latter is more specifically linked to an explanation of the universe and the role of humans in it. All religions have developed expressions for the matrix of relationality seen in the natural world and many of the most powerful symbols and rituals are dependent on humans' encounter with nature. Although shared characteristics of many of such sources of meaning have been revealed through comparative anthropological studies, there is no unique single cosmovision that informs all aspects of life. Since they are based on perceptions and local belief systems, cosmovisions differ from one culture to the next. However, the review of studies allows for the recognition of significant similarities beyond varying peculiarities.[36] The forms and contents may vary, but invariably they are saturated with religious symbols, myths, rituals and reflection and though highly varied and both continuous and discontinuous over time and across cultures (Rasmussen 1993: 176f.). In many writings, religions are contrasted with scientific outlooks and opposed to the rational supremacy and the human-centred and reductionist forms of dominant science that elicit meaning from the world. Sahtouris writes:

Every culture present and past has, or has had, its own worldview or cosmovision. Western science has evolved a cosmovision very different from all other human cultures, though it has now become the one most influential in all the world. Its most obvious divergences from other cosmovisions lie in its seeing life and consciousness only in Earth's biological creatures, and in its narrowing of ›reality‹ to what can be tested and measured scientifically. This excludes from its reality gods, soul, spirit, dream experience, thoughts, feelings, values, passions, enlightenment experiences, and many other aspects of consciousness beyond their physiological correlates. [...] Western science has defined the universe as an array of non-living matter and non-conscious energy – a universe in which changes over time are due to random or accidental processes that assemble material particles, atoms and molecules into patterns within the constraints of a few physical laws (2002: 60).

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of anthropology's own cultural biases, including the reliance on the aforementioned dichotomies such as *nature - culture* or *sacred - profane*.

[36] In particular, this observation applies to different cultures of the Americas. Pierotti and Wildcat (2000), for instance, compare local beliefs about the close relationship with nature among indigenous groups in North America as opposed to environmental concepts of European immigrants. Similarly, the essays in Bol (1998) describe how North American Indians perceive the natural world by examining stories of the various groups, their rituals, myths and resource use methods. These notions are similar to the findings of anthropologists working in South and Central America. Apffel-Marglin (2001) and Ishizawa (2003), for instance, have acknowledged the worldview held by indigenous communities centred in Andean agriculture, who see spiritual and physical phenomena as all being part of nature and the cosmos, while Galicia Silva (2001) provides a similar account of religion and ritual in traditional agriculture among the present-day *Nahua* of Mesoamerica.

In discussing *Science and Religion as World-Builders,* Hefner argues that science and religion are both ways of constructing worldviews in which people can »make sense of their place in the universe story« (2002: 357). In his view, religion is about what he calls »meaning-formation«. He affirms that rituals, dogmas, moral codes, personal devotional habits and all religious behaviour have personal and communal meanings that constitute »world-building«. Science is both a method of exploring the world and a body of knowledge about the world. It is a way of thinking and an activity, but it is also a collection of all the facts and theories that science has brought together as knowledge of the world. Both of these aspects are significant for the activity of world-building, and it is in this activity that science and religion meet (2002: 358f.).

Roepstorff and Bubandt define cosmology as »a moral regime of knowledge and a practical getting to know the world« (2003: 25). In that respect, even ›hard‹ sciences such as economics and biology can be seen as employing a particular cosmology in their approach to nature. The calculating of the monetary value of biodiversity, for instance, may be seen as part of a »moral universe that interrelates humans and non-humans into larger frameworks and thus have the effect of mobilizing cosmologies in the classical anthropological sense« (2003: 22f.). This point has also been made by Schroeder (1996) in his article *Ecology of the Heart. Understanding How People Experience Natural Environments.* Based on the conviction that the worldview of ›Western‹ societies has been greatly influenced by science, especially in the resource professions where many people have been trained in scientific disciplines, he writes that scientists tend to be suspicious of emotion, imagination and intuitive experience as subjective and therefore less valid and real than objective knowledge that can be tested by scientific methods. Although science is an important and necessary part of resource management, Schroeder reminds that

when we emphasize a scientific and objective attitude to the exclusion of all else, we create an environment in which it is difficult for people to speak about intuitive and emotional experiences, and in which it is difficult for us to hear or understand them when they do. Our work requires us to have the best scientific information available about ecosystems, but we also need to consider the kinds of experiences that are expressed through art, music and poetry. [...] But this whole level of experience is left behind when we turn value into abstract numbers. We end of with information and data that we can manipulate, but we don't gain an understanding of appreciation for the experiences and emotions that lie behind the data (1996: 16f., 20).

Metzner (1993) argues that the original reason for the present ›environmental disaster‹ lies in the worldview values of the industrial age that permitted the exploitative and destructive application of technology. This worldview is shared by science and translated into a conception of nature as serving the advancement of humankind. Moreover, he argues that »the pursuit of knowledge has come to mean the ever-narrower specialization of disciplines and an unbridgeable gap between the ›two cultures‹ of science and the humanities« (1993: 168). However, he sees humanity in the midst of a transition phase to an ecological age, characterised by an ecological worldview the out-

lines of which are being articulated equally in the natural sciences, the social sciences, philosophy and religious thought. It involves more systemic approaches that recognise the validity of different perspectives and the fact that theories and models are mental constructions. These will replace the view of logical positivism inherent to the industrial worldview of the modern age of rationalism that was based on the notion that sense observations are the only meaningful statements (1993: 164f.). This position is shared by a number of authors. Berkes, for instance, comments that although much of ecology continues as a conventional reductionist science, more holistic approaches have recently emerged providing »a new vision of the earth as an ecosystem of interconnected relationships in which humans are part of the web of life« (1999: 164).

This view is also presented by Goldsmith (1993) in his book *The Way*. Drawing on ideas developed in the *philosophy of science,* he explores the underlying causes of environmental destruction more thoroughly. For him, our society is committed to economic development – a process that must increase systematically the impact of economic activities on an environment ever less capable of sustaining them. The ›Western‹ worldview that he specifies as *modernism* is reflected in the paradigms of economics and science. And one of its most fundamental tenets is the idea that all benefits. This implies that human welfare is derived from the ›man-made world‹, i.e. science, technology and industry, and the economic development that these make possible, which is imbued by the objective to maximise all benefit through ›progress‹. These assumptions inherent to the ›Western‹ worldview and the general human tendency to regard the only world known as ›normal‹ are reflected in the disciplines taught in schools and universities. The role of the academic world is acknowledged to provide governments and societies at large with knowledge that serves the public interest and general welfare. But as the worldview of modernism does not accommodate the policies needed to bring to an end the environmental deterioration and to develop a sustainable way of life, Goldsmith sets out to establish a new *ecological worldview*. To do so, inspiration may be derived from »vernacular societies« and in particular from their »chthonic worldview of the earliest period when people knew to live in harmony with the natural world« (1993: xvii). Therein he identifies two major principles to be taken into account. The first is the notion that the biosphere is the basic source of all benefit. The second is that the overriding goal of behavioural patterns in an ecological society must be to preserve the critical order of the natural world or the cosmos. Cosmovision in this sense refers to this order of the cosmos and is used to denote *the way* that must be taken:

Evolution and its constituent life processes build up order. Individualistic systems become organized, differentiated and hence specialized in the fulfilment of various functions. As this occurs, so competition yields to cooperation, so the incidence and severity of discontinuities is reduced, and so the systems become more stable. Indeed, order implies organization, differentiation, specialization, cooperation, and stability. They are only different ways of looking at the same fundamental feature of the living world (Goldsmith 1993: 183).

In the same vein, it has been emphasised by Tucker and Grim (2001) that the current environmental crisis is not only the result of economic, political and social factors. As it is equally informed by issues of moral and spiritual relevance, problem-solving strategies require broader philosophical understandings of humans as beings of nature. In search of more comprehensive ecological worldviews and effective environmental ethics, they argue that it is inevitable to draw from world religious traditions that have all provided conceptual frameworks for »interpretive direction, moral foundations for social cohesion, spiritual guidance for cultural expression, and ritual celebrations for meaningful life« (2001: xviii). In addressing the moral dilemmas resulting from the environmental crisis, distinctive ecological attitudes, values and visions for imagining humans as part of, not apart from, the natural world may provide a meaningful outlook. Despite abundant scientific knowledge and numerous political and economic statements, the authors see a lack of »religious commitment, moral imagination, and ethical engagement to transform the environmental crisis from an issue on paper to one of effective policy, from rhetoric in print to realism in action« (2001: xix).

The interplay of worldview and ecology, which the above mentioned scholars have drawn their attention to, will remain of particular interest in the last part of the *discursive context*. Many of the presented ideas pertaining to the symbolic sphere of human experiences with nature will reappear in the following considerations that reveal different dimensions of *indigenous knowledge*. Intimately related to the outlined issues dealing with perceptions of nature and landscape, the topic will be discussed along four major lines, including questions of conceptual, empirical, symbolic and epistemological relevance. Again cutting across a number of disciplinary borders, the theme will be elaborated as a way of presenting the core ideas of anthropologists as to what indigenous knowledge is. The ways by which they have studied and approached the topic have changed during the course of the discipline's history and within different cultural settings. On the grounds of previously outlined anthropological fields, the chapter concentrates on recent arguments derived from different viewpoints, including development anthropology, ethnoecology, symbolic and spiritual ecology and anthropology of science and technology.

3.4 Anthropology of indigenous knowledge

Just as there can be no ›nature‹, there can never be just one ›knowledge‹ either. (Gray 2000: 62)

That the ›new biocultural synthesis‹ can be pursued from a variety of perspectives becomes evident in the field of indigenous knowledge.[37] Since the early 1990s, the theme emerged as a priority concern on the international development and environment agenda. It currently appears as a constituent of ongoing debates concerned with global questions of sustainability and biodiversity conservation. Scientific work in this domain has nonetheless been ongoing for several decades. Anthropologists within various subfields dedicated their attention to the subject and thereby contributed to the emergence of new sub-disciplines. These fields came up in the course of a larger »transdisciplinary process«, wherein the boundaries between the disciplines are eroding increasingly (Brosius 1999: 279). The growing appreciation of indigenous knowledge that emerged primarily in the field of rural development in the 1980s can be interpreted as a reaction to the previous failure of the grand development theories. Among others, scholars engaged in development anthropology had criticised externally introduced *top-down* policies and uni-directional initiatives that were based on modernisation and technology transfer and argued in favour of more participatory and decentralised *bottom-up* initiatives.[38] The predominant approach perceived development in terms of a progressive movement towards technologically and institutionally more complex and integrated forms of ›modern‹ society. This process was maintained through increasing involvement in commodity markets and a series of interventions involving the transfer of technology, knowledge resources and organisational forms from the more ›developed‹ world or sector of a country to the less ›developed‹ parts (Long 1992: 16ff.). In the frame of *top-down* policies, organisations often failed to see or even ignored the value of existing knowledge systems on the basis of their own ›superior‹ development model. Based on scientific paradigms, the conventional approach saw local knowledge as something to overcome rather than to encourage. As this ignorance frequently resulted in the failure of projects, professionals gradually came to consider the until then undervalued local knowledge systems. In search of culturally appropriate and environmentally sustainable approaches to global issues, knowledge acquired in local settings had been discovered in the following as a meaningful alternative to conventional strategies. Increasingly, it became recognised by institutions that

[37] For sake of simplicity, the term will be abbreviated hereafter to IK.

[38] Since the 2nd World War, the general course of debates and interpretations on development processes developed from perspectives based upon the concept of *modernisation* in the mid-1950s, to *dependency* in the 1960s, to *political economy* in the 1970s and to the *post-modernism* of the 1980s. While the former have interpreted development in the latest instance as a process of modernisation, post-modernism has questioned some of the basic presuppositions of the concept of modernism (Siebers 1994: 210). This latest phase is depicted in many quarters as entailing the deconstruction of previous orthodoxies. For further discussions on issues related to development theories and paradigmatic shifts in development practice, see Marglin (1990) and Sillitoe (1998a, 2002a).

efforts paying attention to local conditions and perceptions were more likely to be relevant to peoples' needs and to generate sustainable interventions than initiatives imposed from above. In general, the interest in IK emerged out of a ›postmodern‹ discourse on development looking for »ways which allowed other voices to speak for themselves« (Ellen 2002: 237). Since this revaluation of »social capital«, as Jeanrenaud (1999: 130) puts it, national authorities, international agencies and NGOs have propagated locally evolved notions and practices as a key issue of an endogenous development approach for sustainable results in development cooperation. An extensive body of research began to challenge the assumption latent in many development schemes that local ways of knowing and relating to the natural world are invariably inferior to science-based technologies. In favouring an actor-oriented paradigm, scholars like Long (1992) called for a more dynamic approach to the understanding of social change in order to capture the interplay and mutual determination of what he calls ›internal‹ and ›external‹ factors and relationships and which recognises the central role played by human action and consciousness. Such critical analyses of development processes emerged increasingly from an evolving *development anthropology* that paid attention to local institutions, gender roles and concerns about indigenous rights and territorial autonomy.[39] Academic engagement with these issues emphasised the importance of ethnographically based research from the local ›grassroots‹ perspective. Given this growing apprehension of locally grounded knowledge in development policies, *local* has acquired richer meanings, associated not only with geographic locations but also with particular communities, histories, institutions and even specialist expert bodies. In this course, the ›holder of indigenous and traditional knowledge‹ emerged as a new actor in international discourse and translocal actor coalitions have become increasingly prominent players at UN meetings and conferences, where they became politically committed to their cultural and political rights but also to the recognition of their knowledges and environmental practices (Long Martello & Jasanoff 2004: 12f.).[40]

The present debate on the issue of indigenous knowledge tends to pertain mostly to the domain of natural resource management and has shifted from initially questioning *what* is the usefulness of such local knowledge systems for sustainable development strategies to *how* it can be used to ensure equitable sharing of benefits arising from the utilisation of knowledge, innovations and practices as claimed in the CBD (Slikkerveer 2000: 169). Apart from contributions emerging from the field of development anthropology, the issue met with growing interest within various other disciplines concerned with human-nature interaction and transformed the topic into a highly politicised discourse that culminated in contemporary controversies concerned with the question of intellectual property. This crucial aspect has been framed in terms

[39] For the socio-historical context of the emergence of *development anthropology*, see Purcell (1998) and Ellen & Harris (2000).

[40] The discussion on the close relationship between economic, social and cultural development even led the *World Bank*, seen as »the most influential advocate of global capitalist development« (Peet & Watts 1996: 18) to recognise IK as key issue in development and environmental conservation, as the *Guidelines. Integrating Indigenous Knowledge in Project Planning and Implementation* by Emery (2000) indicate.

of *intellectual property rights* (IPR). As mentioned, IK did not only emerge as a subject of growing interest for anthropologists, development practitioners or environmental researchers but also for bio-prospectors in search for commercially valuable genetic resources, who increasingly became aware of its previously underestimated utility in the past decades (Posey 1996b: 58). As a consequence, the patenting of domestic plant varieties and traditional medicinal products has become a source of general concern. In response to the quest for natural products to be identified and exploited for commercial benefit, government institutions and NGOs as well as local peoples themselves as knowledge-holders have sought to protect their knowledge from commodification by the pharmaceutical, biotechnological and agricultural industries (Ellen 2003: 68).[41] Such arguments over the links between ecological, cultural and economic aspects in indigenous politics have emerged as a very contentious issue in the 1990s.[42] Escobar (1998: 58) is critical of the debates on benefit sharing and compensation that dominate contemporary discourse as a »neoliberal imposition« of the industrialised countries rather than a democratically agreed upon option. Since emerging in the 1980s, the debates in social research on the topic lack paradigmatic and methodological coherence and may evoke the impression of being caught in a battle of perspectives, as the book title *Battlefields of Knowledge* by Long and Long (1992) suggests.

Before going further into the wide range of analytical directions, this chapter first aims to approach some definitional issues of indigenous knowledge and endeavours to systematise the diverse conceptual approaches to the theme that is, as Ellen and Harris aptly comment, »a veritable semantic, legal, political and cultural minefield« (2000: 3). Given the assumed aim of anthropological research, to explore what societies know about the world and the ways in which people generate, represent and communicate knowledge, the following sections expound selected core ideas developed in recent anthropological approaches that serve as a foundational frame for the findings of the field investigation. The primary glance at the terminological issue is followed by a review of different perspectives arising from several research traditions reflecting the aforementioned transdisciplinary process. The last part of the chapter delineates epistemological aspects and considers the relational complementarity of indigenous and scientific knowledge as an important theme in the discursive frame focused on cross-cultural approaches to biodiversity conservation and rural development.

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[41] At the international level, the question of what is patentable is both unsettled and controversial (Grenier 1998: 15). Intellectual property rights are only granted for particular innovative achievements and not for general notions located in the public domain, to which IK pertains as it is most often commonly held. A vast amount of writings deals with this contentious issue. For the role anthropology may play within this discourse, see Brush (1993).

[42] Posey (1996b) reminds that even the publishing of scientific information has become a ›superhighway‹ for transporting restricted and even sacred information into the unprotectable public domain. Myer (1998) comments that IK is, like biodiversity, a resource, which is extracted and manipulated, the resulting profits rarely return to the original source. Questions on ethics and equitable relationships in the field of research on biodiversity have also been discussed as a central theme in the contributions edited by Laird (2002). With reference to standards of scientific practice, Posey (2002) hints at codes of conduct developed by the *International Society for Ethnobiology*.

3.4.1 The conceptual dimension - *definitions and approaches*

Indigenous knowledge is »an authentic appropriation of being« (Seeland 2000: 8). This is by far one of the broadest understandings found in current writings about the question of how to approach indigenous knowledge, most often referred to as *local* or *traditional* knowledge. Seeland specifies that »knowledge may be called indigenous if it originates from, and is bound to, local experiences, and takes its local world not perhaps as the only one in existence, but as being locally the most relevant of all« (2000: 8.). Following his understanding, the term *indigenous* refers to

something that originates locally and is performed by a community or society in this specific place. It emerges as people's perceptions of and experiences in an environment, as being a continuous process of observation and interpretation in relation to the locally acknowledged everyday rationalities and transcendental powers. Indigenous knowledge is human life-experience in a distinct natural and cultural amalgamation, within a unique local and contemporary setting (2000: 8).

Although its relevance for conservational issues has been widely recognised, defining the term still remains difficult. It is a broad and elusive concept and terminologies vary between disciplinary fractions. What is meant by indigenous knowledge in the discursive context relating to biodiversity conservation? A wide range of terms can be found in the literature, but they are mostly used interchangeably and refer to the same semantic field. In general, the terminology indicates the topical frame of natural resource management in which IK is mostly used.[43] Thus, Clay et al. (2000) employ the expression »local ecological knowledge«, Howitt (2001) deals with »traditional ecological knowledge« and »indigenous peoples' ecological knowledge«. Similarly, Zent (1999) relates to »ethnoecological knowledge« and »indigenous ethnoecologies«. Others, like Huizer (1994) describe IK as »ecological wisdom« and »indigenous science«, whereas Myer (1998) writes about »indigenous environmental knowledge« and »local cognitive understandings of the environment«. Purcell defines IK as »the body of historically constituted (emic)[44] knowledge instrumental in the long-term adaptation of human groups to the biophysical environment« (1998: 260). Kimmerer writes of a »diachronic database« of collective intellectual contributions of peoples that are the result of observations over a long period of time (2002: 433). The temporal depth of IK is quite often referred to, while most authors make reference to its inherent spatial dimension. In *Working with Indigenous Knowledge*, Grenier employs a concept of IK as »the unique, traditional, local knowledge existing within and developed around the specific conditions of women and men indigenous to a particular geographic area« (1998: 1).

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[43] For an attempt to systematically review the terminological diversity within the academic domain, see Antweiler (1998). Among others, Ellen & Harris (2000: 4f.) have undertaken to provisionally systematise commonly asserted characteristics and conceptualisations of IK. For some German contributions, see the volumes compiled by Honerla & Schröder (1995) and Schareika & Bierschenk (2004).

[44] *Emic* is a perspective in ethnography concerned with how phenomena are perceived and interpreted from within a culture. The term indicates a view *from within*, whereas *etic* implies a view from *outside,* including scientific analysis.

With emphasis on the geographical factor, the term *local knowledge* has been widely applied synonymously and is characterised by Escobar in a broader sense as »a mode of place-based consciousness, a place-specific [...] way of endowing the world with meaning« (2001: 153). From the perspective of an *anthropology of local knowledge*, he questions how other societies represent the relationship between human and biological worlds, what distinctions and classifications of the biological are made, in what languages (including oral traditions, myths and rituals) such distinctions are expressed, through what practices these distinctions are effected, whether there is a place for ›human nature‹ in native representations and cognitive maps and what the relationship is between cultural constructions and production relations and between meanings and uses of biological entities (1999: 9). Sillitoe prefers the term *local* knowledge as the simplest acronym of widest currency. With reference to the development context, he asserts that local knowledge may relate to »any knowledge held collectively by a population, informing interpretation of the world« (1998b: 204). Elsewhere he provides a working definition of IK as »a unique formulation of knowledge coming from a range of sources in local cultures, a dynamic and ever changing pastiche of past ›tradition‹ and present invention with a view to the future« (2002b: 113).

In contrast to *indigenous*, the term *local knowledge* has the advantage of not excluding non-indigenous knowledge-holders, whose extensive notions on the natural milieu are also the result of resource-based livelihoods extending across many generations. Nakashima and Roué (2002) draw attention to this aspect, but assert that the major weakness of the term is the lack of specificity, as most knowledge can be labelled *local*. Although rooted in particular local settings and in this sense to be understood as »situated knowledge« (Nygren 1999), indigenous knowledge is not to be seen as exclusively local, but rather as a result of complex negotiations linked to knowledge interfaces. Therefore, it should be approached as a dynamic and fragmented »plurality of local knowledges«, rather than a unitary concept of knowledge, as mentioned by Pottier (2003). In the same way, Ellen (2003) argues that there are diverse »indigenous biological knowledges« that have a number of broad common characteristics. Likewise, Banuri and Apffel Marglin (1993 : 9) refer to definitional questions by conceptualising the expression »systems of knowledge« to signify that there exist manifold ways to define reality. The term »indigenous knowledge systems« is employed by Nakashima and Roué more precisely as

the complex arrays of knowledge, know-how, practices and representations that guide human societies in their innumerable interactions with the natural milieu: agriculture and animal husbandry; hunting, fishing and gathering; struggles against disease and injury; naming and explaining natural phenomena; and strategies for coping with changing environments (2002: 315).

Despite the absence of a widely accepted terminological and conceptual framework, it has been largely asserted by anthropologists that indigenous knowledge needs to be understood as an integral part of the respective cultural system and cannot be disembedded from the local context it has been developed in.

In order to capture this cultural embeddedness, authors such as DeWalt have claimed that »we need to try to achieve the holistic understandings that are characteristic of indigenous knowledge systems« (1994: 128). By emphasising a contextual approach, Antweiler (1998) argues that the diversity and dynamics of local knowledge themselves need to be understood as part of the respective cultural system. Consequently, the documentation of local knowledge is not just a question of recording its contents as a product; it is needed to describe the frame of relevant social, economic, cultural and ecological processes. Although carrying different connotations, the outlined definitions and approaches make explicit or implicit reference to the contextual character of IK – not only in terms of spatial scales, but also in terms of historical contingence and social relations. Nygren (1999) who specifies local knowledge as a »holistic way of knowing« comments that knowledge is linked to a complex social history and as a social product, it cannot be detached from the knowledge holders and the process of knowledge production. Or as McCarthy (1996) formulates, the collective functions of knowledge have to do with the establishment of social reality through an ongoing social process. Knowledge is always disseminated through social networks and must be understood in terms of the context of social relations.

Referring to indigenous knowledge acquired by farmers in the Peruvian highlands, Apffel-Marglin (2001) exemplifies that there is no simple process of knowledge acquisition, as the appropriation of knowledge assumes that there exists independent knowledge unaffected by knowledge holders. Accordingly, there are no firmly established traditions, continuities or recurring effects that may be acquired to serve as an object for the critique of an observing and judging subject. Supposed continuities are constantly in revision and renewal. With regard to the transformational nature of knowledge, Nakashima and Roué affirm that indigenous people may contribute to understanding processes of change as they retain within their knowledge systems »an intergenerational memory of fluctuations, trends and exceptional events in relation to the local environment« (2002: 318). Moreover, IK repertoires have to be seen as a result of encounters in which local and global, traditional and modern elements are intricately intermingled. In her account on *Local Knowledge in the Environment-Development Discourse,* Nygren refers to this point by underlining the »contested and hybrid character« of knowledge (1999: 268). Not only bound by specific spatial and social frames and tied to personal relations and emotional conditions, it is the result of continuous processes of generation, experimentation, transmission, innovation and adaptation to changing conditions. What people know is constantly tested and revised and involves knowledge hybridisation, syncretisation and integration (Ellen 2003: 63). Beyond the pattern of knowledge transfer in a context of performance and resonance or through narratives, beliefs, rituals and laws, Gorenstein (1998: 6) reminds that meanings about the individual and his or her role in the community are also passed on through the process of learning-in-action.

As the present study concentrates on those aspects that apply explicitly to indigenous peoples' knowledge about natural resource management, the preferential term indigenous knowledge is used in the following and understood in accordance with an operational definition provided by Berkes, who established the term *traditional ecological knowledge* (TEK), described as »a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment« (1999: 8).[45] Berkes, who is engaged in the interface of natural and social sciences, has undertaken to conceptualise a *knowledge-practice-belief complex*. This approach of contextualisation implies a primary level of ecological knowledge regarding animals, plants, soils and landscapes being framed by a second level of knowledge on land and resource management systems. A third level refers to social institutions and relations, whereas the fourth level is given by the worldview, which includes belief systems and cultural ethics and values that shape environmental perceptions. The following figure illustrates these distinguished levels of analysis.

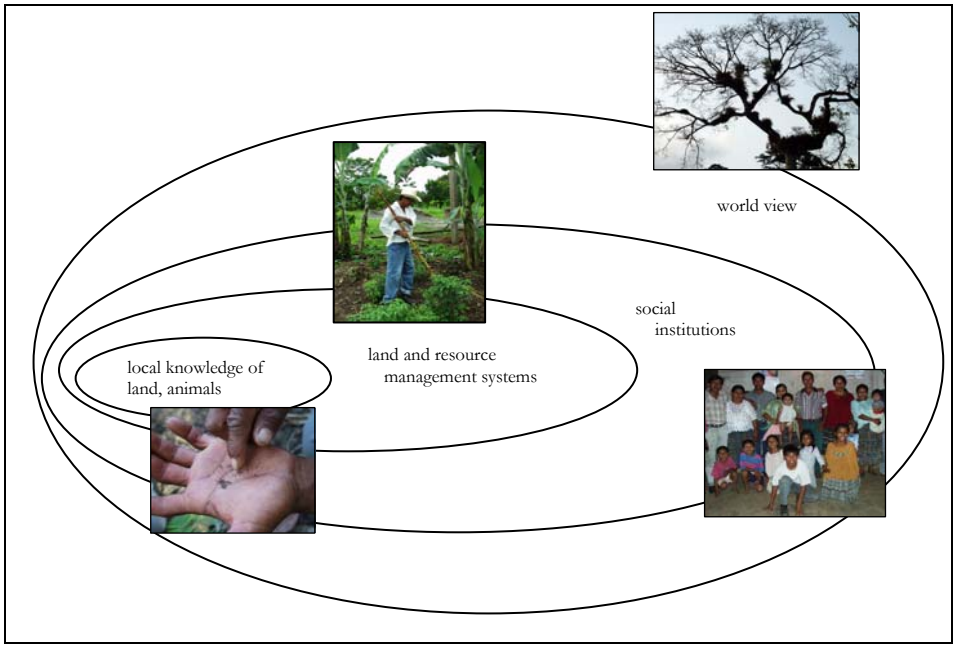

Fig. 3.3 Levels of analysis in traditional knowledge and management systems[46]

[45] The term *traditional knowledge* is often used synonymously in contemporary writing. In the present context, it is avoided as it is often conceived as a counterpoint to ›modern‹ knowledge and implies a form of cultural stasis. In other contexts, ›traditional‹ is used in the sense of a »cultural continuity transmitted in the form of social attitudes, beliefs, principles, and conventions of behaviour and practice derived from historical experience« (Berkes 1999: 5).

[46] The scheme is adapted from Berkes (1999: 13) and illustrated with pictures taken by the author.

Apart from this broad-based analysis, Berkes underlines the fact that knowledge needs to be understood in a *political context* and is even to be approached itself as an »intensely political matter« (1999: 24). It incorporates notions of differentiation between local groups and power gradients on local, regional and global levels. This view has been widely shared and was framed by Purcell in terms of a »key insight of postmodern thinking« (1998: 268). Dealing with the political dimension, authors like Pottier conceptualise knowledge *itself* as power, which implies that »one cannot discuss knowledge without discussing the economic and political dimensions of its emergence and use« (2003: 7). This affirmation leads to the claim that any analysis must include an appreciation of social relations imbued with aspects of power, authority and control being central to the production and articulation of knowledge. Long assumes that

if we take the view that we are dealing with ›multiple realities‹, potentially conflicting social and normative interests, and diverse and discontinuous configurations of knowledge, then we must look closely at the issue of whose interpretations or models [...] prevail over those of other actors [...]. Like power, knowledge is not simply something that is possessed and accumulated [...]. Nor can it be measured precisely in terms of some notion of quantity or quality. It emerges out of processes of social interaction and is essentially a joint product of the encounter and fusion of horizons. It must therefore, like power, be looked at relationally (1992: 26f.).

Despite the fact that IK is apparently subjected to very diverse interpretations and conceptual strands, there is a certain convergence in recent anthropological works in treating it as situated practice rather than a system of shared context-free knowledge. Following the understanding of McCarthy (1996), who suggests that knowledge itself is best conceived and studied as *culture* and may be identified in general terms with human *experience*, it can be assumed that knowledge as sets of experiences is not to be seen as an abstract and coherent entity independent from practice. To a considerable extent, knowledge related to natural processes is often unconscious and remains implicit. Embedded in economic modes and social structures, it is partially verbalised but tends primarily to be transferred through non-verbal demonstration, imitation and repetitive practice. Thus, it has been proposed to be »bodily knowledge« (Ellen 2003) or »embodied practice« (Pottier 2003) encoded as a part of doing and recognising in applied contexts and informal apprenticeship but not formulated in a set of rules. If explicitly transmitted, it is orally communicated and thus encoded by language.[47] Anthropologists have demonstrated that in all cultures, knowledge and traditions, beliefs and myths are subject to a process of re-creation, re-adaptation and renewal. Thereby, diverse approaches to culture-environment issues have been explored, each adding different aspects to an understanding of the system as a whole. These include knowledge systems of the natural environment, resource use practices, spatial land use patterns, social organisation, common property management systems, as well as worldviews and spiritual systems influencing human-nature interaction (Nakashima 1998: 9).

[47] For a discussion pertaining to the central role of language in encoding and transmitting indigenous knowledge, consider Maffi (2001).

3.4.2 The empirical dimension - *the context of doing*

Evolving from different academic disciplines, numerous studies have undertaken to identify and document local expressions of knowledge inherent to indigenous modes of production and resource use practices.[48] Apart from studies in fields related to development anthropology, cultural ecology or agronomy, scholars of other disciplines like botany, geography, forestry, soil science or wildlife management have also dedicated their attention to the investigation of specific knowledge systems. Above their significance concerning cultivated species in the field of agricultural production, Posey (2000a: 37) hints at the importance of knowledge related to ›semi-domesticated‹ or ›human modified‹ species. People who inhabit forest environments rely extensively upon hunted, collected or gathered resources, which provide nutritional and medicinal security and other benefits. Within such livelihood systems, forest gardens and fallow systems are common examples of production modes that take advantage of natural processes and species that science has systematically undervalued and overlooked. Elsewhere, Posey notes that in such transitional anthropogenic ecosystems, local communities frequently interlink forest and agricultural management systems as »poles of a classification continuum« (1996b: 53). Consequently, the use of resources that are *neither* agricultural domesticates *nor* timber species implies that common analytical categories as ›hunter and gatherer‹, ›forester‹ or ›farmer‹ are not to be considered as discrete schemes, but represent continua of livelihood activities scientists and policy-makers should be aware of (1996b: 55).[49]

Since the 1950s, a growing academic interest had emerged in the study of local ideas and classification schemes. That expressions of knowledge embrace taxonomies of natural phenomena and notions on cause and effect relationships was postulated by scholars who had undertaken to explore cognitively defined ecological categories of soil-plant-animal-human relationships. In particular, knowledge on plant and animal species, plant disease management, soil and water conservation and crop selection embedded in farming systems, gathering activities and horticultural practices was the focus of a wide scope of research within *cognitive anthropology*. Building on *ethnobiology*, many of these contributions examine the systematic structure of local folk taxonomies

[48] Benchmark anthologies to be emphasised are the volumes *Indigenous Knowledge Systems and Development* edited by Brokensha et al. (1980) and *The Cultural Dimension of Development* by Warren et al. (1995). Another considerable number of contributions drawn from case studies of resource management systems in South and Central America have been combined by Redford and Padoch (1992) in *Conservation of Neotropical Forests. Working from Traditional Resource Use.*

[49] By referring to the *Kayapó* of the Brazilian Amazon, Posey exemplifies that over 76 percent of the useful plant species collected are not ›domesticated‹, nor can they be considered ›wild‹. His criticism of conventional classifications of human economies has also been formulated by Milton (1998: 97). In order to understand how ways of perceiving nature come to be distributed among societies, it is important to leave aside such labels as they do not represent the diverse ways in which people engage with their environments. Rather, the activities themselves, the practical experiences of interaction generate attitudes towards the ambient world and humans' thoughts about it.

and organising principles of categorisation that underlie culture and behaviour.[50] This approach assumes that all cultures possess ways of categorising the natural diversity in their surroundings, providing themselves with the cognitive tools by which environmental components can be intellectually manipulated to achieve culturally determined ends (Nakashima 1998: 14). So far, the most common approach to evaluating knowledge related to biological diversity consists of ethnobotanical surveys, which essentially focus on the uses of given plant species. These extensive folk taxonomies correspond closely with systematic scientific taxonomies but generally do not consider trends in abundance of particular species or the impacts of human resource use on their status (Hellier et al. 1999: 870).[51] In dealing with *Cognitive Anthropology and the Environment*, Kempton (2001) points to a sample of questions, which studies in ethnobiology still have not managed to answer comprehensively. Although the classification of plants and animals is well understood, it is still unclear how knowledge of the environment is produced and how societies come to develop sustainable practices. Even if current work in ethnobotany has taken greater care to note the relevant social contexts of local understandings and practices, critics such as Kottak affirm that anthropology's contribution is »to place people ahead of plants, animals and soil« (1999: 33).

However, the methods that anthropologists have pursued to study and define IK have changed during the past decades. Although many questions that occupied earlier researchers who also identified themselves as *ethnoscientists* continue to inform ethnographic accounts, contemporary foci move away from notions that are restricted only to biological relations towards approaches that value the perceptions of local people about their environments.[52] A review of the current trends indicates that it is hardly possible to delineate clearly the profiles of these emerging research traditions as they are distinguished by cross-disciplinary approaches. In general, it can be stated that an increasing number of studies do not only focus on ecological knowledge repertoires themselves but also on their symbolic content, bringing to the surface some of the less tangible values that inform what is generally regarded as an economic relationship with the environment. As has been outlined, knowledge is characteristically situated within broader cultural traditions, and this implies, according to Ellen, that »separating the technical from the non-technical, the rational from the non-rational, is problem-

[50] A pioneer in the field of *cognitive anthropology* was Harold Conklin who dedicated himself in the 1950s to the study of knowledge acquired by indigenous people of the Philippines to farm the tropical forests. He concentrated on environmental knowledge through the examination of indigenous semantic categories. According to his findings, the ethnobotanical classification system of the *Hanunóo* comprised 1,800 specific plant names (Kempton 2001: 68).

[51] For further details, see *Ethnobotanical Classification. Principles of Categorization of Plants and Animals in Traditional Societies* by Berlin (1992). Dudley and Balée define ethnobotany as »the study of plants *and* people in their historical and geographic totality« (2005: 617; emphasis added). In discussing overlapping spheres of plant use and knowledge, they point to a relatively understudied aspect of ethnobotany, namely the question of how the use of plant resources is related to religious understandings. In particular they remind that throughout history there has been a strong link between healing practices, medicinal plants and spiritual beliefs.

[52] Sanga and Ortalli (2003) compile actual ethnoscientific approaches in *Nature Knowledge. Ethnoscience, Cognition, and Utility.*

atic« (2003: 65). Since a plant for instance can be at times an ancestor, a relative, a deity or ›simply‹ a plant, Seeland suggests a hermeneutic methodology to overcome »the artificial *making of the indigenous or local knowledge* by avoiding objective-oriented research strategies« (2000: 12). Although ethnobiological configurations are not authentic accounts from the emic point of view of the concerned culture, they are not simply one-dimensional scientific data sets either. Ethnobiological inquiry goes beyond the reconstruction of classification schemes in order to explore the origins of the nomenclature of certain species. The way in which nature is recognised and transformed into a social order to become the foundation for rituals and symbols where nature and culture become interchangeable terms is to be seen as the process of classification and an applied social science approach. The processes of cognition and classification are based on cosmological, spiritual and philosophical notions and assumptions that refer to the constitution and confirmation of cultural core terms. The shared worldview of a community is thus reflected in this »cosmogonic process« which on the surface seems to be a classification of botanical or animal genera (Seeland 2000: 7ff.).

Increasingly, it became acknowledged that »local people do not think in terms of soil, crops, fish and forests, but exploit and manage their natural environment as whole systems« (Sillitoe 2002a: 17). A growing number of studies in the field of *ethnoecology* aim to move towards such an expanded understanding beyond common questions of how natural resources are economically used or taxonomically classified. Research in this field has widened the scope towards questions of how natural resources are perceived and endowed with significance. In this way, technical and rational aspects have been related to behavioural patterns and perspectives. According to Toledo, the main objective of ethnoecological research can tentatively be considered as »the exploration of how nature is seen by human groups through a screen of beliefs, knowledge and purposes, and how in terms of their images humans use, manage and appropriate natural resources« (1992: 6). Contributions aim at »the ecological evaluation of the intellectual and practical activities that a certain human group executes during its appropriation of natural resources« (1992: 10). By focusing on the *corpus* (the whole repertory of knowledge or cognitive systems), the *praxis* (the set of practices) and the *cosmos* (the belief system), the discipline offers an integrative approach to the study of the process of the human appropriation of nature. In this analysis, the dynamics of the perspective taken by ethnoecologists have been much more receptive to considering indigenous belief systems than earlier analyses conceded.[53]

[53] According to Ellen (2003: 49) ethnoecological analysis distinguishes a) classificatory knowledge; b) knowledge of anatomy, autoecology and processes with respect to individual organisms or groups of organisms; c) knowledge of ecological systems (plant interaction, dynamics of various kinds of landscape, seasonality, food chains, pest ecology) and d) knowledge of the general principles of plant and animal biology. How all this knowledge connects into some larger whole presents analytical difficulties, since it is more difficult to disaggregate in local emic terms, partly because it is characteristically intermeshed with symbolic and aesthetic representations. An example of the potential contribution of ethnoecological knowledge to biodiversity research and conservation has been provided by Zent (1999). See also the other contributions in Gragson and Blount (1999). Further case studies include

3.4.3 **The symbolic dimension** - *the context of meaning*

By drawing on case studies on human interaction with nature, anthropologists have increasingly placed special emphasis on the significance of symbolically motivated criteria within indigenous knowledge and natural resource management systems. They underline the crucial role of cultural and religious values that are highly variable, difficult to quantify and often contrast with values underlying scientific approaches that until recently have dominated conservation thinking (Laird 2000: 356). In the present context, by referring to the symbolic dimension of IK, emphasis is placed on cultural belief systems and related cosmological principles as determining factors in human behaviour and important forms of knowledge in themselves. As experiences of the natural world often remain »wordless« (Weber Nicholsen 2002: 12), an appropriate way of exploring this unspoken sphere involves the analysis of symbolic expressions.

Interest in the relationship between symbols and socio-cultural systems has long been a domain of anthropological study of symbolism. In his essays compiled in *The Interpretation of Cultures*, Geertz defines the term *symbol* as »any object, act, event, quality, or relation which serves as a vehicle for a conception – the conception is the symbol's ›meaning‹«. He considers symbols as »tangible formulations of notions, abstractions from experience fixed in perceptible forms, concrete embodiments of ideas, attitudes, judgments, longings or beliefs« (1975: 91). Following this understanding, the construction, apprehension and use of symbolic forms are to be seen as any other social event or cultural act developed within a given culture. In particular, the symbolic realm becomes evident in religious systems that are made up of »a cluster of sacred symbols, woven into some sort of ordered whole« and for those who are committed to such a religious system, it »seems to mediate genuine knowledge, knowledge of the essential conditions in term of which life must, of necessity, be lived« (1975: 129). In view of attempts to approach how religions generate worldviews and ethics that underlie fundamental attitudes and values of different cultures and societies, he asserts that the notion »that religion tunes human actions to an envisaged cosmic order and projects images of cosmic order onto the plane of human experience is hardly novel. But it is hardly investigated either, so that we have very little idea of how, in empirical terms, this miracle is accomplished« (1975: 90). Following the influential work of Geertz, many anthropologists began to incorporate indigenous cosmological concepts in their ethnographic studies. With the growing attention on ecological concerns since the 1970s, the study of indigenous religions and perceptions of the natural world as a source of symbols has been increasingly approached by scholars engaged in the field of *symbolic ecology*. Contributions emerging from this field are characterised by an integrative approach that does not oppose secular aspects of human life from distinct patterns of interpretation anchored in specific worldviews.

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the accounts by Arizpe et al. (1996) and Hellier et al. (1999). For methodological specificities in ethnoscientific research and its application to conservation, see Nazarea (1998) and Slikkerveer (2000).

While ethnobiologists have confined their ambitions to studying local classificatory schemes, scholars in symbolic ecology have devoted their attention to »elucidating the logic of native cosmologies which do not appear to classify their components in conformity with the rules of domain-specificity« (Descola 1996: 83). In his article concerned with *Symbolic Ecology and Social Practice,* Descola argues that taxonomic classification reflects only a limited aspect of the ›social objectivation of nature‹, the process by which each culture endows certain features of its environment and forms of practical engagement with it. He suggests that

one must also take into account such dimensions as local theories of the working of the cosmos, sociologies and ontologies of non-human beings, spatial representations of social and non-social domains, ritual prescriptions and proscriptions governing the treatment of, and the relation with, different categories of beings [...]. In other words, if all cultures classify plants and animals according to identical procedures, but if each of them endows living kinds with specific attributes and social values and conceives its relations with them in its own fashion, it must be because ethnobiological taxonomies play a subsidiary role in that process of diversification (1996: 85).

In attempting to dissolve the demarcation of the *sacred* and the *profane* in natural resource management, anthropologists assert that ecological aspects cannot be divorced from the social and spiritual. With reference to the work of Lévi-Strauss[54] who argued that knowledge is not solely motivated by practical applications but rather by considerations other than utility, Nakashima and Roué assert that the »concrete and the spiritual co-exist side by side, complementing and enriching rather than competing and contradicting« (2002: 315). This view implies that often the most critical issues are situated below the surface of consciousness and can only be deduced through an analysis of behavioural patterns and their representations. It emphasises that the rational, empirical aspects of knowledge are not to be separated from religious, moral and symbolic knowledge.

In his analysis *Indigenous Knowledge and Popular Spirituality*, Huizer notes that a crucial aspect of IK is a »permanent spiritual revitalization« grounded in a »religious awareness [...] which takes the continuity and one-ness of life and after-life, good and evil, natural and supernatural for granted« (1994: 66). He refers to ›spirituality‹ as an integral part of indigenous knowledge that may be interpreted as a form of »resistance to change« against development and conservation schemes initiated ›from above‹ or large-scale modes of production that were imposed by colonial and postcolonial enterprises and projects (1994: 63ff.). The aspect of resistance has also been mentioned by Grim, who writes that IK is not to be seen as an »antiquated cosmological system that has been carried into the present in hermetically sealed conceptual containers« (2002: 259). Indigenous communities have rather consistently drawn on their traditional environmental knowledge to fight for their cultural survival both in the past and the present. The ›religious awareness‹ Huizer referred to has been framed in different

[54] Claude Lévi-Strauss, *The Savage Mind* (1966).

terms throughout the writing concerned with the interaction of indigenous perceptions and ecological applications. Seeland (2000) for instance, writes of ›transcendental notions‹, whereas Berkes (1999) has chosen the previously discussed term ›worldview‹ in a more encompassing sense. In current writing on indigenous belief systems, the term became widely pronounced. Throughout his work, Posey refers to cosmovision in terms of ›cosmic connectedness‹. He argues that »although conservation and management practises are highly pragmatic, indigenous peoples generally view knowledge as emanating from a spiritual base« (2003: 124). With reference to studies conducted among indigenous groups such as the *Kayapó* in South America, the *Mazatecs* of Mexico, the *Cherokee* of North America and aboriginal peoples of Australia, he argues that the emphasis on *spirit* provides a bridge between cultures, since cosmovisions are the organising spiritual and conceptual models used by indigenous and traditional peoples to integrate their society with the world. They are based on the ›sacred balance‹ of cosmic forces that unite human beings with all life. Elsewhere, Posey comments that

all Creation *is sacred, and the sacred and secular are inseparable. Spirituality is the highest form of consciousness, and spiritual consciousness is the highest form of awareness. In this sense, traditional knowledge is not* local *knowledge at all, but rather an expression of* universal *knowledge as expressed through the local* (2002: 28).

Similarly, by referring to indigenous cultures in the North American context, Grim (2002) has shown the interwoven character of ritual and worldview. In exploring *Native Cosmologies and the Environment,* he describes the human relationship with the natural word as a ›way of knowing‹ in which symbols and rituals are ›semantic tools‹ serving humans to manipulate their world. Rarely interpreted by humans themselves into verbal exposition, the network of symbolic images and the performance modes of rituals are to be seen as lived expressions of worldviews establishing human-earth relations.

Since the 1990s, another new transdisciplinary field of academic research referred to as *spiritual ecology* has emerged. Sponsel attempts to describe the field as »a complex and diverse arena of spiritual, emotional, intellectual, and practical activities at the interface of religions and environment« (2001: 181). Unlike environmental studies, which have left unprobed the role of religion, spiritual ecology integrates materialist and mentalist approaches to culture-environment relations. A central concern is to comprehend that the *natural* and the *supernatural* are not rigidly separated and antithetical domains but interwoven into human experience and ultimate reality. Among other general principles that are partly inherent in many animistic[55] and other religions,

[55] Animism is focused on a belief in multiple spiritual beings in nature. The spirits are thought to reside in natural phenomena such as rocks, trees, forests, animals, lakes, rivers or mountains. Consequently, the natural and the supernatural are not always rigidly separated into discrete domains. This unity is also one of the central tenets of *spiritual ecology* as well as a key attribute of sacred places in nature. Despite the spread of the world religions, many indigenous societies throughout the world remain essentially animistic. Even after a new religion becomes dominant, in many cases elements of previous religions persist and forms of syncretism are frequently to be found. Thus, the religious system of many societies does not necessarily belong to one or another category (Sponsel 2001: 179f.).

Sponsel (2001: 185f.) points to the lack of confidence in the adequacy of secular approaches such as science and technology to reduce if not resolve environmental problems. They are recognised, but not considered sufficient because they focus on symptoms rather than on causes and consequences. The *ultimate* cause is thought to reside in morality, wherein religion can play a crucial role as a fundamental source providing a worldview, values, attitudes, practices, rituals, institutions and sacred places. Religions are seen as alternative ways of representing nature, affording it spiritual, moral and cultural meanings and values and defining the place of humans in nature, including how they should and should not act toward non-human beings and other natural phenomena. Nature is considered to be an interwoven web of material and spiritual relationships from the local to the global levels. Thus, spiritual ecologists view humans as an integral part of nature and focus on an *ecocentric* environmental ethic instead of an *anthropocentric* one. This view implies the need to maintain and restore the dynamic equilibrium of society in nature, which is an essential concern of spiritual ecology.

In contrast to spiritual ecology, which is to be seen as a social, political, intellectual and religious movement rather than a merely transdisciplinary arena of academic research, materialist critics question the discrepancies between ideals and actions. Such sceptics assert that giving primary causal weight to religious beliefs may oversimplify complex historical, cultural and environmental conditions. Religious responses may not address ecological problems and the ›ecological balance‹ that is seen expressed in indigenous religious traditions may be the result rather than the cause of particular practices said to be ecologically sustainable. In this way, it has been argued by Kalland (2003) that the sustainability of many indigenous societies can more plausibly be explained as an outcome of particular technologies, ecological conditions or levels of population density than the result of spiritual attitudes about nature. He critically asserts that non-Western religions are depicted as ecocentric and as harbouring profound ecological knowledge and sound environmental ethics in order to construct the dichotomy between anthropocentric and ecocentric worldviews (2003: 165). Elsewhere, Kalland (2000: 323) notes that understanding the natural world as a sacred sphere does not necessarily require an ethic of environmental conservation or stewardship, and infusing nature with spirits is no guarantee for the well-being of the environment. It would be too naïve to assume that everybody within a culture acts in accordance with a set of norms and values. Such a conception would ignore the contradictions that exist in any culture. He attributes the driving force behind the interest devoted to traditional ecological knowledge to the same logic that informs those who see the solutions to environmental problems in non-Western indigenous worldviews.

We cannot a priori *assume that people's perceptions and norms are mirrored in their actual behaviour, and if such a connection is present this is not necessarily a result of ecological understanding and conscious conservation but might be a coincidental side-effect of something else. [...] It is tempting to suggest that any religion is likely to support values that are inhibiting over-exploitation of natural resources as well as values that are facilitating or legitimating such behaviour. Explaining behaviour from ideologies may rest on selective reading of evidence.* (Kalland 2003: 171)

Nevertheless, Kalland proposes that resource management regimes should be based on the knowledge, premises and priorities of local people who depend on natural resources for their nutritional, economic, social and cultural needs and who have often developed social institutions and regulations that had positive effects on nature conservation, although these originally might have been motivated by other considerations (2003: 172).

3.4.4 The epistemological dimension - *indigenous knowledge and science*

Current writing pays particular attention to the relationship between ›modern‹ science-based knowledge and ›indigenous‹ or ›traditional‹ knowledge.[56] Among others, Berkes (1999) discusses complementarity as an increasingly important theme in resource management and has undertaken to analyse similarities and differences between both knowledge systems. In general, he argues, both ›Western‹ and indigenous science may be considered the result of the same »intellectual process of creating order out of disorder« (1999: 9). For DeWalt, it is important to consider indigenous and scientific knowledge systems as »complementary sources of wisdom« (1994: 127). Kimmerer (2002) distinguishes between traditional and scientific ecological knowledge, assuming that the two have much in common, since both derive from systematic observations of nature. Accordingly, both knowledge systems yield detailed empirical information of natural phenomena and relationships among ecosystem components, both have predictive power and in both intellectual traditions, observations are interpreted within a particular cultural context. Traditional ecological knowledge encompasses a wide range of biological information that overlaps significantly with the content of ecology or conservation biology. Its scope includes detailed empirical knowledge of population biology, resource assessment and monitoring, successional dynamics, patterns of fluctuation in climate and resources, species interactions, ethno-taxonomy, sustainable harvesting, adaptive management and manipulation of disturbance regimes.[57] But TEK, she asserts, also differs from science in a number of ways. First of all, it is qualitative in its scope and implies a record of observations from a single locale over a long period of time. Such continuous data contrast with scientific observations that tend to be quantitative and often represent synchronic data from a wide range of sites without a long-term perspective. Science is conducted in an academic culture in which nature is seen objectively. In contrast, ›indigenous science‹ views nature as subject. Unlike science, it is much more than the empirical information con-

[56] In the 1990s, the encounter of anthropology and the field of science and technology studies (STS), which is centrally concerned with the production of authority structures in scientifically and technologically advanced societies, led to the formation of a new direction referred to as *anthropology of science and technology*. For an introduction into this field based on the assumption that the culture of science itself is a valid object of study, see Gorenstein (1998).

[57] Ellen and Harris (2000: 6ff.) remind to recognise that much scientific knowledge of the natural world that was constituted during the 18th and 19th centuries absorbed pre-existing indigenous European folk knowledge.

cerning ecological relationships; it is, rather, woven into and inseparable from the social and spiritual context of culture. Thus, it is laden with associated values, while the scientific community relies upon data that are »value free« (Kimmerer 2002: 433f.). As it is woven into social structures of a specific culture and bound by time and space, by contextual and moral factors, indigenous knowledge contrasts according to Banuri and Apffel Marglin with knowledge derived from science, »which bases its claim to superiority on the basis of universal validity« (1993: 13). Following Nakashima (1998), knowledge in ›Western‹ cultures is conceived as an abstract entity and independent of practice. ›Theory‹ and ›practice‹, like ›science‹ and ›technology‹, are continually differentiated. In this intellectual tradition, science is considered to be secular and thus distinct from religion and belief. Scientific reality is supposedly empirical and conceptual barriers have been erected to exclude the sacred, the spiritual and the intuitive. He writes that »science remains a powerful institution in today's world and most people that have received a formal education [...] have been engrained with the idea that science and scientists represent the absolute and ultimate authority, particularly when interpreting biophysical reality« (1998: 9). Sahtouris writes on the same issue, suggesting that scientists »have been given the role of ›official‹ priesthood, with the mandate to tell us ›how things are‹« (2002: 72).[58]

Discussing the inherent ethnocentrism[59] and elitism of global science in late 20th century, Ellen and Harris (2000) point critically to the limitations of research methods and ways of theorising in that they often ignore or undervalue contexts; it is important to question the extent to which IK can ever be de-coupled from the cultural context. Despite programmatic rhetoric, they assert that even in anthropological work such as the contributions in *The Cultural Dimension of Development* (Warren et al. 1995), IK is almost placed *outside* culture. These examples appear to have little to do with the cultural contexts in which they occur, but rather provide representations of ›indigenous science‹. By contrast, Agrawal (2002) sees these accounts as crucial to the continuing vigour of debates about IK after long decades of dismissal of the ›indigenous‹ and what it signified by attempting to create greater awareness about its significance among policy makers and neoliberal reformers pursuing privatisation and economic liberalisation. Elsewhere, in analysing disparities between the two knowledge systems, Agrawal (1995) argues that IK is essentially a personal, practical knowledge related to the meeting of individual and community needs. It is immediate and corporate, but represents a different worldview from science in that it is not constrained by rules and

[58] In most writings, ›science‹ or ›scientific thinking‹ is referred to as a rather unspecified domain. Implicitly, it seems that scholars direct their criticism to the natural sciences on which conventional conservation and resource management are based. The same authors who emphasise that there exist diverse indigenous knowledges do not take into account that science itself should also be differentiated; there are many sciences of which all are based on different principles and assumptions that need to be distinguished. It should be kept in mind that at least the social sciences, as Long (1992) suggests, referring to the role of worldviews in the development of science, have always been composed of a multiplicity of paradigms.

[59] The term implies the tendency to interpret other cultures according to the values of one's own culture.

hypotheses. Nevertheless, he suggests that the attempt to create distinctions in terms of ›indigenous‹ and ›Western‹ is »potentially ridiculous«; instead, it makes more sense to him to talk about »multiple domains and types of knowledges, with differing logics and epistemologies« (1995: 433). To productively engage IK in development, he suggests to go beyond the dichotomy of indigenous vs. scientific and work towards greater autonomy for indigenous peoples. Agrawal considers the critical difference between indigenous knowledge and science not to be an epistemological issue but rather a question of power relations. Differently formulated, those who have access to knowledge seem also to possess the truth about the natural world and how humans should interact with it. Knowing the truth about a place grants the knower a certain amount of power in relationships with those who are not considered to have access to that knowledge (Sundberg 1998: 3).

By emphasising the »hegemony of science«, Schumacher notes that »we live in the space of science exactly as we live in the space of politics« and their convergence is the »space of our lives« (1998: 54). He calls into question the understanding of science as the »benchmark against which all other knowledge practices must be measured« (1998: 45). The assertion of a hierarchical relation involves the assumption that IK has to be confirmed or disconfirmed by science; if it meets scientific standards, it may be acknowledged. Otherwise it is likely to be reduced to the sphere of mere custom or tradition. Or as Nakashima and Roué write, the scientific and development communities view IK foremost as »a resource to be appropriated and exploited« (2002: 314f.). An integration of IK with science implies a validation process based on scientific criteria that separate the useful from the useless, objective from subjective, indigenous ›science‹ from indigenous ›beliefs‹. Through this process, IK repertoires that correspond with the scientific paradigm are extracted and other aspects such as distinct patterns of interpretation anchored in specific worldviews are rejected. For Goldsmith (1993), the paradigm of science is a homeostatic system, for if knowledge is only accepted to the extent that it fits the paradigm, any knowledge that does not fit – however true and important it might be – is rejected. Similarly, Gorenstein argues that it cannot be assumed that all knowledge systems can either be translated into science or if not translatable, they must be rejected as valueless in a world in which the values of science dominate. Thus, science cannot be considered a *lingua franca* of different knowledge systems or ›pan-human knowledge‹ that some societies have not yet attained but may if they ›progress‹ (1998: 3). In the same line of thought but in reference to the context of development cooperation, Long critically relates to knowledge encounters that »involve the struggle between actors who aim to enrol others in their ›projects‹, getting them to accept particular frames of meaning, winning them over to their points of view« (1992: 27). Commonly, projects attempt to keep the practical separate from the metaphysical, the necessary from the non-essential and the specific from its context. Thus, they make implicit judgements about what is valuable about IK and contribute to reshaping such knowledges and practices in the very effort to safeguard them.

These thoughts lead to another aspect pertaining to what Agrawal (2002) has termed the ›scientisation‹ of IK in his article *Indigenous Knowledge and the Politics of Classification.* Touching the problem of *ex situ* conservation of IK, he examines its transformation by locating it in databases.[60] The strategy of archiving IK in lists of ›best practices‹ highlights successful efforts by indigenous peoples or local communities to address problems related to environmental conservation, health, education or agriculture. The common purpose of such databases that document particular instances of knowledge is, according to Agrawal, twofold. On the one hand, they are intended to safeguard IK in the face of external pressures undermining the conditions under which indigenous peoples and knowledge thrive; on the other hand, they aim to collect and analyse the available information and identify specific knowledge features to be generalised and applied more widely in the service of development and environmental conservation. Through this process, he asserts, IK is transformed into a kind of under-utilised and context-independent resource to be archived in international and national centres mirroring the structure of science, parts of which can be conveniently modularised and transferred. This documentation- and publication-related process can be seen as »a new beginning in the abstraction and harvesting of specific elements of indigenous knowledge [...] justified on the grounds that it is crucial for successful development results« (2002: 288ff.). In this way, the instrumental logic of development that underlies the creation of such databases becomes obvious.

Like previously mentioned critics, Agrawal argues that only those forms of IK gain attention and protection that are potentially relevant to development, while other, irrelevant forms, for which no practical use can be perceived or which cannot be stated as direct cause and effect sentences remain unconsidered : »rituals, words, movements, gestures, and actions that may be the concomitant of the administration of a herbal medicine or drug in an indigenous practice can be divested and discarded as not being part of the crux of the usefulness of the herbal medicine or drug« (2002: 291). Thus, utility becomes a necessary condition to be proven through the application of science. In this sense, Agrawal infers, scientisation can also be seen as being identical to what he calls ›truthmaking‹. Whatever the value of other knowledge systems may be, their lack of utility makes them unsuitable for inclusion in databases that hold instrumental power in development initiatives. This process he terms as *particularisation* bound to the *validation* of IK on the basis of scientific criteria and finally aimed at its *generalisation* in terms of an application in a classificatory-taxonomic structure, limiting the examination of the contextual factors that might be responsible for the effects being claimed

[60] This strategy has proliferated especially in the past decade. Among other global institutions, the *World Bank* has sought to standardise IK as a useful tool for sustainable development, collecting and disseminating local knowledges in centralised databases. The *Native American Botany Database*, for instance, provides information on specific uses of plants and trees for different purposes in agriculture, medicines, cosmetics, etc. (Agrawal 2002: 290). For further details on this issue, see Long Martello and Jasanoff (2004). That the documentation, reconstruction and systematisation of cultural information pertaining to IK should be integrated into some sort of *memory banking* procedure is a major theme presented by Nazarea (1998) in her account on *Cultural Memory and Biodiversity*.

for a particular indigenous practice. Consequently, it fails to take into account the many almost imperceptible variations that a constantly changing context creates. These considerations lead to his conclusion that the ways in which power works must be critically examined, just as the relationship between power, development and science needs to be re-examined in order to realise the aim of working in the interests of indigenous or other marginal people who have often remained in positions of localised resistance to effects of power produced by those who possess and apply scientific knowledge, including the builders of databases (2002: 292ff.).

In a similar way, other authors have emphasised the need to recognise power inequalities, ethnocentric assumptions and epistemological contradictions that lie at the heart of efforts to convert the indigenous into the scientific. Ellen and Harris, for instance, draw attention to this depleted vision of IK inventories as »a convenient abstraction, consisting of bite-sized chunks of information that can be slotted into ›Western‹ paradigms, fragmented, decontextualized, a kind of quick fix, if not a panacea« (2000: 15). The notion of a material stock that can be analysed and extracted for use in any context disregarding the entirety of particular circumstances and the presumed existence of a definable body of knowledge independent of the context in which it arises leads them to suggest that it is precisely the local embeddedness of IK that made it successful. Elsewhere, Ellen argues that the boundaries between science, scholarly knowledge and folk knowledge are constantly shifting and that the distinctions themselves are not always helpful: »All knowledges are anchored in their own particular socio-economic milieu; all are indigenous to a particular context [...]. By presenting agroecological knowledge as a decontextualized inventory of practices, all agency and creativity is drained, reducing it to a packageable commodity, secured and easily transferable from place to another« (2003: 66f.). Or as Antweiler notes, it is wrongly assumed that indigenous knowledge can be incorporated into measures conventionally planned and implemented – »like a module« (1998: 484). Examining the same question, Escobar formulates:

Local, ›indigenous‹ and ›traditional‹ knowledge systems are found to be useful complements to modern biology. However, in these discourses, knowledge is seen as something existing in the ›minds‹ of individual persons (shamans or elders) about external ›objects‹ (›plants‹, ›species‹), the medical or economic ›utility‹ of which their bearers are supposed to transmit to us. Local knowledge is seen not as a complex cultural construction, involving movements and events profoundly historical and relational. [...] As they are brought into its politics modern science recodifies them in utilitarian ways (1996: 57).

In order to overcome this discussion on the oppositional relationship between IK and science and to break the »epistemological monopoly« (Toledo 1992: 18) the latter has imposed, Gorenstein suggests creating a »third space where knowledge traditions can be performed together« (1998: 4). Likewise, DeWalt proposes more effective and creative interactions between indigenous and scientific knowledge:

The key is to provide both knowledge systems with more opportunities in which they can inform and stimulate one another. [...] In order to be effective, the results of scientific knowledge must ultimately be incorporated into indigenous knowledge systems. [...] The strengths of observation of these indigenous knowledge systems, however, need to be combined with the experimental method of scientists (1994: 128).

DeWalt argues that social scientists could become a connecting part of this process of both mediating between indigenous and scientific knowledge and orienting research towards accomplishing more socially just and ecologically sustainable systems. It is not enough to simply engage in post-modernist criticism of industrial society, he contends; anthropologists should apply their knowledge obtained from studying indigenous knowledge systems to assisting in the transfer of these knowledges to other similar circumstances and situations. As they are coming from the society and culture of scientists but concurrently identify with or focus on the needs and goals of the people they study, social scientist should better learn to speak the languages of both natural scientists and the people on whom development efforts are focused (1994: 128f.).

Likewise, Antweiler (1998) positions anthropological knowledge between the scientific and indigenous perspectives. With reference to Turner[61], he mentions anthropologists' ›interculturality‹ and their status as *liminal personae,* which may lend them a certain aptitude for reflecting and integrating both ways of knowing. Their role as mediating agents translating cultural knowledge and uncovering the inherent ethnocentrism of science is also referred to by Kalland (2003). He argues that anthropologists may contribute in a twofold manner. First, they can provide a linkage between the two distinct knowledge regimes. Secondly, as resource management is first of all a question of social relations and not a relationship between people and nature, they may contribute in designing and monitoring management institutions. Taking into account that ›social engineering‹ seldom works as intended, he argues, monitoring is essential. Here, anthropologists function »not necessarily as advocates and interpreters of exotic cultures, but as mediators between two knowledge systems, the local/practical versus the scientific/legalistic« (2003: 173). Though they have made important contributions as to the presentation of local knowledge, he argues, anthropologists should rid their analyses of the »apologetic romanticism« often found in their studies: »Ideally, we should use the same critical standards when analysing other people's knowledge systems as when we analyse our own culture« (2003: 173). Although alternative worldviews might be important sources of inspiration and make it possible to reflect on one's own understanding of the world, Kalland further claims that knowledge alone, whether scientific or local, is insufficient to secure the sustainable use of natural resources. Thus, he argues elsewhere, both knowledge traditions will benefit from a dialogue. Science is facing a problem with its narrow focus on one-dimensional causalities and often lacks the empirical data it needs. In contrast, local paradigms face limita-

[61] Victor Turner, *The Ritual Process. Structure and Anti-Structure* (1969).

tions with their holistic approaches that everything is interrelated, which makes it difficult to predict changes and isolate the reasons for such changes. These different ways of understanding and interpreting the environment are both rooted in empirical observations, but whereas science is oriented towards quantification and one-dimensional causality divided into disciplines, local knowledge is behaviour-based, contextual and to be assessed by a qualitative approach. This acknowledgement leads to the conclusion that new models incorporating both qualitative and quantitative data are needed for an exchange of information (Kalland 2000: 326f.).

In the same vein, Kimmerer (2002) emphasises the need for integrative thinking. In order to encounter the complex issues of sustainability and to develop problem-solving approaches, a diversity of intellectual traditions is required. She considers an integration of social and cultural concerns a major new direction for scientists for developing cross-cultural competency. In search for ways to incorporate IK into mainstream scientific teaching, its use in education calls for a thoughtful consideration of the cohesive and internally consistent worldview to which it belongs. This view is also held by Nakashima and Roué (2002). They suggest appreciating IK not as static information set to be conserved *ex situ* and integrated into science but as dynamic components of indigenous societies that may be protected through the conservation of languages, ensuring knowledge transmission within the societies themselves and empowering people to increase their control over the environments upon which they depend. Even today, Nakashima (1998) affirms, the notion is still held that development can best be achieved by severing all ties with the past and investing in modernisation via external inputs of science, technology and formal education. The roots of sustainable development have to be set within the society itself, in order to allow people to find their own way between the past and the future, to draw upon resources from inside as well as outside and to use their own traditions as the foundation for change. Such a process of cross-cultural understanding should involve a mutual flow of information and requires »the need for humility, the need to learn from people before trying to teach them« (Chambers & Richards 1995: xiv).

To sum up this chapter reviewing key aspects of indigenous knowledge, it can be concluded that although underlying cognitive strategies influence how people construct what they know about the biological world, most knowledge is culturally transmitted and shaped by environmental and social forces that vary from place to place. Or as Arce and Long put it: »knowledge is constituted by the ways in which people categorize, code, process and impute meaning to their experiences« (1992: 211). This is as true of scientific and of indigenous knowledge, even though the grounds of belief and the procedures for validation of knowledge-claims may vary.

Knowledge emerges out of a complex process involving social, situational, cultural and institutional factors. The process takes place on the basis of existing conceptual frameworks and procedures and is affected by various social contingencies, such as the skills, orientations, experiences, interests, resources and patterns of social interaction characteristic of the particular group or interacting set of individuals, as well as those of the wider audience. Moreover knowledge is constructive in the sense that it is the re-

sult of a great number of decisions and selective incorporations of previous ideas, beliefs and images, but at the same time destructive of other possible frames of conceptualisation and understanding. Thus, it is not an accumulation of facts but involves ways of construing the world. Nor is knowledge ever fully unified or integrated in terms of an underlying cultural logic or system of classification. Rather it is fragmentary, partial, and provisional in nature and people work with a multiplicity of understandings, beliefs and commitments. (Arce & Long 1992: 212f.)

That knowledges cannot be divorced from the historically specific forms of social intercourse, communication and organisation has been widely asserted. Among others, McCarthy (1996) reminds that knowledge itself is a historical construct. She has provided a definition of knowledges as »any and every set of ideas and acts accepted by one or another social group or society of people – ideas and acts pertaining to what they accept as real for them and for others« (1996: 23). Its working premise, she comments, is that social reality itself is in process and is formed out of the prevailing knowledges of a society or group of people. In this sense, the next chapter will explore aspects of relevance within larger social and historical frames. Leaving behind the highly diverse theoretical ideas, the turn towards the *local context* again entails different levels of analysis. Building upon the central attributes of indigenous knowledge as described above, the following chapter specifically considers the role of national policies and integrationist objectives that defined the major parameters of the Guatemalan governments towards the indigenous population in the past. It synthesises some general ethnological data and explores the influence of dynamic configurations of state policies and institutional environments. This analysis may provide a matrix of culture, history, social movements and environmental change that local resource use patterns are embedded in.

4 THE LOCAL CONTEXT – *national policies and indigenous communities*

While the previous chapter drew together recent discursive threads, this chapter turns to the *local context*, which is conceptualised as an enlarged frame of spatial and temporal scales in which findings of the field investigation are embedded. Leaving behind the frames of global and discursive discussions, it intentionally sets out to explore the present conditions of the indigenous population in Guatemala, which are interwoven with the threads of colonisation and their economic, political and social marginalisation throughout the past centuries. As Adams (1988) emphasises, there is an important reason for such a perspective as events may obtain meaning only in terms of their historical context. Thus, the chapter combines chosen aspects of past and recent developments to document particular dynamics of Guatemalan society. These are an example of what Slikkerveer has described as »unbalanced historical processes of acculturation« (2000: 174); or as O'Kane briefly comments: »Guatemalan history reads like an unequal struggle between life and deathly silence« (1999: 5). On this background, the second part of the chapter turns to the *Maya-Q'eqchi'*. By combining social, political and ecological issues, it provides a frame for considering the principle nature of political events and their continued influence on the current social and environmental situation in Alta Verapaz. An introduction to the conservational setting and the specificities of the National Park *Laguna Lachuá* is followed by a portrayal of the study area combined with applied methodology considerations.

4.1 The national context

[A] society's intellectual developments cannot be divorced from its concrete historical and social contexts.
(McCarthy 1996: 107)

Guatemala is characterised by an ethnic heterogeneity and its status as one of the most fertile and biologically diverse countries in Latin America (O'Kane 1999: 56). The country covers a total area of 108,890 km^2 and is divided into 22 departments. It has a common frontier with Mexico and Belize to the north and borders with Honduras and El Salvador in the south and east. Geographically, Guatemala is characterised by four major areas. Beginning with the southern lowlands along the Pacific coast, which are replete with fruit, coffee, sugar and cacao plantations, the country rises to temperate central highlands featuring a wide range of volcanoes, forested areas and cultivated lands and then slopes to the tropical Caribbean east coast and the largest and northernmost province Petén, which covers over 36,000 km^2 of originally low-altitude moist tropical forests. Historically, the area was inhabited by the ancient Maya, who developed a highly sophisticated agrarian society and a trade network covering a major part of Mesoamerica.[1] The height of the Maya reign is associated with the northern lowlands of Guatemala and the Yucatan Peninsula as of about 1500 BC. During the Classic period (200-900 CE), it flourished through the rise of ceremonial centres such as *Tikal* at the heart of social worlds resembling small-scale city-states (Carrasco 1990). Ten centuries after the disintegration of the Maya civilisation[2], the remains of the elaborate centres still give evidence of the cultural achievements of the defunct empire and attract around 600,000 tourists annually. The number of foreign visitors increased substantially in the past decade and tourism has grown to become one of the largest industries in the country. Many visitors come for cultural tourism with the purpose to see the archaeological sites. Increased awareness of diverse environmental concerns has led to the emergence of so-called eco-tourism. The popularity of the natural attractions, which are contained primarily within numerous protected areas, contributes to the growth of this branch of nature-based tourism in the region.

[1] The term Mesoamerica designates a geographical and cultural area covering the section of Central America from central Mexico south to Honduras and northern El Salvador. The area roughly corresponds to the ancient civilisations of the *Olmec*, *Maya*, *Zapotec*, *Mixtec* and *Aztec*, as well as the area inhabited by their descendants today. Evidence has demonstrated the presence of humans in the area since 11,000 BC. With the domestication of crops, like maize, beans and squash, the Maya evolved into one of the most developed civilisations of the ancient world, building large cities and sophisticated waterworks and inventing a hieroglyphic writing system and a precise calendar based on astronomical knowledge (Secaira 2005: 1068). For a series of accounts on Mesoamerican cultures, see *The Oxford Encyclopedia of Mesoamerican Cultures. The Civilizations of Mexico and Central America* edited by Carrasco (2001).

[2] The Classic Maya civilisation disintegrated rapidly between 790-900 CE. The reasons for this decline have been an issue of longstanding discussions. According to Carrasco (1990), it appears that a pervasive series of crises in the agricultural, ceremonial and political systems caused the demise of the empire. Others, like Schackt (2004) mention some kind of environmental breakdown as a background variable provoking malnutrition, epidemics and strife. For an introduction into the Classic epoch, see *Time and Reality in the Thought of the Maya* by León-Portilla (1988).

4.1.1 Biological and cultural diversity

The general finding that areas with high degrees of biodiversity tend to be characterised by a high cultural and linguistic variety is equally evident in the case of Guatemala. Beside a striking ethnic heterogeneity, the country's biological diversity rates among the highest in Central America.[3] Regional *hotspots* are to be found in the cloud forests covering mountain peaks in the central highlands and in the tropical rainforests of the northern lowlands in the department Petén, which makes up about one-third of the country's surface. The *Selva Maya* surrounds most of the Classical Mayan sites. It is the largest remaining tropical rainforest habitat in the Americas north of the Amazon and shared with neighbouring Mexico and Belize (O'Kane 1999).[4] Besides the abundance of wild flora and fauna in diverse ecosystems, Guatemala also belongs to one of the 12 mega-centres of cultivated plants in the world (Castañeda Salguero et al. 1995).[5]

Fig. 4.1 Temple site at *Tikal* – reminiscent of the ancient Maya reign

[3] Relating to the species abundance found in Guatemala, O'Kane (1999) mentions 19 distinct ecosystems with more than 8,000 plant species, approximately 600 orchid species, including the nearly extinct *white nun* orchid, which is the country's national flower, around 200 reptile and amphibian species, 250 mammal and 600 bird species. One of the threatened bird species is the *quetzal* (*Pharomacrus mocinno*), the national bird, for which the unit of currency is named and which became a famous ›flagship species‹ within the conservational movement.

[4] The recent history of Petén is reminiscent of Brazil's development. In the 1970s, the Guatemalan government sought to accommodate the in-migration through land grants and road construction. But as colonisation was leading to severe deterioration of the forest resources, the policy was reversed through the establishment of protected areas. According to Hallum (2003), the *Selva Maya* is losing its forest cover much faster than the Amazon Basin, at a rate that surpasses 80,000 ha per year (Nations et al. 1998). For details on the ecological variations and land cover changes in the area, see *History and Destiny of Middle American Forests. The Inheritors of the Mayan Landscape* by Furley (1998).

[5] Among other cultivated plants, maize, different bean species, pumpkin, cocoa, chili, avocado, tobacco and cotton originate from Central America and the southern part of Mexico.

The observation that regions of high remaining biodiversity are most often found in areas inhabited by indigenous peoples also applies to the Guatemalan context.[6] For millennia, the ecosystems of many areas have been shaped by communal land use systems related to subsistence production, hunting and gathering practices and forest extraction of indigenous farming communities.[7] Besides the use and protection of numerous wild species, these communities have generated a large variety of domesticated plants and crops like maize, beans, tomatoes, chilies and numerous tropical fruits adapted to the specific environmental conditions. Although the crop diversity and associated knowledge have undergone a process of severe erosion, indigenous communities throughout the country have generally preserved customary practices for meeting basic needs and securing their livelihoods. Unlike the situation in most other Latin American countries, where they constitute minorities, the indigenous peoples of Guatemala represent the majority of the country's inhabitants. Within this multi-ethnic society, they comprise around two-thirds of the eleven million citizens, most of them of Mayan descent (Secaira 2005).[8] The other major part of the population is referred to as *Ladinos*. The term generically refers to Spanish-speaking people of mixed or indigenous origin who have adapted to or identify themselves with the mainstream national Hispanic culture.[9] Although there are no rigid boundaries between the categories, the society is divided along these ethnic lines. The social divide has for centuries been marked by an oppositional relation. Economic power is held almost exclusively by *Ladinos,* who mainly inhabit the central southern and eastern parts of the country and dominate the large-farm sector, whereas the indigenous people comprise the vast majority of the land-poor and landless population living predominantly in rural areas of the highlands. The overlap of departments with the highest concentration of indigenous population and those that experience the greatest poverty confirms the link between ethnic origin and poverty in Guatemalan society.[10]

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[6] In mapping the intersections of forested land and indigenous peoples, researchers found that the densest tropical forests in Central America coincide with territories inhabited by indigenous communities (Berger 1997: 106).

[7] In examining resource use patterns among the ancient Maya, Gómez-Pompa (1991) identified a series of biological conservation strategies, many of which are still practiced in different parts of the area. Despite the Mayan collapse, such conservational knowledge still exists in present-day silvicultural and agricultural production systems.

[8] Statistical data tend to vary. As to the geographical distribution (map 4.1), the majority of the *indígenas* live concentrated in the western and northern regions of the country. The *K'iche',* with over one million members, form the largest of the 21 Mayan groups. The other largest groups include the *Mam*, *Kaqchikel* and *Q'eqchi'*.

[9] Apart from the *Maya* and the *Ladinos*, there are two other ethnic groups of minor number to be distinguished: the *Xinca*, a minority of a few thousand people that has inhabited the country since precolonial times and the *Garífuna*, who are of Afro-Caribbean origin, settled along the eastern coastline.

[10] According to official figures, 60 percent of the country's population lives in rural areas. Of these, 59 percent are indigenous (MINUGUA 2001: 10). The country has one of the highest rates of inequality in the world and is one of the poorest countries in Latin America. In 1995, the *World Bank* estimated that 75 percent of the population live in poverty and 58 percent in extreme poverty, meaning they cannot fulfil their basic survival needs (Amry 1999: 78).

Map 4.1 Distribution of indigenous languages spoken in Guatemala[11]

4.1.2 Historical accounts

The colonial era in Guatemala began – as in most other Latin American countries – in 1524 with the arrival of the Spanish conquerors, who imposed their colonial reign known as *encomienda*. This system saw the concentration of much land in the hands of few colonists. It not only handed the territorial control to these new landowners, but also obliged the indigenous population to pay royal tributes to the Spanish crown. Since they usually could not meet these demands in material goods, they were forced to pay in the form of labour. In addition, as throughout the ›New World‹, the establishment of colonial rule was accompanied by missionary work to convert the indigenous population to Catholicism. In general, the process of subordination was characterised by violent changes that deeply altered indigenous economic, social and symbolic worlds (Carrasco 1990: 128). This initial situation imparted a specific character to the history and culture of the region.

[11] Apart from Spanish, there are 23 officially recognised languages: *Garífuna*, *Xinca* and the 21 Mayan languages. The map indicating their spatial distribution is adapted from *http://www.informpressca.com/municipal/mapag.htm*

Moreover, warfare, forced relocation and diseases drastically reduced the number of inhabitants of Mesoamerica in the following century. European epidemics introduced in the course of colonisation led to a severe demographic decrease; the indigenous population was reduced from around fourteen million at the arrival of the Spanish to two million in just two generations (O'Kane 1999: 11). Since the European invasion in the 16th century, resistance to the terms of their incorporation into colonial and post-colonial nation state resulted in a struggle for social and legal recognition. Movements for independence led to an end of the colonial era in 1821. But the process of subjugation of the Mayan population was reinforced during the liberal period in the nineteenth century, at which time a governing class retained its power and privileges based on large rural estates and the exploitation of indigenous labour.

A new wave of external intervention emerged with the beginnings of export-oriented coffee production industry fostered by German immigrants during the second half of the 19th century. In the following, unequal structures under authoritarian and property-based regimes remained; large landholdings as well as the main economic activities such as mining, construction and industry continued to be concentrated in the hands of a privileged few. A number of attempts to build a fairer society were repeatedly suppressed by force. A military coup in 1954, which overthrew a democratic regime that had been in power for a decade, evoked a cycle of violence that lasted almost half a century. The policies of succeeding military regimes and transitory civilian governments sought to advance the process of national integration, but consistently failed to bring reforms to halt inequalities and injustices. The state constituted the parameters of its citizenship, in which the nation-state as an ›imagined community‹ was constructed on the ideal of *mestizaje* (Green 2003: 58).

A renewed push towards this homogenisation of national society began throughout the Guatemalan highlands during the late 1970s. The attempt to promote cultural assimilation met with considerable disinterest within the population. Growing oppositional activism and a guerrilla movement were encountered by massive military aggression. In the late 1970s, the social tensions that always had been present in the agrarian society culminated in a civil war, with concomitant consequences for indigenous communities throughout the country. Although they had been undergoing social and cultural changes for more than a century, it was not until the 1980s that they became a source of mobilisation and support for the guerrilla organisations and thus a perceived threat to the country's powerful economic and military elites (Davis 1988: 6). In the late 1970s and early 1980s, the discriminating policies against the rural population involved extreme violence; the army and paramilitary forces sought to control the situation by means of threats, torture, community massacres and killings of individuals considered to be linked to the insurgents.[12] Although the state justified the military ac-

[12] In 1982 the *Unidad Revolucionaria Nacional Guatemalteca* (URNG) was founded by four left-wing guerrilla groups. As Davis (1988) mentions, parts of the indigenous population began to join with the guerrilla not because of an ideological understanding of or a commitment to their cause but rather as a means of individual and community defence against acts of terror by the army and death squads. For an outline of revolutionary organisations in Alta Verapaz, see Wilson (1995: 208ff.).

tions as a counterinsurgency campaign, the majority of victims of the acts committed by the army were not combatants of the guerrilla, but civilians (Stavenhagen 2003). Throughout the period of political violence and civil strife, hundreds of villages were destroyed entirely. In the course of the conflict that became commonly known as *la violencia,* some 200,000 citizens were killed (Flores Arenales 1999: 14). In the violent years of the so-called *scorched earth policy,* the genocidal practices also included the widespread tactic of ›disappearing‹ people.[13] The state violence led to a massive dislocation of the rural population; more than one million persons were internally displaced and an estimated 350,000 to 400,000 persons sought refuge abroad, in particular in Mexico and the United States (Stepputat 1999: 54f.).[14]

4.1.3 From past to present

In 1996 negotiations between the government and the guerrilla organisation URNG set an end to the armed conflict, which had continued for over 30 years. With the signing of peace agreements**,** democratic structures were formally re-established. Within the framework of the peace process, a number of agreements were worked out, which entailed an agenda of substantial accords aimed at eliminating the major sources of social and economic conflict within Guatemalan society. These agreements contain commitments to acknowledge the indigenous cultures by stating that

the indigenous peoples have been particularly subject to de facto levels of discrimination, exploitation and injustice, on account of their origin, culture and language and that, like many other sectors of the national community, they have to endure unequal and unjust treatment and conditions on account of their economic and social status [...] this historical reality has affected and continues to affect the peoples profoundly, denying them the full exercise of their rights and political participation, and hampering the configuration of a national unity which should adequately reflect the rich and diversified physiognomy of Guatemala with its wealth of values (MINUGUA 2001: 5).

In particular, the *Agreement on Identity and Rights of Indigenous Peoples* (AIDPI) contains specific commitments to overcome the structural factors of social and racial discrimination, which remain present in Guatemalan society. As a basic commitment, the parties established that they »recognize and respect the identity and the political, eco-

[13] State forces and paramilitary groups were responsible for 93 percent of the violations, including arbitrary executions and disappearances; victims were men, women and children of all social strata: workers, professionals, politicians, peasants, students and academics. In ethnic terms, the majority were Mayans (Stavenhagen 2003). Selective attacks were committed in particular against members of the Catholic Church and cooperatives, community leaders and teachers. According to Green (2003), over 45,000 people have disappeared since the war began in eastern Guatemala in the 1960s, which is more than in any other Latin American nation.

[14] Adams (1988) reminds that Guatemala is part of the political economy of capitalism and lies in the sphere of influence, or hegemony, of the United States. On the particular dynamic and impact of the political violence and background concerning an intervention of U.S. governments to protect economic and political interests in the area, see *Harvest of Violence. The Maya Indians and the Guatemalan Crisis* edited by Carmack (1988).

nomic, social and cultural rights of the Maya, Garífuna and Xinca peoples, within the unity of the Guatemalan Nation and subject to the indivisibility of the territory of the Guatemalan State, as components of that unity« (MINUGUA 2001: 6). The AIDPI resolved that the indigenous languages become official languages, that the different forms of spirituality practiced by the indigenous population be respected and that measures be taken to prevent discrimination against the use of indigenous dress. A series of further commitments was given to orient public policy, taking into account the recognition of indigenous systems of authorities and customary law. It was stressed that the state had to ensure and institutionalise the participation of indigenous peoples in all political, economic, social and cultural spheres.[15] This included an educational reform, which must reflect cultural and linguistic diversity, granting the incorporation of indigenous concepts in the definition of the curricula.

Officially, the constitutional legislation recognises the existence of indigenous groups and the right to their cultural identity in accordance with their traditional ways of life, languages, values, customs and forms of social organisation. But despite being established in official law, the rights of the indigenous peoples need to be distinguished between *de jure* and *de facto*. The ambiguity between legally established and actually granted rights is evident in various fields. One of the fundamental problems affecting the indigenous peoples in Guatemala relates to land tenure. The lack of access to land and problems stemming from the loss of land due to the armed conflict, created a situation of rising social tension. Agricultural resources are still distributed unequally, with cultivable land highly concentrated in a few large estates.[16] The so-called *latifundios* include the most fertile land of the country, being generally situated in areas of volcanic soil. In contrast, indigenous farmers hold small plots situated in the highlands or in ecologically extremely difficult karstic regions of the Petén and the Verapaz area. While their land is subject to erosion due to excessive cultivation, the fertile lands best suited for agriculture are reserved for extensive use and for cattle ranching (Amry 1999: 78). During the more than three decades of armed conflict, the fragmentation of peasant plots into *minifundios* increased, leading to growing conflicts, largely due to the displacement and resettlement of the indigenous population and the misappropriation of communal land.[17] This has been reported to be particularly acute in

[15] In compliance with the AIDPI, Guatemala also ratified the ILO-Convention 169 concerning indigenous and tribal peoples in independent countries, which recognises indigenous rights to the use, ownership, management and control of traditional lands and territories. For further details on the implementation of the provisions of the peace accords, consider *Indigenous Peoples, Customary Law and the Peace-Process in Guatemala* by Amry (1999).

[16] The country has the most unequal land tenure in Latin America, with approximately 2 percent of the landowners controlling 80 percent of the farmland. This exclusionary agrarian structure reinforced seasonally labour migration towards large *fincas* and coastal plantations and more recently even to the United States. In the 1960s the government introduced low cost chemical fertilisers into highland *milpa* agriculture as part of the *Green Revolution* in lieu of an agrarian reform (Green 2003).

[17] Farms smaller than 10 *manzanas* (7 ha) are commonly referred to as *minifundios* (Katz 2000: 122). According to Berger (1997: 100), the average size of smallholdings declined from 1.7 to 0.79 ha over the last 30 years and the unequal land concentration leaves 27 percent of the population landless. For further information on the issue of land conflicts in this area, consider Milián et al. (2002).

the area known as the *Franja Transversal del Norte*, one of the main areas of confrontation during the civil war, from which many indigenous communities were displaced and where large estates were established, owned by former members of the armed forces. This disparity reinforced the socio-economic polarisation of society.

Another issue of crucial concern is the position of indigenous peoples in respect to access to justice. To date, despite the signing of the peace accords, the juridical system, largely ineffective, is unable and in some cases unwilling to enforce citizens' rights. As Green (2003: 62) mentions, impunity is crucial to the ways in which power is exercised in the country today. It is fear and silence, not justice that circumscribes the lives of large parts of the rural population. In his report on the *situation of the human rights and fundamental freedoms of indigenous people* in Guatemala, Stavenhagen (2003) makes clear reference to this issue. While the government has taken various steps to broaden the administrative system of justice throughout the country, the coverage remains inadequate. As Stavenhagen notes, the indigenous peoples complain of difficult access to the courts, discrimination against their customary law and the lack of interpreters of indigenous languages in the courts. He attaches special importance to the recognition of legal systems specific to the indigenous peoples themselves and recommends that the government and civil society as a whole promote a major national public campaign for the respect of cultural diversity. This endeavour should embrace in particular the field of education, which has been reported to be an issue of priority concern for the indigenous peoples. Despite the government's efforts to provide bilingual education, there are as yet insufficient trained teachers, just as other educational resources are inadequate. Thus, levels of school attendance, particularly in rural areas, remain low, which is a disturbing state of affairs that perpetuates exclusion and discrimination. Stavenhagen asserts that there is still no overall system of intercultural education set out in the curricula adapted to the languages and the needs, values and systems of the indigenous peoples themselves and reaching schools in remote localities. Although public investment in education has grown in the years following the signing of the peace agreements, the figures for education in predominantly indigenous areas show large lags compared with regions with non-indigenous population.[18]

According to Flores Arenales (1999: 16) the process of reconciliation that was initiated in the mid-1990s could not resolve the long term social paralysis and silence. Due to the repressive policies of the militarised state and its intelligence network, *trust* – seen by the author as an essential value in intimate relations – was one of the major casualties of the political violence. Although peace has been achieved, Guatemala remains a profoundly unequal and divided society. Adams, referring to »a population of divided identities«, writes that fear has always been part of the psychodynamics of the relationship between the *ladino* and the indigenous population. Its historic genesis lies

[18] Historically, the linguistic diversity of the country has not been considered in the design and implementation of education policies. The nation's expenditure on education belongs to the lowest in Latin America, leading to the second highest rate of illiteracy of 31.9 percent (Green 2003: 68). In particular, the indicators of access to education by the indigenous, rural and female population are extremely poor. For further details on educational issues, see Gleich (1997) and Heckt (2000).

in the conquest, and it has been reborn in every subsequent generation (1988: 284). The experienced history of exploitation, exclusion and repression that created a culture of mistrust still shapes the dynamics between the nation-state and civil society and affects the relations between indigenous communities and official agencies, including institutions involved in environmental policies. Nevertheless, in view of the concessions formally established in the peace accords and taking into account the increasing importance of local governance in current trends towards decentralisation as well as relevant constitutional and institutional reforms, the negotiations and efforts may contribute to overcoming the long-standing ignorance of the indigenous people and enhance their participation in decision-making processes at all levels of society.

4.1.4 Environmental policies

The recent past of political instability has seriously impoverished the country and at the same time encouraged an ongoing process of deterioration in environmental terms. Until the mid-1980s, the military-dominated governments supported a development policy designed to exploit the natural resources for export purposes. The effects of this approach included the expansion in the fields of agro-export, cattle ranching, mining and oil drilling, which all contributed to a high rate of deforestation. As a consequence, some 65 percent of the country's original forests have been destroyed in the past three decades (Berger 1997: 99f.).[19] Amidst these circumstances, a small and urban-based environmental movement emerged that achieved substantial success. In 1989, the Congress created a national system of protected areas, the *Sistema Guatemalteco de Areas Protegidas*.[20] Founded on the concept of sustainable development, the framework acknowledges that »the state of natural resources and the environment in general in Guatemala have risen to such critical levels of deterioration that it is directly affecting the quality of life of the inhabitants and ecosystems of the country, obliging us to take immediate action in order to guarantee a favourable environment for the future« (Berger 1997: 103).

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[19] Deforestation, ranging from 1,080 to 1,620 km^2 per year, principally occurred in the country's north, in the departments Petén, Izabal and Alta Verapaz. According to CONAP (1999: 88), the forest cover declined between 1992 and 1998 from 31.3 to 26.6 percent of the national territory, which is a decrease of 15 percent in just five years. The cutting of rain forests is partially the result of macro-economic forces such as transnational corporations that export timber and drill for oil. However, the level of deforestation caused by slash-and-burn farming and in firewood production has scarcely been examined (Hallum 2003: 60).

[20] The system of protected areas in the north of Guatemala provides protection for more than 25,000 km^2 of tropical forest. The *Maya Biosphere Reserve* incorporates numerous pre-existing reserves and biotopes into a more comprehensive conservation programme. The volume *Timber, Tourists, and Temples. Conservation and Development in the Maya Forest of Belize, Guatemala, and Mexico* by Primack et al. (1998) discusses ecological, social and political issues as encountered in the area. Consider also *Strategies for Authenticity, Space, and Place in the Maya Biosphere Reserve, Petén, Guatemala* by Sundberg (1998), who examined how conservation projects are being articulated in the discourses at the local level and how relationships between NGOs and local people transform landscapes and identities in the struggle for control over the reserve and its natural resources.

Moreover, the return to civilian rule in the mid-1990s created a new space for political activism and led to significant accomplishments in environmental policies. Beyond official recognition at the national level, the global proceedings informed by the UNCED in Rio led to the emergence and strengthening of further conservational initiatives. Since the country ratified the CBD in 1995, a national biodiversity strategy has been formally established that also includes considerations relating to article 8(j).[21] The strategy is mainly based on the establishment of protected areas, but also includes landscapes and natural sites of social, cultural and spiritual importance to be considered in the frame of *in situ* conservation.[22] In addition, the need to establish mechanisms to protect indigenous knowledge relating to natural resource use has been politically acknowledged in the aforementioned *Agreement on Identity and Rights of Indigenous Peoples*. In this document, attention is also drawn to the protection and sustainable use of the country's biological resources. The agreement underlies the need to guarantee the rights of indigenous peoples to participate in the use, administration and conservation of the resources existing in their lands, including the regulation of land tenure, the restitution of communal lands, the compensation for dispossession and the acquisition of land for the development of indigenous communities (Stavenhagen 2003: 11).[23]

Providing legal mechanisms for environmental conservation and local participation is a first step in the long-term protection of natural resources. The more difficult task follows in the effective management of designated areas of conservational importance. Despite official announcements and formal directives, Lehnhoff and Nuñez (1998: 137) mention shortcomings in the development of essential aspects of national strategies. More specifically, they refer to the governmental funding for environmental agencies, which has been insufficient in the past.[24] Due to the lack of national funds, international and national conservation organisations have supported a variety of protected area operations throughout the country, but this does not sufficiently ensure

[21] See *Estrategia Nacional para la conservación y uso sostenible de la Biodiversidad y Plan de Acción Guatemala* by CONAP (1999). For an account of the importance of biodiversity in Guatemalan society, consider Castañeda Salguero et al. (1995).

[22] Apart from the numerous protected areas throughout the country, Guatemala also forms part of the *Mesoamerican Biological Corridor,* which is one of the world's largest transboundary conservation initiatives focusing on all Central American countries. The initiative aims to create ecological corridors that facilitate the movement of animals and the genetic exchange of species, which is essential to their survival. Covering only 0.5 percent of the world's terrestrial area, Central America contains 5 percent of all known biodiversity. Thus, the forests from southern Mexico to Panama have been included in the list of the 25 global biodiversity *hotspots* (Mittermeier & Konstant 2001: 18).

[23] For details on the emergence and implementation of the AIDPI, which also urges academic institutions and agencies working in the field of rural development and environmental conservation to promote contributions of the indigenous peoples and to encourage the dissemination of their specific customary notions and practices, consider Amry (1999).

[24] In general, the protected areas are administered by the government agency CONAP, under the auspices of the *Ministry of Environment and Natural Resources*. A total of 172 protected areas, including national parks, wildlife reserves and multiple-use reserves making up 25.3 percent of the national territory (World Resources Institute 2003). An analysis of the Guatemalan conservation policy and national institutions charged with the management of natural resources and conservation programmes has been provided by Berger (1997).

appropriate long-term financing for the protected areas. Just as in the context of rural development, private sector organisations increasingly play an important role in the planning and implementation of conservational ventures.[25] Although a wide network of protected areas has been created, which also includes numerous private nature reserves playing an important role in maintaining the integrity of landscapes and ecosystems throughout the country, the threats to the survival of the natural abundance are numerous. In particular, high rates of deforestation resulting from the expansion of the agrarian sector and land colonisation as well as legal and illegal timber harvesting have increased seriously the process of environmental degradation.

Discussing the case of the *Sierra de las Minas Biosphere Reserve,* Lehnhoff and Nuñez (1998: 135) argue that the slash-and-burn practice places the most direct pressure on forested areas. This is a practice of those who are marginalised, poor and lacking in social and economic development opportunities. The problem is exacerbated by the lack of land tenure clarity and legal security. The authors also refer to the more indirect lack of clarity regarding jurisdiction and authority among governmental agencies and local authorities, which is a general problem faced by indigenous communities throughout the country. An estimated 80 percent of the officially declared protected areas overlap with land inhabited by indigenous communities. No significant provisions were made by the agencies charged with their management to address the impacts for the local population. Nature conservation strategies were usually drawn up without formal consultation with or information of the communities concerned. Although existing authority structures inhibit widespread participation in decision-making, local communities are currently recognised as decisive stakeholders for initiatives aimed at the conservation and sustainable use of natural resources. In comparison with other Mayan groups, the rural *Q'eqchi'* have the highest number of protected areas on their ancestral lands; 23 percent of the protected areas in Guatemala have been established on lands that are inhabited by *Q'eqchi'* peasants (Secaira 2000).[26]

[25] For an example, see *Delegating Protected Area Management to an NGO. The Case of Guatemala's Sierra de las Minas Biosphere Reserve* by Secaira et al. (2000).

[26] Map 4.2 in the Appendix indicates the spatial distribution of protected areas in Guatemala.

4.2 The *Maya-Q'eqchi'*

The *Q'eqchi'* represent the fourth largest of the Mayan groups in Guatemala.[27] Most of them live as subsistence farmers in rural areas of Alta Verapaz, one of the largest departments of the Guatemalan highlands. Covering an area of 8,686 km^2, it is located in the eastern temperate highlands north of the capital and yields to the north to the tropical lowlands of the Petén.[28] More than 90 percent of the population (around 750,000) are indigenous and 84 percent live in about 1,700 relatively dispersed villages scattered throughout the department (Letona 1999: 37). Due to the remoteness of their settlements, a large number of older people in particular are illiterate and monolingual speakers of the *Q'eqchi'* language.[29] Exposure to the formal education system as well as more frequent interaction with the urban centres and regional markets led to a process of acculturation towards the predominantly urban *ladino* culture among younger people, who are also more likely to speak Spanish. In general, the lowlands with their more significant communication facilities have been more acculturated than the less accessible areas in the highlands, where mountain barriers have contributed to maintaining the isolation of villages.

Fig. 4.2 Village structure in the highlands of Alta Verapaz

[27] According to Flores Arenales (1999), the term *Q'eqchi'* probably derives from the way they were named by the *K'iche'* at the time of Spanish conquest in the 16th century (*q'eq* = black; *achi* = man). Common ethnonyms are *Kekchí* and *K'ekchí*. Estimates of their total population vary from 361,000 (Flores Arenales 1999) to 600,000 (Siebers 1994). Archaeological evidence shows that Alta Verapaz, the *Q'eqchi'* heartland, was inhabited continuously at least since 300 B.C. until the time of Spanish conquest (Secaira 1992: 7). Apart from the original homeland, there are at present also minor *Q'eqchi'* populations in the adjoining departments of Quiché, Baja Verapaz, Izabal and Petén, as well as in parts of southern Belize and Mexico.

[28] As can be seen from map 4.1, the *Q'eqchi'* cover the largest area of any Maya group in Guatemala. Map 4.3 in the Appendix indicates the *Q'eqchi'* heartland and major settlements in Alta Verapaz.

[29] *Q'eqchi'* is thought to have the largest percentage of monolingual speakers in Guatemala (Kockelman 2003); it belongs to the *Quichean* branch of the Mayan languages and is closely related to *Poqomam* and *Poqomchi'*. For further details on language particularities, see *Aspects in Q'eqchi' Mayan* by DeChicchis (1996).

4.2.1 Local economy and social structures

The rural economy revolves around subsistence farming. As the mainstay of livelihood is based on agriculture, the majority of the *Q'eqchi'* are largely dependent on the local natural resources. These form an indispensable part of life of the communities as they are the main source of alimentation, medicine and housing. Economic and social life revolves around the *milpa* system, which consists of the cultivation of maize produced by cyclical swidden-farming and is generally carried out by single household units on smallholdings.[30] It includes other crops such as beans, chillies and vegetables that are cultivated in diverse forms of multi-cropping. Home gardens also provide a wide range of crops raised for consumption and for sale at local markets. Their livelihood is supplemented with small-scale forest extraction such as logging, hunting and gathering of non-timber products in primary and secondary forests. The agricultural and silvicultural production of most households is complemented by animal husbandry on a modest scale, mainly for own consumption. Although the local economy is based on subsistence activities, a large number of households are also linked to the national market economy. Since the 1970s, coffee has increasingly been replaced by cardamom as a cash crop and as a mainstay of the regional economy.[31]

Traditionally, land tenure had been governed by a communal management system. Due to the privatisation of communal territories since colonial times, which led to the extremely unequal land distribution, temporal wage and migrant labour has become a common source of monetary income.[32] Limited access to sufficient quantities of arable land, the need for immediate income and growing demographic pressure entailed continued clearing of primary forest for agricultural use and led to shorter rotation cycles. Especially in the highlands, where villagers need three times as much land for subsistence than in the lowlands with their richer soils and a more suitable climate, the ideal fallow time of four to six years declined to shorter periods of restoration (Wilson 1995: 42).[33] Consequently, severe erosion and the decline of soil fertility, crop yields and farm-level biodiversity became common problems that peasant farmers presently face in the area.[34]

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[30] The term *milpa* derives from the *Aztec* language *Nahuatl* and means cornfield (Carter 1969: 16). As the plots are not used for long-term farming, *milpa* is often described as shifting cultivation; when a plot's fertility declines, usually after two to three years, farmers clear another section of forested land and allow the older plot to return to forest.

[31] Worldwide, Guatemala is the major producer of cardamom, which is mainly exported to the Arab countries. The majority of the country's cardamom is produced in Alta Verapaz.

[32] It is estimated that an average household in rural Alta Verapaz has a monthly income of US$ 100 (Reinoso et al. 2001).

[33] Following the scheme provided by Furley (1998), I refer to *lowlands* as areas that range from 0 to 500 m in elevation, whereas *highland* implies a topography that is characterised by mountains and hills from 500 to 2500 m.

[34] Another major economic problem is the decreasing world coffee price, which worsened rural poverty in recent years. For decades, coffee was one of the major cash crops widely grown by farmers in Alta Verapaz.

The integration of economic patterns into social, political and religious affairs defines community structures in rural areas. The outlined economic activities form part of the social life of the communities and are bound to institutions such as kinship, marriage, neighbourhood and age groups. Two basic levels of social organisation may be distinguished: the household or family and the community as such. In particular, relations of kinship guide interpersonal behaviour; a person's interactions with others are directed by their position within the family network.[35] Within these structures, gender is a major organising principle in the local production system. Although there is a certain degree of flexibility within the division along gender lines, most agricultural production is related to the labour of men, whereas household work and food processing are completed by women, who also cultivate home gardens and tend domestic animals. Women also take part in agricultural and forest gathering practices and they are commonly involved in commercialisation and sell parts of the yields at the local markets. Within the domestic mode of production, women have generally developed a refined expertise in handicraft production such as weaving, knitting and basketry. In general, male and female roles are perceived as complementary and accorded equal value. The social ascription of specific roles by gender is commonly understood as a form of maintaining balance and harmony within the household and the community (Flores Arenales 1999: 132f.).

Communal labour and co-operative ventures are an integral part of community life, which in terms of socio-political organisation is traditionally characterised by a high degree of egalitarianism and inter-family collaboration. The production system is largely based on an ideology of integrity and reciprocal exchange. Within the communal structure, local leadership was traditionally a council of elders (*consejo de ancianos*). For centuries, religious brotherhoods (*cofradías)* made up the traditional civil-religious hierarchy. Their authority was nevertheless increasingly undermined in the past by formal structures. Today, an elected council commonly constitutes the socio-political system within the villages. In general, the so-called *alcalde auxiliar* (auxiliary mayor), who represents the mayor of the municipality locally and to whom he reports on the affairs of the community, is elected every year. The tasks of the auxiliary mayor include the solving of intra-community conflicts. However, in many rural communities the spiritual, moral and judicial leadership is regarded as integral and rests with a group of elders, who are recognised as having knowledge and normative judgement skills for the benefit of the community. Their authority is not considered to derive from their political power but from their social function developed in the course of communal life. Another central aspect of socio-political organisation is the formation of local committees that are related to different fields of communal life. Within most settlements, such assemblies are engaged with the organisation of social events and activities in the field of communal development, including education, health, water supply, road construction or trail improvement.

[35] *Q'eqchi'* kinship does not involve lineages nor do communities have an apical ancestor (Wilson 1995: 81).

Given the important role of such communal structures, identity, although being linked to language and ethnicity, is primarily built around the local community and the surrounding landscape. Most people identify themselves as being from a certain community, which is defined not as a particular village, but rather as the greater surrounding social and natural environment of a specific place. In interviews, people would often trace back the *Q'eqchi'* to the ancient Maya culture, but when they were asked what it means to belong to the group in ethnic terms, informants commonly referred to language rather than to other aspects of cultural identity. Most centrally, the religious realm is of particular significance in the cultural frame. According to Wilson (1995) *Q'eqchi'* identities draw upon many dimensions of culture, but none so strongly as religion, which has a direct relevance to all aspects of life. Since the Spanish conquest, the *Q'eqchi'* have largely converted to Catholicism, although components of the traditional belief system have been widely retained and form a syncretic combination with catholic rituals and doctrine.[36]

Fig. 4.3 Households with female heads are not uncommon; mother and daughter in *Xucaneb*[37]

[36] According to figures cited by Parra Novo (1993), almost 80 percent of the *Q'eqchi'* population are catholic. Though syncretism may work in a complex way involving religions, languages and other cultural elements, it has been defined as »the combination of different forms of beliefs and practices into new patterns of meaning« (Carrasco 1990: 126). The complex issue of syncretism in Guatemala is beyond the scope of this work. For this, see Wilson (1995).

[37] As elsewhere in Latin America, dress is an important part of traditional life and one of the most significant signs of ethnicity. In the highlands, each ethnic group identifies with different garments and weaving patterns. In Alta Verapaz, the tradition is mainly kept alive by women who dedicate themselves to the skilful manufacture of woven textiles. Their clothing includes a woven blouse (*huipil)* and a dark-coloured skirt (*corte*). However, a process of acculturation towards the adoption of western style clothing is taking place in urban areas and is being reinforced by the import of used clothes from the United States. These cast-offs are sold at regional market towns, where a large number of so-called *pacas* have been opened in recent years. The term *paca* is derived from the English word ›package‹ as the clothes are imported in large bundles.

4.2.2 Historical references

Historically, as elsewhere in Guatemala, the reality of the indigenous population in Alta Verapaz has been continuously threatened by socio-cultural, economic and ecological transformations, including a wide range of politically destabilising factors. Throughout the centuries, the rights of the *Q'eqchi'* were largely neglected and their culture, language and traditions were regarded as socially inferior by the European-descended ruling class. At the time when the Spanish colonists reached the eastern highlands in the 1530s, it was highly difficult to establish centralised governmental control over the area due to continued resistance of the *Q'eqchi'* and the dispersal of their settlements. After the Spanish military failed to conquer it by force, the territory became governed by an ecclesiastical administration. In the 1540s, the Dominican priest *Bartolomé de las Casas* set out to pacify the area, which had been known until then as *Tezulutlán* – ›the land of war‹, by converting the population to Catholicism. In 1547, it was named *Verapaz*, ›true peace‹ (Schackt 2004: 6). Despite the ›spiritual conquest‹, which comprised a central element of the Spanish subjugation, the pre-hispanic religion proved resilient, as the *Q'eqchi'* incorporated Christian beliefs into their traditional worldview.[38] A second historical epoch that deeply transformed the world of the *Q'eqchi'* was the liberal period in the 19th century, paving the road to the conflicts of the 20th century.[39]

Fig. 4.4 The *Calvario* in *Cobán*[40]

[38] The indigenous worldview will be further discussed in chapter 5.2.

[39] For an early ethnographic account dealing with *Q'eqchi'* culture, see Sapper (1936).

[40] As Secaira (2005) mentions, several sacred sites were ›christianised‹ by building churches on top of them. One example is the Calvary church in *Cobán*, which was built around 1810 on a hill overlook-

Traditionally, each settlement had defined property rights over communal territories from which members of the community usually took up land for cultivation. The communities had established their own councils, which regulated the access to land. In the 19th century, the colonial government transferred indigenous territories into private ownership, thereby reducing most peasants to migrant labour status. The displacement from ancestral lands became a major problem and led to resistance movements since the purchase of land by the authorities not only involved the terrain itself, but also included its residents, who were obliged to work on the lands. Virtually all of the best farmland was seized, mostly by German expatriates who had settled in Alta Verapaz and established a production system based on *fincas*, for which they needed large expanses of land to meet the demands of the growing coffee export industry.[41] Subsequently, the *Q'eqchi'* were relegated to farming mountain slopes and indentured into seasonal servitude on plantations. The continued fragmenting into small holdings due to ongoing land consolidation provoked massive migration movements of whole families towards the adjacent lowlands and places such as *Senahú*, *Panzós*, *Lanquín*, *Cahabón,* to the Petén and southern Belize in search of new land (Carr 2004).[42] Migration was even intensified as a result of the adverse effects of the violence of the armed confrontation during the years of war succeeding a military coup in 1954.[43] By the end of the 1970s, the first steps in a generalised social and political mobilisation had taken place. In 1978, a number of religious, labour and popular organisations began protesting the increasing militarisation that was taking place in rural areas of Alta Verapaz. A key event in mobilising the oppositional movement was the first massacre in *Panzós*.[44]

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ing the town. Today, traditional ceremonies are commonly performed next to the church entrance. The city of *Cobán* was founded in 1544 on a sacred mountain where a deity called *Mon'a* venerated by the local *Q'eqchi'* was substituted by a big wooden cross (Flores Arenales 1999).

41 A *finca* is a large landholding devoted mainly to commercial agriculture. It is usually privately owned and includes a community of permanent land labourers. By 1930, the Verapaz was virtually a German territorial possession until the coffee empire came to an end with the 2nd World War. As part of Guatemala's declaration of war on the side of the Allies, the Germans were expelled and their properties expropriated (Barreiro 2001). Nevertheless, the land and labour relations formed during that area have changed little to this date (Wilk 1997: 53). At present, *finqueros* (landlords) are often high-ranking members of the military.

42 While many indigenous peoples in Guatemala have tended to migrate toward the larger urban centres as a result of forced displacement, the *Q'eqchi'* tended to move onto *tierras baldías* (empty lands) to establish new communities in the mountainous, forested and coastal areas of their region, thereby recreating their customary way of life (Barreiro 2001: 5). This phenomenon has to do with the fact that the *Q'eqchi'* were almost the only ethnic group in Guatemala that had a flexible agrarian frontier at its disposal (Siebers 1994: 233).

43 With exception of an agrarian reform initiated by the government between 1952 and 1954, no regime had attacked the agrarian roots of cultural discrimination. Between 1950 and 1970, the average farm seize dropped from 8.1 ha to 5.6 ha. The number of landless peasants increased to about one-forth of the rural workforce (Davis 1988: 14f.).

44 For several months, *Q'eqchi'* peasants of *Panzós* had been soliciting for official land titles. Despite counterclaims by *finqueros*, the government had promised to issue the titles. When the peasants came to the town hall to obtain them they were met by armed soldiers. In the ensuing encounter more than 100 people were killed (Davis 1988: 17). This event constituted a turning point because the army's strategy shifted thereupon from low intensity repression towards large-scale violence (Flores Arenales 1999: 97). Until late 1983, massacres became routine, whereas villages did not have to be

In the early 1980s, the area north of *Cobán* was heavily affected by counterinsurgency campaigns because the guerrilla movement operated in the region. Dozens of communities were destroyed and thousands of inhabitants were killed or ›disappeared‹. At the height of the conflict, at least 40 percent of the *Q'eqchi'* were displaced from their original homelands; they either sought refuge in the towns or went into exile; some 20,000 fled into the mountains where they often remained for years. The physical disappearance of individuals not only adversely affected the life of the particular families but also the entire social body of the communities.[45] The army also moved entire communities, concentrating them in so-called ›model villages‹.

Another cornerstone of the counterinsurgency programme was the establishment of a system of civil self-defence patrols. By creating paramilitary control groups at the community level, the army aimed to separate the civil population from the insurgents operating from the mountainous areas. Since the early 1980s, villages throughout the highlands were patrolled by groups of men drawn from the civilian population and armed by the military with the purpose to control subversive activities in the countryside.[46] Adams (1988) comments that the colonial policy of forced labour was reinstituted by the army with the civil patrols, requiring the unpaid time of all able-bodied male members of the communities. These men perceived the imposed system as burden that took time from their agricultural and other productive activities. In 2002, political debates were ongoing as to these *patrullas de autodefensa civil* (PAC) in terms of official negotiations regarding financial compensations the government had assured to the former *patrulleros* for their unpaid services. As the state authorities never met their commitments, strikes were repeatedly called out and main routes were blocked throughout the country so as to remind of the official obligation to compensate the peasants for their engagement during the war. An informant living in *San Benito*, one of the villages the present study took place in, recalls that he had been a *patrullero* for almost 12 years. Sixty men from his community were obliged to patrol every third night, 10 to 15 men at a time. When asked whether he intended to participate in the announced strike, he replied indirectly by referring to the possibility of being killed on an occasion that probably would meet with official mechanisms of violence. In spite of official assertions concerning reparations and reinforced measures to advance unresolved questions of land tenure, conflicts between large sections of the landless population and the government continue to destabilise the ongoing peace process.

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suspected of collaborating with the guerrilla to be attacked. Communities with developed local institutions such as cooperatives or schools were particularly targeted (Wilson 1990: 13).

[45] Often the people knew about clandestine cemeteries, but army members or their informants prevented the people from bewailing the deaths (Flores Arenales 1999).

[46] In 1985, the civil patrol system was said to include more than 900,000 men between the age of 18 and 60 who were armed and obliged to protect roads and the inhabitants of their villages from guerrilla intrusion (Davis 1988: 27). According to Flores Arenales (1999: 138), other civilian and religious hierarchies were relegated to a subordinate position in relation to this paramilitary structure. The internal organisation of the patrols remained in place when they were transformed into the above mentioned local development committees in the second half of the 1990s.

The above mentioned *culture of fear* remains notable in many spheres of present society. In particular, claims over land imply social tensions that manifest regularly in strikes and occupations of large estates. Due to the concentration of landownership, population growth and environmental degradation, migration continues to play an important role in its impact on the deforestation process in the area.[47] Encouraged by improved means of transportation, migration occurred to an increased extent during the period between the censuses of 1981 and 1994 and led to deforestation rates in the municipalities of the Petén and the *Franja Transversal del Norte,* which tripled the average growth of the country (CONAP 1999: 100).[48] The expansion of the agricultural frontier was reinforced by the construction of roads through forested areas and even through National Parks and biosphere reserves.[49] As affirmed by Nations et al. (1998: xviii), the most serious challenge the *Selva Maya* faces is caused by poverty. It impels individual farmers to clear the forest for cropland and pasture in order to feed their families. Thus, identifying viable economic alternatives to this pattern of destruction has become a most important issue. According to the authors, past experience has taught a significant lesson about ignoring the needs of local inhabitants: it does no good to designate an area as off-limits to human use or habitation when there are people in need of land, housing and food. To halt the process of deforestation and environmental deterioration, numerous protected areas have been established in the past decades throughout the northern territories. However, the information base for the development of a multipurpose range of alternative strategies for forest management in the area is limited, as Furley (1998: 128) states. This also applies to studies concerned with ethnoecological knowledge and the involvement of local communities in different conservation schemes.[50] These particular issues will be dealt with in the following sections concerned with the National Park *Laguna Lachuá*.

[47] Besides migrating further into the adjacent lowlands, the *Q'eqchi'* have also migrated into higher terrains in the area. A study concerned with issues of territoriality, migration and land tenure has been provided by Pedroni (1991).

[48] The *Franja Transversal del Norte* consists of a strip of land stretching from the Caribbean coast to the northern department of Huehuetenango. The *Q'eqchi'* areas of this transitional zone include the northern parts of Alta Verapaz and Izabal and the north-eastern part of Quiché. The latter is also referred to as Ixcán.

[49] For implications of this process, see Grünberg (2000).

[50] Apart from the contributions by Secaira (2000), relatively little attention has been given so far by anthropologists to the design and implementation of conservation strategies in the area. While most work centres on the northernmost areas in the Petén (Primack et al. 1998, Sundberg 1998, Grünberg 2000, Katz 2000, Atran 2002, Carr 2004), few scholars have undertaken to analyse and document the particular conditions of protected area management in Alta Verapaz. The latest account by Secaira (2005) reveals an interesting example from the western highlands about efforts to build alliances between indigenous communities and conservationists to protect sacred sites that often are located in areas important for biodiversity conservation.

4.3 The conservational context

In discussing social impacts of protected area management, Furze et al. (1996) reveal that one of the most common problems encountered by local communities when protected areas are established nearby is the restriction of access to the natural resources. Consequently, there is likely to be a conflict between the necessity for rural communities to make a living and the management of protected areas. This also applies to the National Park *Laguna Lachuá* where the establishment of the conservation area had restrictive implications for the livelihood opportunities of the people living in the surrounding forest-edge villages.[51] In this respect, the land-use conflict between protectionist interests and economic needs exemplifies a typical situation where legally designated protected areas are met with opposition from local residents. At the same time, *Laguna Lachuá* is an example of an integrated development-oriented conservation scheme. The community-based co-management involves a research branch that endeavours to combine scientific and local knowledge to understand human-ecosystem interrelations.

Fig. 4.5 The *Laguna Lachuá* at the heart of the National Park

[51] According to the classification scheme of protected areas provided by IUCN, a National Park (category II) is defined as a natural area of land and/or sea designated to a) protect the ecological integrity of one or more ecosystems for present and future generations, b) exclude exploitation or occupation inimical to the purposes of designation of the area and c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible (Stolton & Dudley 1999: xiv). Within this scheme, the only permitted activities in parks of this category are scientific investigations and tourism on a very limited scale. Any further extractive activities are strictly prohibited.

4.3.1 The National Park *Laguna Lachuá*

The park is named after a scenic lake located in the centre of the protected area. [52] The water contains high levels of sulphur, thus the name *li chu ha* means ›the fetid water‹. The park is located within the aforementioned transitional zone referred to as *Franja Transversal del Norte* in the northern lowlands of the municipality of *Cobán*. It covers an area of 14,500 hectares of subtropical moist forest and is administered by the National Forest Institute (INAB).[53] Additionally, the management of the park has been promoted by IUCN. The currently proposed management plan is to restore and secure protection of the natural values of the park consistent with national park criteria, while integrating cultural values and accommodating those needs of local people that are compatible with conservation objectives.

At the beginning of the 1970s, the colonisation of the region in the north-western tropical lowlands was officially initiated without considering aspects of sustainable development, specifically in environmental terms (Reinoso et al. 2001). Formerly, the area was densely covered with tropical rainforest and inhabited by just a few scattered settlements. The construction of roads in the 1960s opened the area to immigration. In this process, the *National Institute of Agrarian Transformation* (INTA) distributed parcels to landless farmers, many of whom came from the highlands of Alta Verapaz.[54] The protected area was established in 1975 in order to conserve the forest resources from the pressures of ongoing agricultural expansion and the destructive patterns of deforestation for swidden farming.[55] In 1996, the natural reserve was officially declared a National Park. A significant feature to be emphasised is the missing buffer zone around the core protection area.[56] In the present case, the park's zone of influence, which is inhabited by approximately 10,000 people, comprises an area of around 27,500 hectares and is geographically limited by the river *Chixoy* in the north and west, the river *Icholay* in the east and the mountain range of *La Sultana* in the south.[57]

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[52] The lake is 173 meters above sea level, 222 metres deep with a surface area of 400 ha. For its location within the country, see map 4.2 in the Appendix, which indicates the National Park *Laguna Lachuá* as no. 4.

[53] INAB is under the directive of the *Ministry of Agriculture, Livestock and Food.*

[54] The INTA later became the *Fondo de Tierra.*

[55] According to monitoring conducted in the frame of biological research, the area contains significant numbers of tree species (100), mammals (130), birds (298) and particular endangered species of conservation concern, such as the tapir (*Tapirus bairdii*), the saraguate monkey (*Aloutta pigra*) and the jaguar (*Panthera onca*).

[56] Ideally, by permitting the sustainable use of natural resources (like hunting, fishing, gathering of forest products and the seasonal grazing of domestic livestock) within such a peripheral zone, ecosystems in the core area will remain undisturbed from activities by local residents inhabiting the wider surrounding lands. Besides local participation, buffer zone management has been described by Wells and Brandon (1993) as a further key issue in protected area management.

[57] The usual way to reach the area from highland Alta Verapaz is in a four hour ride from *Cobán* on a paved road to *Chisec* and further by dirt road to the park entrance close to the village of *San Marcos*.

Fig. **4.6** A view from above reveals clearly the limits of the National Park[58]

The landscape of the area, which in conservational terms is called *Ecoregión Lachuá*, was originally covered with primary subtropical rain forest but has been widely shaped by human impact during the past decades, as the above satellite picture indicates. Throughout the area, forest resources are being degraded, logged or cleared for agriculture. Today, 45 communities are located in the wider surroundings of the protected area, of which 19 directly adjoin the park boundaries.[59] The region is predominantly inhabited by indigenous residents of whom almost 90 percent are *Q'eqchi'*, the rest of the population living in the park's zone of influence are *Pocomchí* and *Ladinos*.[60] The production activities of the population have generated a mosaic of distinct landscape features from subsistence farming to commercial agriculture and pasture lands. The previous forest cover thus became fragmented and appears now as small patches of forest islands of different extent. A major reason underlying the intensified forest clearing activity is the poor soil quality, which does not allow for intensive agricultural production. Thus, the peasant farmers have to clear major areas to meet their subsistence needs. The immigration of displaced farmers who had left their ancestral homelands due to the military repression in the 1980s, led to the increased deterioration of

[58] Derived from *http://earth.google.com* (2-16-2006).

[59] On the whole, the estates in the area are defined as national territories (60.42 percent), followed by privately owned *fincas* (20.83 percent), communal property (14.58 percent) and municipal lands (4.17 percent). The size of the parcels may vary; some families just own the ground on which their homesteads are built while other parcels reach sizes up to 1.5 *caballerías* (1 *caballería* = 45 ha). In general, the governmental institutions have shown relatively little presence in the area and the communities have hardly received any financial state aid or technical assistance (Reinoso et al. 2001: 11).

[60] A few communities are composed of returnees, who had sought exile in Mexico during the civil war.

natural resources in the area. Many of the peasants settled without legal land titles, so that differentiating claims caused a large number of land-use conflicts within and between the communities. In socio-economic terms, the population lives in conditions of extreme poverty.[61] Besides the high level of legal uncertainty in terms of land titling and property registration, there is no institutional support by the government for the improvement of living conditions in the communities, particularly in terms of infrastructure, technical or financial assistance programmes. The presence of NGOs is also very limited in the area. Due to poor farming surpluses and returns of labour investment, incomes are very low. As the access to the market is limited, the mechanisms of local commercialisation of agricultural products and livestock are controlled by a number of middlemen whose prices in many cases not even meet production costs. The lack of regional markets for cash crops allow the merchants – commonly *Ladinos* – to make price agreements among themselves and fix prices for the villagers.

The extension of the agricultural frontier with cultivation of annual crops like maize and beans and the low returns of agricultural activities have provoked an increased extension of extractive activities of resources within the park limits. Due to the need for land and the general lack of economic alternatives, environmental functions and wild resources within the park form an integral part of the subsistence economy of the neighbouring communities. Consequently, although forbidden by the authorities, cases of logging, hunting and gathering have occurred repeatedly within the limits of the park. In particular, selective harvesting of high-value hardwoods such as mahogany (*Swietenia macrophylla*) has been reported as they offer an attractive economic option for the villagers.[62] Such encroachment and extractive activities led to a series of intense conflicts between parts of the population and the park agents as the following article documents that was published in the national newspaper *El Diario* in March 2003.

Invaden parque Lachuá – son familias campesinas

Ixcán *El paque nacional Laguna de Lachuá fue invadido por once familias de la comunidad Salacuín, quienes talaron 2.4 hectáreas de bosque, confirmó el director del parque, Marvin Turcios, del Instituto Nacional de Bosque (INAB). »Los campesinos levantaron tres galeras, donde se quedan a dormir y éste puede provocar que lleguen más invasores«, indicó Turcios a Nuestro Diario.*

Denuncia *»El 13 de marzo presentamos la denuncia de esta invasión a la Fiscalia del Medio Ambiente del Ministerio Público de Cobán, para que ordene el desalojo«, indicó el funcionario. Los equipos de monitoreo intentan dialogar con vecinos de las 17 comunidades que viven en los alrededores del parque Lachuá para evitar que sea invadida, señaló Hector Nufio, director del INAB en Alta Verapaz.*[63]

[61] Alta Verapaz has the second lowest human development index of Guatemala, which is just exceeded by the department Quiché (Reinoso et al. 2001: 24).

[62] Reinoso et al. (2001) refer to a particular case that occurred in 1999, when around 900 mahogany trees were felled illegally inside the park by residents of the adjoining communities.

[63] *El Diario* (3-20-2003, p. 8); the article reports that eleven families from the community *Salacún* had squatted illegally on park land and felled 2.4 ha of forest. According to the park director, Marvin Turcios of the National Forest Institute (INAB), the peasants had put up three sheds to stay over-

4.3.2 The co-management approach

Although the National Park was created without prior consultation with local residents, the current management plan explicitly addresses issues related to the peoples living close to the area and includes objectives to take into account their livelihood needs. The purpose is not to exclude humans from the area, but to identify ways in which people and nature can co-exist to the benefit of both. Based on the notion that there is little chance of protecting the natural resources within the park boundaries from extractive activities without the involvement of the local residents, a central concern has been to encourage effective conservation with active community participation. This purpose is achieved by means of a *co-management* framework, which aims to link environmental conservation with human development issues on the basis of a participatory decision-making process. The dual objective of this conservation-development approach is to conserve the biological diversity within the park and to achieve the sustainable use of natural resources in its zone of influence by improving the living conditions of the local population. To date, this management scheme has been implemented by the *Proyecto Lachuá* in 36 communities surrounding the park. It aims at the intensification and diversification of agricultural production in areas that have already been deforested. The initiatives include the support for the legalisation of land tenure, the strengthening of local institutional capacities and the promotion of marketing and alternative income-generating activities. In 2000, a pilot project was initiated to promote non-agricultural income sources such as carpentry, craftwork and the commercial production of honey, chocolate and a local variety of chili called *chile cobanero*. Further objectives the project has been trying to address involve activities related to environmental education, reforestation through a community nursery programme, soil fertility improving measures, fire control techniques and initiatives to promote the emerging eco-tourism sector in the area.

The collaborative arrangement also includes research carried out by the *Escuela de Biología* of the State University *San Carlos*. This involves a monitoring programme based on an intersectoral ecosystem approach, which actively seeks to integrate local knowledge into scientific studies and environmental management.[64] It builds upon the assumption that conservational practices are not to be identified as such, but locally adapted management systems may contribute to the protection of biodiversity through a number of particular land and resource use systems. A process has been initiated of concluding a comprehensive assessment of the park's resources and their re-

night within the park and this could provoke more incursions. Another comment by Hector Nufio, the director of INAB in Alta Verapaz, indicates that a formal complaint had been made with the environmental department of the Attorney General's office in *Cobán* to order the peasants' eviction. In order to avoid further encroachments, he affirmed that monitoring teams were striving to hold talks with neighbours of 17 communities living in the margins of the *Laguna Lachuá* Park.

[64] Monitoring the status of the resources is a common practice among many groups and is often accompanied by the monitoring of change in ecosystems. The proximity of users to the resources makes it possible to observe day-to-day changes, either by the whole community or by selected individuals (Berkes et al. 2000: 1254).

ciprocal relations with the economic and social dimensions of human resource use activities. Investigations in cooperation with 17 communities have been undertaken in the fields of biology, agronomy and sociology. Integrating socio-economic with ecological information by combining quantitative and qualitative data may provide new perspectives on nature conservation and sustainable resource use. Data collection on land use systems, soil characteristics and water quality (Monzón Miranda 1999) was conducted in the park itself and in adjacent zones, just as numerous studies on flora and fauna have been carried out. Further studies were undertaken with the objective to investigate specific taxonomies with local specialists from the surrounding communities. A study in ethno-botany (Chaves Herrera 2001), for instance, explored 209 plant species being used for medical purpose in the area.

Another recent study aimed at negotiating with community members to reduce the hunting activities to a sustainable level in the area. Hunting for domestic consumption has always been an important subsistence activity among *Q'eqchi'* peasants. As pressure on land intensified and forest habitats have been reduced, overhunting and poaching in the National Park became a problem – having a direct impact on wildlife populations, especially of birds and mammals. At the same time, it has an impact on ecosystems, reducing the populations of animals engaged in herbivory and seed dispersal, thus affecting the plant abundance as well. Despite its significance in the livelihoods of the villagers, there are clear indications that the abundance of wildlife is diminishing (around 250 persons from the surrounding villages hunt regularly an estimated 1,000 birds and 30,000 mammals per year). In order to respond to this situation, the objective of the project has been to analyse the impact of hunting in the context of the current socio-economic situation and the management of the National Park. The research was based on the assumption that hunting is harmful to wildlife, if it is not adequately regulated. To ensure the continued survival of game species as well as the continuation of an activity of cultural significance, it is important to limit hunting to a less harmful level. The investigation was based on the monitoring carried out by local peasants themselves, as they acquired detailed knowledge of the habitat, behaviour and migration patterns of the animals. The programme was initiated to determine which species of major fauna are important in hunting activities and aimed at an understanding of hunting cycles and their importance in the local household economy of peasant farmers. The outcome of the joint evaluation consisted in the elaboration of a calendar indicating temporal restrictions to hunting practices (Fig. 4.7).[65]

[65] For a general introduction, see the study *Hunting of Wildlife in Tropical Forests. Implications for Biodiversity and Forest Peoples* by Bennett and Robinson (2000).

Fig. 4.7 Discussion on hunting regulations

4.4 The ethnographic context

In the larger framework of the co-management concept being applied in the environment of the National Park, the current investigation was associated with a research project of the *Escuela de Biología* that applied an ethno-ecological approach to document indigenous farmers' resource use patterns. The specific objective of this application-oriented research was to identify local knowledge and practices that may contribute to better responding to environmental changes and may even be better adapted to the specific conditions than externally introduced technologies. The joint collection of data with biologist Sindy Hernández was conducted in two communities at the margins of the park between May and September 2002 and completed during a last visit in March 2003. Given the essential need for competence in multiple disciplines as they are applied in the field, our experience confirmed the claim as expressed by Kempton (2001: 62) that ethnographic research on ethnoecological knowledge cannot be done without collaboration with biologists. While the lack of a clearly bounded object of study often hindered concerted work within the German research team, the joint research with my Guatemalan counterpart Sindy Hernández turned out to be a very fruitful experience as we could clearly identify fields of common interest. Although departing from different professional and cultural backgrounds, we succeeded in finding a ›common language‹, which might have been due to an intellectual and personal correspondence in terms of a shared ›worldview‹.

As has been already mentioned, the investigations did not follow a straightforward, systematic research design based on established hypotheses. Departing from the given framework related to the CBD and an outline based on provisions dealing with indigenous knowledge, the research progressed successively along a winding path. On the basis of a number of potential research questions, relevant themes and matters for discussion were specified as the research process developed. The encounter with the

biologists working in the surroundings of the National Park resulted in the main focus being enriched by an ethnoecological approach that had not been envisioned initially. Although it is not an ethnobotanical survey aimed at the systematic documentation of local plant classification, the outcomes in this respect were advanced through interdisciplinary borrowing. In this way, the research results were supplemented by a number of plant inventories that give an account of the abundance of species used by the farmers and their families in the communities *Roq-há Purib'al* and *San Benito*.

4.4.1 The study sites

The two villages where the joint field research took place were selected based on their reported time of first settlement. *Roq-há Purib'al* is one of the oldest in the area, whereas *San Benito* was established more recently. Both communities were founded by landless *Q'eqchi'* peasants and belong to the municipality of *Cobán*. *Roq-há* is located at the south-western edge of the National Park and covers an area of 736 hectares. First settlement dates back to 1943, when the first families came from *Cubilhuitz* and *San Juan Chamelco*. Initially they established scattered settlements and considered the lands to be communal property. At the time of our investigation, the village was composed of 90 *Q'eqchi'* families (500 inhabitants) of whom 61 had officially registered land parcels[66], the remaining 29 just owned a *lote,* which implies a domestic area of 1,600 m^2. The families divide their land holdings into plots between which cultivation is commonly rotated. Unlike the settlement pattern in the highlands, where the village structure is characterised by widely dispersed houses surrounded by fields, the dwellings in the lowlands are less scattered. The homesteads are built closer to each other and the croplands are mostly found within walking distance of the villages. The houses are clustered around a central place where the school and a building for community assemblies are to be found. The lands used for rotating swidden farming lie in a broad band around the village. Although the land holdings were officially distributed, only 69 percent of the villagers had at that time received corresponding titles over their property. Regarding the communal structure, the villagers have organised themselves in a development council (*consejo de desarrollo*) and there is also a so-called women's committee. The majority of the people are monolingual, however bilingualism is likely to increase because most children attend the local primary school with an education scheme that involves teaching in *Q'eqchi'* and Spanish. Except for an adult education programme provided by the national literacy commission, all further educational opportunities are found in the nearby village of *Salacuim*. The community has a health post which is visited irregularly by a health promoter. The next medical care station is also in *Salacuim*. At the time of our stay, the community still had no electricity, the water supply for the villagers was ensured by a tank. Above and beyond the relatively

[66] The *parcela* comprises an area of 18 *manzanas* (a *manzana* is a unit of square measure equal to 0.7 ha).

poor condition of education, health and other infrastructure, the village has six churches, all of them established in the community in recent years.[67]

San Benito, the second village chosen for our study, was founded in 1982 and today covers an area of 19.66 *caballerías,* of which 15.71 *caballerías* are divided into *parcelas.*[68] Another 0.5 *caballería* forms the village occupied by the dwellings of the community's inhabitants. The *lotes* of the farmers in *San Benito* comprise an area of 1,800 m^2. As mentioned elsewhere, the traditional property system has been widely replaced because of the pressures of privatisation. Not all villagers of *San Benito* have to date obtained formal recognition of ownership of their land (65 percent with titles, 35 percent without). 31 families own *lotes* and *parcelas,* 17 only have *lotes.*[69] Apart from the individually owned holdings, the community also manages common fields and forested lands. An area of 3.46 *caballerías* of primary forest has been left untouched as a sanctuary area (*reserva natural*). At the time of our field research, the village had a population of 288 inhabitants in 48 families. The majority of the villagers are bilingual and of Catholic confession, whereas just a few families belong to Protestant churches. Originally, the villagers came from other areas in Alta Verapaz, such as *Fray Bartolomé de las Casas*, *San Pedro Carchá*, *Senahú, Telemán and San Miguel Tucurú*. In 1978, the first families came to the area. Their concerted search for arable land led to the establishment in *San Benito*. Some of these families had settled in *Salacuim*, but as there was no more cultivable land there, many had worked as day-labourers before they learned that plots of land were being distributed by the land titling agency INTA.[70] At present, water is provided by a well. *San Benito* has a primary school provided by the *Ministry of Education* with partly bilingual classes. If they want to attend secondary school, children have to move to the neighbouring village *St. Lucía,* five kilometres away. The village is visited from time to time by Cuban doctors who normally provide basic stationary health care in *Santa Lucía,* where the *Escuela de Biología* has also built a biological station.[71]

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[67] Due to the political violence of the civil war, the Catholic Church had disappeared for several years from parts of the area in the early 1980s. Just recently it has re-established its presence in the communities. Since the 1960s, Protestant denominations emerged increasingly in Alta Verapaz, although they were less tolerant regarding the incorporation of traditional beliefs and customs. By the mid 1990s, these Churches have expanded their membership to almost one fourth of the total *Q'eqchi'* population (Siebers 1994: 216). As a result, a plurality of different Churches is to be found throughout the department. In general, many of the former *patrulleros* and their families converted to Protestant churches (*Adventista, Nazareno, Príncipe de Paz, Calvario, Carismática*) in the 1980s, while the majority of the people who had sought refuge in the mountains are Catholics.

[68] As mentioned, a c*aballería* is another unit of area measurement equivalent to 45 ha (64 manzanas). In *San Benito*, the individually owned *parcelas* comprise an area of 31 *manzanas* per family.

[69] To obtain their final land titles, the farmers pay annual instalments of 1250 *Quetzales* over a period of 9 years (in March 2003, the official rate of exchange was 1 US$ = 7.6 *Quetzales*).

[70] An outcome of this process of land distribution was the official founding of *San Benito* in two parts: *San Benito I* and *San Benito II*. Although the former has been chosen for the study purpose, for sake of simplicity the community is referred to as *San Benito.*

[71] The health post is manned by two doctors who provide medical service for around 19,000 people living in the area. A midwife who lives in the community and two traditional healers (*curanderos*) also provide medical care. *»First we go to the curandero, and if the treatment does not help, we go to see the doctors«,* an informant from *San Benito* explained. Like the doctors, the *curanderos* treat physical diseases, but the people would foremost go to see them if they suffer from spiritual diseases such as *susto*, *ojeado* or

Fig. 4.8 Homestead in *San Benito*

As was mentioned above, the *Q'eqchi'* consider the household to be the basic unit of social organisation in their communities. The picture (Fig. 4.8), the house of an informant in *San Benito*, gives an impression of how the majority of the peasants live in the lowland settlement area. Usually, the rectangular houses are built out of boards made of local timber. Palm fronds are used for the thatched roofs, but some families have also corrugated sheet roofs. The interior is often divided into two parts; a wall separates the kitchen from the living room, which is also shared by the family members as dormitory. In general, they are sparsely equipped with furniture, which is mostly made by the farmers themselves of materials drawn from the proximate environment. The kitchen is dominated by an open fireplace on a wooden and earth frame with a *comal* on top for preparing maize *tortillas*. Depending on the level of income, some homesteads are composed of two or even more buildings, including enclosures for domestic animals, depositories for maize and firewood, and latrines. Household units usually consist of the nuclear family, but it is not uncommon to find extended families in the area. On average, the families we worked with consisted of seven members.

secreto. Due to the tropical climate, the area has high incidences of malaria and dengue fever. With regard to the general health service in Guatemala, it has to be reminded that the nation's expenditure on public health belongs to the lowest in Latin America, leading to one of the highest maternal and infant mortality rates.

4.4.2 Methodological considerations

> *The basic idea is simple: invite people to tell their stories, provide a safe place in which they can speak, and then listen for the experience that lies behind their words.* (Schroeder 1996: 23)

Having obtained permission to carry out our investigation within the communities, the methodology applied during the field research essentially based on a qualitative assessment. To obtain data on behaviour and attitudes, an informal semi-structured conversational approach was most often applied to collect information on general issues regarding the local economy and social structures within the communities. The important feature of conversational interviews is that they attempt to approach the informants' perceptions of their own reality. As the informal interview develops, the technique using predetermined questions and topics allows new issues and concerns to be addressed. At the community level, the investigation also included informal interviews with staff members of conservation agencies and field workers from development organisations, local village representatives, teachers, priests, scientists and even tourists. However, the essential insights gained in the process of fieldwork emerged from personal relations with women and men, youth and elders in the villages. In the frame of guided field walks, informants were primarily men, but many interviews were also conducted with women in the domestic domain. Although their knowledge repertoires reflect different sets of labour responsibilities, they often reported in the same degree of detail as men on the subsistence activities, agricultural practices and income patterns of the family households. The insights obtained presented in the first part of the following chapter on local knowledge expressions were gained predominantly through case studies conducted with five *Q'eqchi'* farmers in each village. The sample of informants was chosen on the basis of a socio-economic survey that had been previously carried out by my counterpart Sindy Hernández. She had selected a representative cross section of the village population.[72] In the course of the joint fieldwork, we additionally applied visual tools as an aid to verbal descriptions, which comprised mapping techniques and seasonal calendars to explore land use systems, cropping patterns and plant inventories.[73]

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[72] Originally, she had been working with ten farmers and their families in each village. After having reduced the number of key informants, we still kept in touch with the farmers who were no longer case study informants. Nevertheless, the results of our assessment cannot be said to reflect the knowledge of the entire community. The men who participated in our study were between 29 and 70 years old.

[73] Over the past two decades, the field of rural development and research on farming systems has witnessed a paradigmatic shift with the emergence of participatory methods. Largely derived from anthropology, they entered into mainstream agricultural research. Drawing on a variety of sources, *Participatory Rural Appraisal* (PRA) in particular has been receiving considerable attention as it includes the placement of IK on a more equitable foundation with scientific knowledge. For details, see *Working with Indigenous Knowledge. A Guide for Researchers* by Grenier (1998) For further details on ethnographic methods, consider the contributions in *Ethnographic Research. A Guide to General Conduct* compiled by Ellen (1984).

It is important to recall that the effects of the civil war provoked a *culture of silence* in many rural communities in Guatemala. During the 1980s, the Ixcán was one of the most severely hit areas.[74] The experience of repression and violence led to ›muteness‹, which is still present and enhanced the difficulties of communication we faced in inquiries beyond common language barriers. In the highlands, most of the villagers hardly speak Spanish and it often turned out to be difficult to find persons who could translate the interviews appropriately. As I was not sufficiently proficient in *Q'eqchi'* to conduct interviews independently of an interpreter, the limited language skills on both sides were one of the reasons to shift the investigation to the lowlands, where the people are more likely to speak Spanish. Above and beyond the language obstacle, it was decisive to establish a relation of trust and to explain thoroughly the investigation's background. As will be shown later, relations of reciprocity are an important feature of social life within the communities; it is not common to receive without giving in exchange. Thus, we were frequently confronted with informants' anticipations regarding return compensation. Just as often we faced mistrust and people expressed their concern about the scope of the scientific inquiries. Why did we ask all these questions? What would happen with the collected data and information? Would the informants themselves somehow benefit from the outcomes of the research? Such justifiable questions, especially aimed at the purpose of the investigation, were raised repeatedly. In their references to prior investigations, informants claimed that such analyses had rarely been returned to the village. In very rare cases people refused to collaborate. All the more often it occurred that questions touching historical experiences or the sensitive field of land tenure that remains a widely unresolved problem were answered by denial or the very common phrase *a saber,* which can be translated as ›who knows‹. As it rarely happened that people spoke openly about subjects concerning land tenure, we concluded that such issues had caused numerous social conflicts in the area in the past. In March 2003, during our fieldwork, the village council of *Roqhá* sent a representative to the authorities in the capital to request the legalisation of their lands on behalf of the families who still lacked secure land titles.

The accounts in the following chapters are based on information presented in narrative form since many interviews took pace in informal settings without being tape-recorded. In general, such conversations took place between rows of maize, beneath cardamom plants in the forest or in the shadow of orange trees in home gardens. Conversations also developed in the domestic realm, in yards, on the backs of pick-ups that serve as most common means of transport in the area or on the edge of the soccer pitch on weekends when villagers come together and exchange news. Most often, the interviews took place in the course of systematic transect walks across the fields, which often lasted several hours, ranging over the different land-use systems. The applied methods changed according to the respective setting and activity and often evolved intuitively and situationally. On such occasions, farmers frequently would

[74] More than 2000 soldiers were stationed at an army base at the provincial capital, carrying out counterinsurgency operations in the area with helicopter support (Davis 1988: 24).

not specify the reason for following certain practices. The common answer »*Así lo hacemos*« indicates that *this is just the way the work is to be done*, or they referred to the habitual way in which activities are carried out: »*Es nuestra costumbre*«.[75] Frequently it occurred that farmers, when questioned about their crop repertoire, answered: »*I just plant maize and beans*«. However, when we approached the farming plots in the course of the mentioned transect exercises and directed our attention anew to the crop varieties, it became evident that the informants often planted far more crop species on their fields than ›just maize and beans‹. This confirmed the notion that knowledge on plant varieties tends to be rather implicit. The same experience occurred when inquiring about the repertoire of timber products the farmers extract from the forest. The question of what kinds of trees the farmers grow in their fallows, forested lands or home gardens, was most often answered with an *a saber*. When we then went to the respective plot and asked specifically: »*Do you have caoba on this land?*«, the answer would be: »*Yes of course, there are five trees*«, and the farmer would take us to the respective place where the mahogany grows.

Such observations show that local peasants know what they know through experience and action. Embodied or »sensory and sonic ways of knowing« as Grim (2001: liii) terms it, do not, to a large extent, imply explicit procedures of examining and questioning what is known, or as Gorenstein writes, the »knowers are silent about how they know« (1998: 5). Thus, this type of fieldwork requires ecological knowledge and taxonomic expertise from the researcher herself to recognise landscape features and compositional structures of local vegetation types. This latter point has also been mentioned by Berkes et al. (2000). They aptly comment that it is often difficult to identify and generalise indigenous practices of resource and ecosystem management. A given practice may be documented for one social group but not the next, or for one period but not another. Researchers who are not trained ecologists may not recognise a practice as having an ecological function or may even misinterpret them. Particularly, in a ›sphere of silence‹, it is difficult to approach intuitively practiced way of knowing through direct inquiries. Thus, our interviews were supplemented by direct observation and active participation. This way of *learning by doing* was particularly important in developing our ability to *see* or *read* landscape features, which developed gradually in relation to an evolving understanding and revealed slowly by means of situated engagement, shared activities and observing and listening to the farmers. As human relations to the natural world takes place in this nonverbal sphere, the sharing of daily activities likewise proved to be the best way to elicit different symbolic expressions of knowledge and approach their implicit meanings.

[75] *Costumbre* literally means ›custom‹ or ›habit‹. In the communities the term is a common expression when referring to the ›traditional way of life‹.

Fig. 4.9 Talk on crop requirements during a field transect

In discussing methods and applications for the use of indigenous knowledge in science, Huntington (2000) reminds us that documenting such knowledge can be a long process; knowledge as a form of experience, which guides behaviour and includes emotional involvement is thus not an easily accessible topic to be investigated short term. Likewise, it has been argued by Siebers, who conducted ethnographic fieldwork among peasant *Q'eqchi'* communities, that »in trying to understand the sense of social actor's practice we not only must look at explicit meanings, often this sense remains implicit and has to be deducted by the researcher. Even some of the most important aspects of culture cannot be made explicit by asking the respondents about their meanings: they ›go without saying‹ and remain implicit« (1994: 211).

This observation coincides with our experience in the field of the more subtle *unseen* dimension of indigenous knowledge. The closer we came to the spiritual sphere of local resource management, the more difficult the investigation became due to different obstacles. In many cases, elder informants placed value on keeping their knowledge of sacred sites, beliefs and practices secret. In particular, the realm of ritual practice has been kept off-limits to foreigners by many villagers. In *San Benito*, an informant explained that they once had allowed tourists to attend a ceremony, but the foreigners »*behaved disrespectfully*«. The community had therefore decided not to include anyone from outside in their ritual life anymore. Later, as we gained credibility in the course of continued field visits, the council of elders decided that we would be al-

lowed to witness the performance of the main agrarian ritual *mayejak* if we were Catholic.[76] In this case, the relevant observations as described in the following are informed by observations made by my counterpart Sindy Hernández. But regardless of whether we just conversed about indigenous cosmovision or whether we took part in relevant activities, we both shared the experience that aspects relating to the religious worldview are difficult to approach, as they mostly remain *invisible*, even to the eyes of the ethnographer. Although informants shared their notions of a very personal sphere, the investigation in this respect was s slow process. The insights presented in the succeeding chapters on the symbolic dimension of knowledge have thus been complemented by secondary data from more in-depth studies by anthropologists in the area. It has to be reminded here that the methodology is not to be reduced to techniques of data collection and processing. A central premise of situational analysis is that fieldwork practice and the formulation of research findings are necessarily interwoven with personal reflection. The final analysis of this intricate process leads to the construction of an ethnographic text that also reflects individual perceptions of the ethnographer him- or herself.

Another general insight that arose from the fieldwork that needs to be mentioned is that although indigenous knowledge may achieve a certain degree of coherence in its diverse expressions, it does not exist in a totality in any place, but in the practices and interactions in which the people themselves are engaged. Just as the entire community is not a given homogenous social entity, the information we obtained reflects the knowledge of individual members of the particular villages and should not suggest that all farmers even on the limited local scale share the same notions as the informants we have been working with. In accordance with Geertz (1975: 22) who wrote that anthropologists do not study villages, but study *in* villages, the following chapters do not reflect an attempt to comprehensively document the entirety village life but rather exemplify what Grim (2001: xxxiv) has framed in general terms as the »seamless cosmology-cum-economy character« of indigenous cultures. To capture this practice, which is simultaneously rational, affective, intentional and ethical, he proposes a ›lifeways‹ concept that may open interpretative doors for understanding an integrated environmental vision that transmits spiritual states of knowing and moral ways of being in the world. Rather than conceptually reducing cultural life among indigenous peoples to a social construction, this approach seeks to bridge the depersonalising distance between observer and observed. The task is to reflect on the interbeing of cosmology and community from the perspective of the people themselves. And in this sense as well, communities do not represent homogenous entities. Instead, we faced multiple interests and overlapping perspectives and realised that the unity of a village itself is to be considered as a mere ideal.

[76] Here again, the importance of the confession becomes clear, pointing also to the religious division of the villages.

The majority of settlements located in the surroundings of the National Park *Laguna Lachuá* exist in an area where the guerrilla movement operated during the 1980s, provoking reinforced counterinsurgency campaigns by the military. It has to be reminded that dozens of communities were completely destroyed and thousands of people killed during the civil war.[77] An informant who was born in 1962 in *Roq-há* said that he had left his community and moved into the mountains of the Quiché, where he remained for three years. When he returned in 1984, he had lost all of his property. Another informant from the same village recalled that he had been forced by the army to kill his neighbours in order to save his own life. Today, their relatives still live next door. In *Roq-há*, as in many other sites, former members of the guerrilla and ex-soldiers live together in the same community. Consequently, social divisions and internal conflicts run deep, dismantling the coherence between those who returned after having escaped to mountainous areas or collaborated with the guerrilla and those who allied themselves with the army or were part of paramilitary forces such as the civil self-defence patrols. Due to these conflicts originating in past experiences and ongoing processes of change, traditional institutions have been widely transformed in politically fragmented and socially differentiated villages. Apart from inter-community conflicts on the control of access to land, people reported on cases of lynching that occurred increasingly in the area in response to the lack of efficiency of the police and the rule of law. To ensure the confidentiality of our informants, no real names will be mentioned in the following chapters dealing with *local expressions of indigenous knowledge*.

[77] In a historical account, Flores Arenales (2001) describes how the area north of *Cobán* was seriously affected by the army.

5 LOCAL EXPRESSIONS OF INDIGENOUS KNOWLEDGE

Drawing on a wide scale of framing contexts, the following sections move to the focal point of the study and document a selected range of indigenous knowledge expressions. The local context is understood in the sense of a universal frame in which knowledge matters and is formed by phenomena that are physically and spiritually in the world. The chapter highlights the research findings of the fieldwork undertaken in the area surrounding *Laguna Lachuá* National Park. It follows an analytic scheme that conceptualises knowledge as a blend of empirical and symbolic domains of customary practices articulated in everyday actions and thoughts. As previously outlined, local knowledge, particularly pertaining to the field of natural resource management, is expressed in multiple ways, but first of all in relation to subsistence patterns. Accordingly, the first part of the chapter exemplifies modes of adaptation to the specific landscape features and conditions of the lowland environment. Revealing the highly practical nature of land use systems that have an impact on agricultural and forest biodiversity it concentrates on the diversity of both domesticated and non-domesticated plant species used by the farmers. Building on this tangible dimension, which is essentially based on a rather descriptive approach with a focus on the materiality of place, the second part turns towards the more subtle *unseen* dimension of human-nature interaction and highlights social mechanism that lie behind customary practices. It interprets the meaning of place and follows the question of how nature is perceived through a screen of images and beliefs. Even though these differentiated dimensions represent distinct realms, they are not to be considered separate phenomena but rather as interwoven extensions of the overall cultural landscape. Succeeding the convergence of knowledge expressions at the nexus of the material and the imaginative, the third part of the chapter moves towards the matrix of socio-historical and

political features in which the process of knowledge generation and transmission is embedded. Given this framework, which embraces a diachronic perspective to focus on current and past experiences, it has to be recalled that the cultural frame cannot be captured in its totality but only in fragmentary aspects. As the described processes are far more complex than any ethnographic description can acknowledge, the chapter deals with selected facets of larger systems that are interlinked by ubiquitous elements such as particular knowledge expressions and symbols, which make up crucial patterns of the constantly evolving cultural context.

As has been outlined in a prior chapter, environmental anthropology is distinguished by a diversity of subject matters and methods. One of the latest trends of investigation has been framed in terms of research in *ethnoecology,* upon which the findings in the following chapters are based. As commented by Faulstich (2005: 622f.), the study of »cultural explications of nature« entails focused research on indigenous knowledge, including those aspects of culture that relate to environmental concerns directly in terms of natural resource use patterns and indirectly through social configurations, cosmological notions and religious beliefs. Emphasising local understandings of nature, ethnoecological research focuses on the importance of cognition in shaping human behaviour. Thus, it entails the investigation of systems of perception, cognition, belief, symbols and uses of the natural environment. It shows that indigenous practices of land use and resource management are not only adapted to local ecosystems but have shaped those ecosystems in ways that have made them more diverse and stable. Local cognitive understandings of the environment and specific knowledge systems of indigenous communities are closely intertwined with broader social, economic and political contexts. Thus, analytical attention centres explicitly on the nexus between biophysical, socio-cultural and politico-economic domains.

Many of the factors that influence local land use practices lie outside the control or knowledge of peasants who are increasingly becoming part of an intensified global system. An understanding of these connections requires the analysis of the political, economic and social context of ecological change. The human environmental relationship is essentially dynamic in a variety of ways and social entities develop through continual interaction between human beings, the material world and the symbolic realm. Meanings encoded in and represented by the landscape are in a continually evolving relationship. It is thus a creative process of constant evaluation, integration and adaptation to inputs coming through a variety of channels that are also external to the local system. Uncertainty and unpredictability are characteristics of all ecosystems, included managed ones. Social learning appears to be the way in which societies respond to uncertainty. Often this involves learning not at the level of the individual but at the level of society or institutions; adaptive management is thus designed to improve on trial-and-error-learning. Such environmental knowledge and accompanying practices are closely related to commonly held values about how people understand the world and their place in it. Nevertheless, these values may change with the appearance of new forms of knowledge and technologies.

5.1 The context of doing – *the empirical dimension*

[T]hought and action form a unity. (McCarthy 1996: 107)

The following analysis of resource management practices portrays farmers' experiences as expressed through customary production methods and seasonal land use activities in the field of agri- and silviculture. In particular, it explores how these strategies are reflected in the features of the local landscape created by farmers and highlights local knowledge inherent to the management of different land use units essentially based on the tropical soil and forest resources. Giving primary attention to the *corpus* and *practice* of knowledge expressions, annual and perennial plant inventories and cropping patterns will be described that form integrated parts of the diversified farmsteads. The aforementioned swidden farming is but one constituent element of the diverse ecological zones the land use patterns are based upon. The *milpa* system also includes activities such as the gathering of forest products as well as hunting and fishing, which together comprise further important components of the local subsistence economy.

5.1.1 Land use systems

The agri- and silvicultural practices of the farmers we worked with are based on a system that involves a specific range of vegetation zones in succeeding growth stages. Examining this spatial distribution, we distinguished seven principal types of land use, from permanently cultivated fields to swidden land at different levels of recovery and areas of mature forest. The first most obviously managed unit applies to farmland under current cultivation (Fig. 5.1). As aforementioned, shifting cultivation is the predominant farming system traditionally practised by agriculturists on smallholdings throughout Alta Verapaz. The system for reclaiming deforested land implies the rotational cultivation of small plots for two or three years in succession until the soil nutrients are exhausted. Then the terrain is abandoned and lies fallow until litter-producing trees have regrown and restored the soil's fertility for the next cultivation cycle. After clearing the land for cultivation, the remaining vegetation is burned to provide nutrients for the new crops. The farmers inter-crop numerous varieties of secondary plants amongst the major staple crop maize. As a result, the plots can contain up to 40 different crop plants including vegetables, root crops and spices.[1]

Fig. 5.1 A *milpa* in *San Benito*

[1] Shifting cultivation is one of the most widespread tropical soil management techniques. Following a rotational principle, land is periodically fallowed and often planted with species that help to restore the soil fertility. As a subsistence strategy, it has been disapproved by many governments and international agencies as it was regarded as a waste of land and human resources as well as being a major cause of soil erosion and deterioration (Warner 1991: 9). After a lengthy controversy over the purported environmental destruction and economic inefficiency of this traditional land use system, which commonly involves burning practices, awareness has grown that swidden agriculture practised by many indigenous peoples is not only sustainable but also contributes to maintain and conserve crop and wild plant diversity (Nakashima & Roué 2002: 320). Slash and burn systems in the tropics do, however, have limitations; population pressure can quickly bring about impoverishment of the poorer soils and result in erosion.

The second type of land use system is referred to as *guamil*.[2] The term applies to terrain that has been left fallow to regrow as secondary forest. After cultivation, fallow periods are adjusted to sustain the productive potential of the ground, increasing biomass production and nutrient recycling that raise crop yields. These zones of transition are not entirely abandoned to a natural regrowth, but used and maintained by the farmers. By collecting seeds in the forest, genetic material is transferred actively to the *guamil* to foster the regrowth of secondary forest (Fig. 5.9). This local technique of restoration depends upon planting and transplanting of species for multiple uses. Due to this method of selection, even more varieties for human use may be found on the fallow land than in the forest itself.[3] In this way, the farmers ensure long-term supplies of food, constructing materials, fuelwood, medicines and other commodities extracted from the site. The fallow land is divided into three different stages of recovery. The *guamil* of first order (**kalemb'il*, *kok' pim*) refers to terrain that has been recently harvested and includes areas of up to three years of fallow. The secondary successional vegetation is characterised by herbs and shrubs that have grown up to three metres. The *guamil* of the second order (**alk'al*) is land that has been fallow for three to six years. Larger trees are found here, such as the *guarumo* (*Cecropia* sp.) or *plumajillo (Schyzollobium parahybum*) and shrubs that can have grown up to six metres. Land that has not been cleared for six to fifteen years is referred to as *guamil* of the third order (**alk'al k'iche'*). This terrain is characterised by abundant undergrowth and is dominated by trees that have reached a height of up to seven metres (Fig. 5.2).

Fig. 5.2 *Guamil*

[2] According to Carter (1969), *guamil* is a Spanish derivative used to designate ›low secondary growth‹. In order to distinguish Spanish and *Q'eqchi'* terms in the following, the latter are marked with *.

[3] Field notes based on interviews held with biologists of the *Escuela de Biología* on different land use systems, 2002.

Apart from the cultivated and fallow land, another category was identified, which the farmers call *potrero* (**alamb'r, xnaj wakax*). This pasture land is an area that has been cropped for a certain period and then converted into grazing land for cattle. On this ground, some larger trees usually remain, such as the palm *manaco* (*Orbignya cohune*) to provide shadow for the livestock. Some farmers just let the grass grow to serve as forage. Others - those with more economic resources - sow *brizanta* (*Brachiaria* sp.) as feed for the animals. If the pasture land is of no more use because the cattle have been sold or moved to another site for lack of abundant fodder, the vegetation is left to convert into *potrero enguamilado,* dominated by herbaceous vegetation. In general, this type of land use plays a subordinate role in *San Benito* and *Roq-há*. Although not common in these two communities, the raising of cattle is nevertheless widespread in the lower parts of Alta Verapaz. As opposed to the rare pastures and grasslands, a system of agroforestry has been widely established by the farmers in the sample communities. This type of land use demonstrates less obvious changes in land cover as a result of ongoing specialisation in the management of forest extraction. It combines the modification of the natural forest environment through the production of cardamom (**ninru*) and the use of permanently forested land without additional cash crop production (**k'iche', nink'iche'*). Agroforestry is a system that encompasses crop and tree species on the same parcel of forested land. The policulture of crops, palms and fruit trees grown by the farmers in a heterogeneous mixture is an efficient pattern adapted to the peculiarities of the forest environment and designed to meet the peasants' basic needs. All informants we worked with maintained parts of their parcels as forest for gathering, hunting and the collection of wood. The agroforestry system is dominated by large trees, providing shadow for the cardamom plants growing beneath the larger vegetation (Fig. 5.3). The characteristic vegetation that dominates the arboreal stratus includes palm trees such as the *bayal* (*Desmoncus orthacanthos*), which is used for the making of thatch and basketry.

Fig. 5.3 Cardamom grown in the forest

Moreover, the vegetation serves as a major source of food, providing fruits, mushrooms, edible herbs and other useful items such as medicinal plants, incense, dyes, seeds and building materials including hardwood and leaves. Thus, the forest is by no means just unused land that is made swidden, it is itself managed to produce a combination of numerous crops for multiple purposes. In this way, any patch of seemingly ›wild‹ vegetation has been modified by the peasants and provides something of use. Within this integrated production system, the farmers create a complex landscape mosaic with agrarian fields, fallow lands, primary and secondary forest and cattle grazing areas. In general, the households tend to carry out a non-specialised production based on the principle of diversity of resources and practices. The following table illustrates the distribution of the different land use systems in the farmers' parcels.

Table 5.1 Distribution of land use systems in farmers' parcels

Land use / Community	*milpa* cultivation	*guamil* 1st order	*guamil* 2nd order	*guamil* 3rd order	pasture land	forest with cardamom	forest
Roq-há Purib'al	6.1%	12.5 %	31.8 %	11.9 %	2.6%	25.1%	10%
San Benito	5.5%	14.6%	27.9%	8.1%	8.2%	15.7%	20%

As the table indicates, more than half of the average farmers' land has been left to regrow as secondary forest. Beyond the major importance of *guamil* for the rotational principle characterising swidden farming, land use distribution also illustrates the importance the farmers dedicate to the forested lands, whereas just a minor part of the respective parcel is under actual cultivation. The diversification of the products obtained from the local agro-ecosystems and especially the integration of different practices will be described in the following. A closer look will be taken at the agricultural cycle of *milpa* farming, which is by far the most important occupation of the peasant producers. The chapter then examines the rather intensive agroforestry production system that includes a large variety of timber and non-timber products used by the farmers as well as hunting and gathering activities in primary and secondary forests.

5.1.2 The *milpa* cycle

Given the overall frame of the existing land use system, the farmers' knowledge of the agro-ecosystem becomes apparent in the cyclical process of decision-making on what to plant where and when. In the following, primary attention will be attached to the annual process of *milpa* cultivation.[4] Within the swidden-fallow system as practised in the lowlands of Alta Verapaz, the planting of maize takes place two times a year. The cycle of the *milpa grande* (**k'atk'al*), which is also called *milpa de invierno* (winter *milpa*) begins with sowing in May. The crop grows during the rainy season and is harvested between September and October. The second sowing of the *milpa de verano* (summer *milpa*) takes place in the dry season between November and December. The crops grow during the summer months and are harvested between April and May.[5] After site selection, the *milpa* cycle follows a rotational process beginning with the clearing of the terrain. Once the undesired vegetation has been eliminated through felling, slashing and burning, the stage is set for the cropping phase, which includes the planting, weeding and the final harvesting of the yields. After felling the forest for the first time, land is usually cultivated for two years before it is left fallow again.

The first task of the peasant-farmers is to prepare the ground. The phase when the site for cultivation is selected and the ground initially measured is referred to as *medición* (**b'isok*). Therein the land is surveyed by *tareas* or *cuerdas*.[6] When the survey is completed, the terrain is prepared for planting. In this step, which is called *roza* (**k'alek*), the plot is cleared by the slashing of secondary or primary forest. This activity is carried out solely for the *milpa de invierno* between March and April. As the heat is quite intense during the day at this time of the year, the farmers start their work at four to five o'clock in the morning. In the process of slashing, most men work by themselves or in small labour groups, the most common being composed of the owner of the field and his sons. Using nothing more than a machete, they manage to cut around one tarea per day. In seldom cases a farmer would engage *mozos* to complete the work.[7] The clearing includes not only the cutting of herbaceous sapling growth but also the felling of heavy arboreal growth.

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[4] The entire *milpa* cycle emerges as a highly complex economic and social process. For analytical purposes, the limited outline as presented in this section concentrates on the most basic stages and procedures of this cyclical process. A more detailed description of the activities surrounding the planting of maize is given by Wilson (1990: 90ff.).

[5] The climate of the region is marked by rainfall with an annual total exceeding 3,300 mm. The rainy season lasts from May through October. Year-round, relative humidity is above 90 percent, the average temperature is 26°C.

[6] As there are no standardised measures, the figures may vary among communities. According to Secaira (1992), a *cuerda,* which is the smallest unit of area measurement, is equivalent to a square of 25 *varas,* a unit of length equivalent to the length of an outstretched arm (90 cm), and comprises an area of 506,25 m^2.

[7] The term *mozo* applies to an agricultural day labourer earning an average of 20 to 25 *Quetzales* per day (1 US$ = 7.6 *Quetzales*).

After a period of one to four weeks, the clearing is followed by the burning of the remaining vegetation. For this process, called *quema* (**k'atok*), which takes place between April and May, the farmers choose a less sunny day, preferably after the first rains. In order to prevent the fire spreading uncontrolled to the forest environment, firebreaks of 1.5 to 2 metres are cleared around the fields and close attention is paid to the wind direction. As it affords a lot of caution, this work requires the additional assistance of family members, friends and neighbours. The informal labour exchange, involving ten to thirty people, is a common institution within the communities and the members of the village proceed from one swidden plot to the next until all have been cleared. When clearing the fields for cultivation, branches and brush are left on the ground and burned, providing the soil with nitrogen and carbon-rich ash.[8]

Two days after the burning, the farmers begin to sow the kernels so that the land does not get ›cold‹, as one informant explained.[9] The seeds are selected about four days before the *siembra* (**awk*) or seeding. Usually the farmers use their own seeds saved from the previous harvest. The seeding is also carried out collectively by around ten people, the owner of the field being assisted by his children and neighbours following a rotational system. Each person plants between one and two *tareas* using a wooden digging stick to make holes for the seeds. They sow in a straight line, placing three to five maize seeds in every hole. In general, one man can sow up to three *tareas* per day. Fifteen days after the sowing, the first weeding takes place. The so called *limpia* (**aq'ink*) is done by *machete* and followed by a second weeding when the plants have reached a quarter of their final height. During the second *limpia*, we observed the widespread application of chemical herbicides used by the farmers to exterminate undesirable, aggressive weeds known as *chak'ra* which were said to extract nutrients from the soil. Products such as *Gramoxone* or *Edonal* are used, although the farmers of both communities consider them to be inappropriate and are aware of the negative side-effect of dried soils that impair the productive potential of their lands. The positive effect of using herbicides is that the work to clear the fields is less tiring.[10]

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[8] A thorough description of the particular steps has been provided by Carter (1969) who followed an ethnoecological approach to document the *milpa* cycle as practised by *Q'eqchi'* farmers in the eastern lowlands of Alta Verapaz. His case study on economic modes provides detailed data and exact measures on site selection and clearing techniques, types of soils and vegetation, labour input, yields, average production per household, etc. He identified specific plant indicators for the selection of a *milpa* site and revealed that plant cover is classified more by size and density of growth than by specific associations of particular species. For another comprehensive and detailed ethnoecological case study undertaken in *Q'eqchi'* villages in Alta Verapaz, consider the work of Secaira (1992).

[9] The metaphors of *hot* and *cold* form a framework of meanings in everyday knowledge throughout Mesoamerica. The dichotomous categories refer not only to soils but also to plants, food items and even conditions of the human body, illnesses and medicines. In this knowledge system, *hot* and *cold* are not seen as transitory thermal states but rather express intrinsic qualities of each object or element (Nygren 1999: 284). For the *hot* and *cold* distinction among the *Q'eqchi'*, see Wilson (1995: 132ff.). A case study concerned particularly with these categories from *Tzeltal Maya* communities in the Chiapas Highlands has been provided by Maffi (1999).

[10] In March 2003, farmers paid 50 *Quetzales* for 1 litre of *Gramoxone,* which was said to be sufficient for about 1 *manzana* (0.7 ha).

Apart from the fact that such techniques offer short-term solutions, in the long term they just aggravate the impoverishment of the soil and additionally affect human health since many farmers apply the chemicals without considering safety measures. But the villagers see themselves obliged to use the products in their search to intensify production in the most efficient way. As it is essential to plant growth, soil fertility is a theme of permanent concern. If the soil is ›black‹, the terrain is considered to be of good quality for cultivation. In contrast, coloured or red soils indicate that the soil is less suitable for planting.[11] As was often complained, the nutrient deficiencies of the soils in the area are a limiting factor in agricultural productivity. Farmers recognise fertility variations in their fields and vary crop choice and conditions accordingly, but consider it necessary to *help the plants to grow* by utilising fertilisers. In *San Benito*, agrochemical products are used such as *20:20* or *15:15,* which are applied to the sprouts two weeks after planting.[12] Only a very few farmers employ organic methods, using leaf litter or plant cover crops such as the local bean species *frijol abono* (*Mucuna pruriens*), which is widely known to enrich the tropical soil. In *Roq-há*, where the farmers do not apply chemical fertiliser, most of them grow the velvet bean as green manure, which substitutes for natural periods of fallow, preventing the loss of soil fertility.[13]

Fig. 5.4 A farmer applies chemical herbicides to the maize plants

[11] Carter (1969) investigated local criteria for soil classification combined with chemical analysis of soil nutrients. According to his findings, *Q'eqchi'* farmers inhabiting the lowland environment differentiate eight major categories for colour, ten for texture, five for drainage and one for root content. Although they do not closely correspond to those established by modern soil scientists, they seem perfectly adequate for *milpa* farming.

[12] In September 2002, one *quintal* (46 kg), which was reported to be sufficient to fertilise one *cuerda* of chili, was sold for 100 *Q.* The chili produced on one *cuerda* could be sold for 2000 *Q.* (one *libra* - 0,46 kg was sold for 3.5 *Q.*).

[13] This nitrogen-fixing legume is well known as a green manure and can double corn-production during the second annual harvest (Carr 2004: 177). Another traditional technique was reported by a farmer in *Roq-há*, who used the leaves of the tree *madre cacao* (*Gliricidia sepium*) to prepare an organic fungicide. The leaves of the tree *b'ach'e* (*Eupatorium semialatum*) were used by some farmers to fertilise garden crops.

The harvest, called *cosecha* (**q'olok*), takes place five months after planting. For this activity, labour exchange is rare. Rather all family members participate in this activity, which is – like the seeding of the maize – of particular cultural significance for the villagers.[14] According to our informants, a ›good harvest‹ produces at least two *costales* per *tarea*.[15] A successful harvest, they explain, depends upon a set of factors. Aside from climate and soil conditions, the farmers' pattern of maintenance in the growing cycle is reported to play a crucial role. The most frequently mentioned threats that affect the plants is the influence of the sun, causing the crops to wither and dry up, and heavy rains that may lead to crop damage. Also animals such as deer and small mammals damage the crops, and farmers frequently attend their *milpa* to chase them away. An ever-present concern is the maintenance of soil fertility. With their production system the farmers attempt to keep a balance between nutrient losses and gains. The role trees play in soil protection is widely recognised. Seeds are collected in the forest, and several species are planted and maintained along the edges of the *milpa* and on the fallows. These are habitats for birds and small mammals, creating diverse landscape patterns and conserving biodiversity. Arboricultural practices are an integral part of the agro-ecosystem and border fields as living fences or living supports.

Fig. 5.5 The raising of trees in seed bags before transplanting is a common practice

[14] A series of ritual practices and taboos emphasise the primary importance of the *milpa* cycle in the local economy. This realm of agrarian rituals will be dealt with in chapter 5.2.3.

[15] 1 *costal* is equivalent to 150 *libras* or 300 cobs. An average household of 10 persons consumes about 1 *quintal* (46 kg) per week.

Maize and beans

Maize and beans are considered to be by far the most important staple crops in the area. Intercropping of the two crops is very common, with maize stalks serving as poles for the beans. Basically, they serve as complementary sources of carbohydrates and protein.[16] In general, the maize planted in the sample communities is a *white* sort (**saq ixim*). Commonly, two sorts are distinguished, both of them hybrid varieties (H3 and H5). The former is of low height. After eight to ten weeks it starts to develop small cobs with few leaves, which is inconvenient as it makes them more vulnerable to animals and rain. This variety can be stored up to six months. The latter, which develops higher stalks and bigger cobs covered by more leaves, needs three months to mature and is preferred in both communities. An inconvenient aspect of this variety is that due to the higher growth, the plants are more susceptible to be bent by the wind, but the cobs can be stored up to one year.[17] The corn grains are used for making *tortillas* (thin unleavened flat bread), *tamales* (ground maize with filling wrapped in a banana or maize leaf) and *atole* (a gruel of maize and water), and likewise serve to feed domestic animals. Particular parts of the maize plant are also known for their healing effects. As an informant in *Xucaneb* explained, a traditional remedy to treat high blood pressure and bladder complaints is made out of the silk of the cobs. The skin of the cobs is also said to be useful to treat nausea and even the roots can be prepared in order to staunch nose bleeding, insomnia and pancreatitis.

Fig. 5.6 The yield of maize is stored in a *troja* at the edge of the *milpa*

[16] According to Flores Arenales (1999: 125), maize is not only a very nutritive crop but also a highly resilient one. Moreover, supplemented with beans and modest amounts of vegetables, the crop provides a complete diet.

[17] Some farmers also plant *yellow* maize, since a programme implemented by the *Ministry of Agriculture, Livestock and Food* distributed the seeds among the villagers. *Black* maize was cultivated by a few farmers in *Roq-há,* but in general is less commonly found in the area. Carter (1969) observed that in the Guatemalan highlands, many more maize varieties were grown than in the lowlands. The difference, he assumes, may be due to the fact that the lowland regions present a more extreme environment for the crop, to which only few varieties are well adapted.

Among the varieties of beans grown by the farmers in the area, the most common one is the *frijol negro* (**ch'ooch'il keenq'*), which is planted beneath the summer *milpa*. Other varieties such as the *frijol trepador* or *frijol garbanzo* are grown in *Roq-há* and the *frijol rojo* and *frijol blanco* in *San Benito*. The *frijol de bejuco* is grown in both communities. In November the seeding takes place on an area of about 0.7 ha. The harvest is carried out from April to May and is followed by a second seeding that is harvested in September. The cultivation of beans is mainly a subsistence activity, but some farmers also commercialise the yield, though not to a large extent (Fig. 5.7). Besides maize and beans, the farmers grow a wide range of other minor crops. The domesticated plant inventory we could identify includes 40 perennial crops and 25 crops cultivated annually (Tables 5.2 and 5.3).

Fig. 5.7 Surplus of maize and beans sold by women at a market in *Cobán*

Annual crops

Among the annual crops, the most widespread are pumpkins and root crops. Between April and May, two or three weeks after the sowing of maize, the seeding of squash is carried out on the same plots. In both communities, a species known locally as *ayote* is grown beneath the maize plants. The harvest succeeds between July and August. In some cases, we observed that the farmers laid out small areas apart from the *milpa*, as the weeding takes much more time and energy when the plants are grown within the cornfield.[18] Moreover, the chemical inputs tend to affect the growth of the crops negatively. In *San Benito*, one informant intermingled pumpkins with chili, as he had achieved bad results planting the crop beneath the corn.

[18] According to the observation made by Secaira (1992: 79), there is almost no need to weed the *milpa* when grown with *ayote*, because the leaves cover the ground and by diminishing luminosity inhibit weed growth.

While the grain and legumes flourish visibly above the swidden ground, many tubers and starch staples grow below. The most important root crops cultivated in the communities are yucca (*Manihot esculenta*), sweet potato (*Ipomoea batatas*), which is locally known as *camote,* and taro (*Xanthosoma* sp.), commonly called *malanga*. They are often intercropped with maize and sometimes also found in small quantities in home gardens. The latter is sown from March to May; the harvest takes place eight months later. Yucca is planted around the end of April; the harvest follows a year later. The red *camote* is sown in June, when the rainy season has started and is also harvested a year later; out of one plant around eight roots can be obtained.

The cultivation of chili is very common in both communities. For the planting, fallow land is cleared and burned in August. At the end of the month and early in September, the seeding takes place. Subsequently, the *limpia* is realised with *machete* and chemicals and at the same time fertiliser is applied to the plants. Succeeding the harvest in December, another yield can be achieved between May and June. Usually up to three *quintales* of green crops can be obtained from an arable area of 900 m^2. Once harvested, the yield is dried for consumption or sale. The seeds for the next planting are obtained from the dried chilies. The *chile jalapeño* is sown in seedbeds, then grown beneath the *milpa* and harvested at the end of July, while the *chile chiltepe* is planted in home gardens and produced exclusively for household consumption.

Due to the specific requirements of rice, which requires a rather humid soil, only a few farmers in *San Benito* who own suitable land cultivate it, mainly for the market rather than for their own consumption. The corresponding activities do not differ from the production cycle of maize. Among the available varieties, *masagua,* which blossoms rapidly, is used but not favoured according to the criteria of the informants. The variety *ligoneta* was reported to be given priority. For the planting of rice a *guamil* that has been fallow for more than six years will be cleared. The seeding is done collectively in May. At the end of the month, the first *limpia* takes place with *machete* and likewise the application of chemicals, while the second *limpia* two months later is done by *machete* only. The harvest is completed between September and October; a yield of 1.5 to 2 *quintales* may be obtained from an area of 900 m^2. In general, the profits do not compensate the labour input the crop demands. Informants complained about the expenditure of time and work, which is out of proportion with the result.[19]

[19] The price depends on the variety and the place of sale. In 2002, a *quintal* of *ligoneta* was sold at 35 to 40 *Quetzales*. In 2003, an informant obtained 55 *Q*. for a *quintal* of *masagua* and 75 *Q*. for *ligoneta* (at the same exchange rate).

Table 5.2 Annual crop species cultivated by farmers in *Roq-há* and *San Benito*

	Spanish / *Q'eqchi'*	English	Scientific name
1	Ajonjolí	sesame	*Sesamun indicum*
2	Arroz / a*roos*	rice	*Oryza sativa*
3	Ayote / *k'um*	squash	*Cucurbita moschata*
4	Bledo / s*es*	amaranth	*Amaranthus hybridus*
5	Camote / *is*	sweet potato	*Ipomea batatas*
6	Chile rojo / *ik*	pepper	*Capsicum frutescens*
7	Chiltepe / *rik tzuul*	chili pepper	*Capsicum annuum*
8	Cilantro / *ixq'i'ij*	coriander	*Coriandrum sativum*
9	Frijol de bejuco / *keenq' kaam*	beans	
10	Frijol blanco	"	*Phaseolus vulgaris*
11	Frijol rojo / *lol*	"	*Phaseolus vulgaris*
12	Frijol trepador / *garab'aans*	"	
13	Frijol / *keenq'*	"	*Phaseolus vulgaris*
14	Güisquil / *ch'ima*	*chayote*	*Sechium edule*
15	Hierba mora / *mak'uy*		*Solanum americanum*
16	Maíz blanco / *ninqisaqihal*	maize	*Zea mays*
17	Maíz amarillo / *q'anhal*	"	"
18	Maíz negro / *q'eqwaj*	"	"
19	Malanga / *ox*	taro	*Xanthosoma sp*
20	Maní	peanuts	*Arachis hypogaea*
21	Pepitoria / *saquil*	squash	*Cucurbita sp.*
22	Sandía	watermelon	*Citrullus lanatus*
23	Rosa de Jamaica	hibiscus	*Hibiscus sabdariffa*
24	Tomate / *pix*	tomato	*Lycopersicon esculentum*
25	Yuca / *tz'in*	cassava	*Manihot esculenta*

Source: Field survey with Sindy Hernández and key informants[20]

Perennial crops

Apart from the annual crops, the farmers cultivate a considerable number of perennial crops that produce yields in a larger period of time. Among the 40 crop species that were identified, mainly trees and fruit shrubs, 28 are grown in both communities. The integration of trees on farms helps to insure a year round supply of foodstuffs. In general, these crops serve domestic consumption, but in cases of a yield surplus, they may also be commercialised within the community or taken to other communities or regional markets for sale. Among others, cocoa is an important crop, which is highly appreciated as a beverage, as is sugar cane, out of which *b'oj* (a fermented beverage) is prepared. They are also of major cultural significance for their use in ritual ceremonies and other festivities.

[20] All scientific names have been researched by Sindy Hernández.

Table 5.3 Perennial crop species cultivated by farmers in *Roq-há* and *San Benito*

	Spanish / *Q'eqchi'*	English	Scientific name
1	Achiote / *xayaw*	annatto	*Bixa orellana*
2	Aguacate / *oh*	avocado	*Persea americana*
3	Anona / *pak*		*Annona diversifolia*
4	Banano / *tul*	banana	*Musa sapientum*
5	Cacao / *kakaw*	cocoa	*Theobroma cacao*
6	Café / *kap'e*	coffee	*Coffea arabica*
7	Caña de azúcar / *utz'ajil*	sugar cane	*Saccharum officinarum*
8	Cardamomo / *tz'i*	cardamom	*Elletaria cardamomum*
9	Chicozapote / *muy*		*Lucuma durdlandii*
10	*Ch'onte'*		*Solanaceae*
11	Coco	coconut	*Cocos nucifera*
12	Guanaba / *wanaw*	soursop	*Annona muricata*
13	Guayaba / *pata'*	guava	*Psidium guajava*
14	Huevo de coche / *k'oy*		*Pithecelobium arboreum*
15	Jengibre / *xanxir*	ginger	*Zingiber oficinale*
16	Jicara/ *joom*	calabash	*Crescentia alata*
17	Jocote marañón	cashew	*Anacardium occidentale*
18	*K'ala*		
19	Lima / *liim*		*Citrus sp.*
20	Limón / *lamux*	lemon	*Citrus aurantiifolia*
21	Mamey / *holob'oob'*		*Mammea americana*
22	Mandarina / *mandariin*	mandarin	*Citrus reticulata*
23	Mango / *maang*	mango	*Mangifera indica*
24	Mazapán / *kastayn*		*Artocarpus altilis*
25	Melocotón	star fruit	*Cucurbitaceae*
26	Nance / *chi'*		*Byrsonima crassifolia*
27	Naranja dulce / *chiin*	orange	*Citrus sinensis*
28	Naranja agria / *aranx*	"	*Citrus aurantium*
29	Naranja injertada	"	*Citrus sp.*
30	Pacaya		*Chamaedorea sp.*
31	Papaya / *papaay*	papaya	*Carica papaya*
32	Pataxté / *b'alam*		*Theobroma bicolor*
33	Paterna / *ch'elel*		*Inga sp.*
34	Piña / *ch'op*	pineapple	*Ananas comosus*
35	Plátano / *tz'ultul*	plantain	*Musa paradisiaca*
36	*Samat*		*Eryngium foetidum*
37	*Tib'ejtz'I*		*Heliconeaceae*
38	Vainilla / *che'sib'ik*	vanilla	*Vanilla planifolia*
39	*Yak*		*Phytolacca icosandra*
40	Zapote / *saltul*		*Calocarpum mammosum*

Source: Field survey with Sindy Hernández and informants

5.1.3 Silvicultural and horticultural practices

Another core element of the agroecology is a complex system of silvicultural practices. Trees and forests constitute essential elements in the production system in the tropical lowlands as they ensure a food supplies for local households and provide the main source of fuel for cooking and food processing.[21] In general, the products gathered in the forest and home gardens are not commercialised, except the widely grown *cash crop* cardamom, which is produced exclusively for the market.[22] First introduced to the country by German *finqueros*, the crop has widely replaced coffee in the area.[23] The cardamom plants are grown in the forest environment in the shade of larger trees. They take about three years to bear fruit and produce for four to six years before yields decline. The cultivation starts with the seeding in seedbeds in May. After forty days, the *matas* are transplanted to the forest with a distance between two and three metres between the single plants. During the first two years of growing, the farmers carry out three *limpias* per year by *machete*, until the first harvest takes place in the third year. Once the plants have started to fruit, the *limpia* by *machete* follows just once a year. One person can weed an area of two *tareas* per day. According to one farmer's explanation, the crop is quite susceptible to diseases and plagues as it is not traditionally cultivated but derived from a different ecosystem. The harvest period lasts from October to April. Especially at the end of the year, when middlemen come to the villages with trucks to buy the cardamom yields, this work is not conducted by the farmers themselves. They are assisted by family members, wives and children alike. A family may harvest an amount of 125 *libras* per day. As the prices are dictated by the *coyotes*, as the farmers call the middlemen, they have no other choice than to accept the offered payment, which may vary daily.[24]

Fig. 5.8 A farmer sells his yield of cardamom to a middleman

[21] Referring to research outcomes on ethnoecological knowledge, Ellen (2003: 60) writes that indigenous forest-fallow cultivation and aboricultural practices throughout the tropics maintain forest rather than destroy it. Agroforestry systems have been shown to reduce the risks of declining soil fertility in the face of increasing population pressure and to contribute to the regeneration of fallow and mature forest.

[22] Before export, the crops need to be dried by regional manufactures. A *quintal* of dried cardamom was said to cost 3000 *Quetzales*.

[23] Due to the massive drop in prices on the world market, coffee has lost its significance as cash crop in the area, although it continues to be grown for consumption purposes.

[24] Cardamom producers are highly vulnerable to the vagaries of the market. In October 2002, the price for a *quintal* varied between 130 and 200 *Quetzales*. On March 17th 2003, a *quintal* brought 245 *Q*., whereas three days later, the price again had fallen to 160 *Q*. at the same location.

Timber products

Timber products are extracted from the forest, the *guamil* of six to fifteen years growth where the arboreal species have become quite large and the *guamil* of two to five years growth although in lesser quantities. The farmers imparted their knowledge by naming trees and commenting on their qualities, such as wood strength and suitability for particular uses. Among other often mentioned trees are *caoba*[25] (*Swietenia macrophylla*), *cedro* (*Cedrela odorata*), *canxán* (*Terminalia amazonia*), *majagua* (*Trichospermum grewiaefolium*), *lagarto* (*Zanthoxylum sp*), *malaquete* (*Xylopia frutescens*), *plumajillo* (*Schyzollobium parahybum*), *santa maría* (*Callophyllum brasilense var. Rekoi*), *palo sangre* (*Virola koschnyi*), *ramón* (*Brosimum alicastrum*), *rosul* (*Dalbergia sp.*), *san juan* (*Vochysia sp.*) and *tem* (*Crotom sp.*). These species are used for the production of boards, whereas other species such as *chaklaawim* (*Miconia sp.*) and *irayol* (*Genipa americana*) are commonly used for the production of beams. *Rosul* (*Dalbergia sp.*) and *tamarindo* (*Dialium guianensis*) are said to be suitable for the fabrication of joists. The bark of the *majagua* serves to make a sort of headband, which is widely used to carry things on one's back. According to an informant in *Roq-há*, the tree *san juan* is the best wood for the making of wooden boxes for beekeeping, as it is a quite soft timber, although one also can use the wood of the trees *cola de coche* (*Pithecelobium arboreu*) or *medallo* (*Vatairea lundeii*), but these are more inconvenient due to their weight.[26] Other trees such as the *tem* (*Croton sp.*), *cuje* (*Inga sp.*), *guarumo* (*Cecropia sp.*) or *canxán* (*Terminalia amazonia)* are mostly used as fuelwood, which the people generally refer to as *leña.*[27] Despite being very heavy, the latter two species are said to be good for *tortear* (fire for making *tortillas*), whereas *carboncillo* suits particularly well the drying of chili. The collection of firewood proceeds throughout the year, but becomes accentuated in April and May, when the cultivation sites are being cleared. The following table (5.4) indicates the tree species used by the farmers in *Roq-há* and *San Benito*.

Fig. 5.9 Tree seeds are gathered in the forest to transplant them to new sites

[25] *Caoba*, which is the local name for mahogany, is the most valuable timber species in the area and represents a major source of timber-derived revenue in the communities. As the trees are of high economical value, it has been reported that their number is currently diminishing due to increased logging activities.

[26] Although beekeeping has been fostered in the development of non-timber forest products in the area, it has not been established widely within the communities under study. The harvesting of honey produced by wild bees (**k'ab'*) using traditional methods that afford little technical assistance such as smoke have nevertheless been reported.

[27] According to Reinoso et al. (2001), fuelwood is the principal resource used by the communities in the area. For domestic needs, the average monthly consumption of *leña* comprises almost three m^3 per household.

Table 5.4 Timber products used by farmers in *Roq-há* and *San Benito*

	Common name	Scientific name
1.	Ancin	
2.	B'ache / *tem*	*Croton sp.*
3.	Bacihuano	
4.	Cacho de toro / *sub'in*	*Acacia sp.*
5.	Canxán	*Terminalia amazonia*
6.	Caoba / *sutz'ul*	*Swietenia macrophylla*
7.	Carboncillo	
8.	Cedro / *yaw*	*Cedrela odorata*
9.	*Ch'acop*	
10.	*Chaqlaawim*	*Miconia sp.*
11.	*Chaxte'*	*Brumselfia sp.*
12.	Cuje / *choochok'*	*Inga sp.*
13.	Cola de coche / *suj*	*Pithecelobium arboreum*
14.	Conacaste	*Enterolobium cyclocarpum*
15.	Guarumo / *ch'oop*	*Cecropia sp.*
16.	*Ich'te*	
17.	Irayol	*Genipa Americana*
18.	*Iximche'*	*Cleyera theaeoides*
19.	Kortéz / *kisaak'am*	*Tabebuia guayacan*
20.	*K'ub'ulte'*	
21.	Jocote de mico / *pook*	*Spoandias purpurea*
22.	Lagarto / *poy*	*Zanthoxylum sp.*
23.	Luín	*Ampelocera sp.*
24.	Majagua / *chaip'*	*Trichospermum grewiaefolium*
25.	Malaquete	*Xylopia frutescens*
26.	Marío	
27.	Medallo /*sib'ikte*	*Vatairea lundeii*
28.	Muy	*Lucuma durdlandii*
29.	Palín	
30.	Palo de hormigo / *saank'che*	*Platymiscium dimorphandrum*
31.	Pali de pito / *tzinte'*	
32.	Palo jiote / *kakaj che'*	*Bursera simarabu*
33.	Palo sangre	*Virola koschnyi*
34.	Plumajillo / *k'ukte'*	*Schyzollobium parahybum*
35.	*Pompte'*	
36.	Quanparaguay	*Vismea camparaguay*
37.	Ramón / *aax, ujuxte*	*Brosimum alicastrum*
38.	Rosul	*Dalbergia sp.*
39.	Santa María / *leech*	*Callophyllum brasilense var. Rekoi*
40.	San Juan / *ranchab'*	*Vochysia sp.*
41.	Siete Camisas / *kaq'ut*	*Ledembergia macrantha*
42.	*Suchaj*	
43.	Tamarindo / *laaw'im*	*Dialium guianensis*
44.	*Wojte'*	
45.	*Wowol*	*Rinorea guatemalensis*

Source: Field survey with Sindy Hernández and informants

Non-timber products

Non-timber products play an essential role for ensuring food supplies and health care. They provide critical support to seasonally dependent agricultural production in times of shortage, especially in interim periods between the harvests or in cases of drought or crop failure.[28] Thus, they significantly supplement the overall diversity and nutritional quality of the peasants' diet. A large variety of edible, medicinal and other useful products for construction, ornamentation, artisanry and the like are obtained from the forest, the fallow lands and pastures. In particular, the forest supplies materials for house construction, granaries or nurseries such as lianas (**kurarina k'aam, pita roja*), which are used to tie up beams, and palm fronds for roofing.[29] Likewise, *talquetzal* (*Poaceae*), which grows in the *guamil* of the first order, serves as material for making thatches, just like *chispa* (*Pteridium aquilinum*), which is used for the roofs of nurseries to provide shade for the plants grown in the seedbeds. Moreover, the forest provides many plants gathered for nutritional purpose. Important trees providing the peasants with fruits include *anona* (*Annona diversifolia*), *aguacate* (*Persea americana*), *zapote* (*Pouteria mammosa*), *mamey* (*Mammea americana*), *chicozapote* (*Lucuma durdlandii*), *guayaba* (*Spondias* sp.), *guanaba* (*Annona muricata*) and *huevo de coche* (*Pithecelobium arboreum*). Likewise, herbal plants are of particular relevance to the diet of the villagers, as they contain high levels of minerals. The most important ones are **maakuy* or *hierba mora* (*Solanum americanum*), **ch'onte'* (*Solanaceae*) and *bledo* (*Amaranthus hybridus*). These are gathered mostly on the fallow lands. *Hierba mora* is found on the *milpa* but is also planted in the home gardens, just like *samat* (*Eryngium foetidum*), coriander (*Coriandrum sativum*), *chiltepe* (*Capsicum annum*), *chile rojo* (*Capsicum frutescens*), cocoa (*Theobroma cacao*), coffee (*Coffea arabiga*), *güisquil* (*Sechium edule*), papaya (*Carica papaya*) and ginger (*Zingiber officinale*). Apart from the use of herbs and fruits for alimentation, mushrooms also form part of the staple diet. In both communities they are commonly collected in the season between April and June and between October and November, when the rains end. In *San Benito*, for instance, **asam* (*Schizophyllum commune*) is found in the forest beneath the rotten trunks of the *palo sangre* (*Virola koschnyi*).

Non-timber products are often gathered by women accompanied by their children of both sexes. Thereby the women teach their children from an early age to recognise edible fruits and other useful plants. These are gathered when the opportunity arises, for instance, when collecting firewood. But there are also times when the women go to the forest or fallows with the purpose to gather particular products, such as materials for the weaving of baskets. In both communities several women were specialised in the production of baskets made of *bayal* (*Desmoncus orthacanthos*) and other items made of leaves of the *corozo* palm (*Orbignya cohune*).

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[28] In many parts of the world, non-timber forest products (NTFPs) are an important component of local economies. For further details and examples of this traditional resource use pattern, see *Plants, People, and Culture. The Science of Ethnbotany* by Balick & Cox (1997).

[29] Depending on the size, the farmers need around 250 leaves for one roof, which is said to last for up to six years.

Although the investigation did not focus systematically on medicinal plants, we observed that their use and benefit are appreciated in both communities. When talking about these plants, informants reported that they are commonly extracted from the forested and fallow lands.[30] Among others, we identified *tres puntas* (*Neurolaena lobata)*, of which the leaves are said to treat *paludismo* (malaria), gastrointestinal affections and diabetes. The plant **ch'ulch'e'* is used against fever and headache. **Xikul raq* is found in the forest and used to reduce high temperature. The same effect is attributed to *cola de caballo*, which is found in fallow lands of the second order. The root of the *zarzaparrilla* (*Smilax lundelli*) - also found in fallow land of the second order - is applied to treat anaemia, gastrointestinal affections, swellings, malaria, kidney disease and headaches. The plant **xtoon k'ulb'* is used to ease body pains. The juice of the fruit **xch'u aj uch'* is given to children in case of bed-wetting. **Maak'uy* (*Solanum americanum),* apart from being edible, serves as remedy for gastrointestinal affections and respiratory diseases. An infusion made of the skin of the pineapple (*Ananas comosus*) and the bark of the *palo jiote* (*Bursera simaruba*) was said to be a remedy for kidney diseases. The tree *kortéz* (*Tabebuia guayacan*)*,* which is found in the forest, is used to cure diarrhoea and gastrointestinal diseases. A plant called *flor morada,* which grows in the *guamil* of the second order, is used to cure toothache. The leaves of the **leetzeb'* can help to kill parasites, whereas the leaves of the **ich'olay* are used to heal skin wounds like cuts, stomach pain, nausea and diarrhoea. Respiratory problems, dysentery and prostate diseases are treated with *escobillo* (*Sida rhombifoli*)*,* which is found in the *guamil* of the first order. Ginger (*Zingiber officinale*) and onions (*Allium cepa*) are commonly used to cure influenza.

Fig. 5.10 A medicinal plant at the edge of the *milpa*

[30] In general, our findings are consistent with those of Asher Collins (1999). The ethnobotanical survey he conducted in various communities of the municipality *San Juan Chamelco* revealed that although a representative number of medical plants were grown in home gardens, the majority of the most frequently used plants were found in secondary forest areas.

Table 5.5 Non-timber products used by farmers in *Roq-há* and *San Benito*

Edible plants	Spanish / *Q'eqchi'* name	Scientific name
1.	Bledo / *ses*	*Amaranthus hybridus*
2.	Cojuca	
3.	Cacao / *kakaw*	*Theobroma cacao*
4.	Café	*Coffea arabica*
5.	*Ch'onte'*	*Solanaceae*
6.	Hierba mora / *maak'uy*	*Solanum americanum*
7.	*K'ala'*	*Cardulovica palmata*
8.	Pacaya / *k'ib'*	*Chamaedorea sp.*
9.	Pimienta gorda / *peens*	*Pimenta dioica*
10.	Pimienta / *peens*	*Pimenta dioica*
11.	*Samat*	*Eryngium foetidum*
12.	*Sub'in*	*Acasia sp.*
13.	*Tib'ejt'zi*	*Heliconeaceae*
14.	*Xchu aj uch*	
15.	*Yuk*	
Medicinal plants		
1.	Arbol de la vida / *icb'olay*	
2.	Cola de caballo	
3.	*Chul Che'*	
4.	Escobillo / *meb'e*	*Sida rhombifolia*
5.	Flor morada	
6.	Kortéz	*Tabebuia guayacan*
7.	*Rokba'ak*	
8.	Tres puntas / *qa'mank*	*Neurolaena lobata*
9.	*Xchu aj uch*	
10.	*Xtoom kulb'*	
11.	*Xikul raq*	
12.	*Xutb'ain*	
13.	Zarzaparrilla / *kulb'*	*Smilax lundelli*
Fungi		
1.	*Asam*	*Schizophyllum commune*
2.	*Choq rek*	
3.	*Loq loch*	
4.	*Olokok*	*Auricularia sp.*
5.	*Silip*	*Armillariella polymyces*
6.	*Xjolom chakmut*	

Other useful plants	Spanish /*Q'eqchi'* name	Scientific name
1.	*B'ache*	*Croton sp.*
2.	Bayal	*Desmoncus orthacanthos*
3.	Chispa / *sis*	*Pteridium aquilinum*
4.	Izote de montaña / *k'uk'iil*	*Dracaena americana*
5.	Jicara / morro	*Crescentia alata*
6.	*Kurarina k'aam*	
7.	Lancetillo	*Astrocaryum sp.*
8.	*Leetzeb'*	
9.	*Lookom kaam*	
10.	Madre cacao / *k'ante*	*Gliricidia sepium*
11.	Majagua / *chaip'*	*Trichorpermum grewiaefolium*
12.	Manaco / *mokooch*	*Orbignya cohune*
13.	*Mox*	*Calathea microcephala*
14.	*Oxib' xuqut*	
15.	Pita roja / *saq'I kaam*	
16.	*Talquetzal*	*Poaceae*

Source: Field identification with Sindy Hernández and informants

Home gardens

Apart from the above outlined cropping and gathering practices, home gardens (**awiink re li rochoch*) are a crucial element in the indigenous subsistence farming system. Traditionally, this type of land use on small plots has been linked with other forms of land use throughout Guatemala and Mesoamerica. Most often, home gardens are integrated agroforestry systems that include trees and numerous annual and perennial crops. Generally a mixture of useful species and minor crops, they provide families with access to nutritious fruits and vegetables, herbs, spices, flowers, medicinal plants, firewood, poultry feed and other tree crops. When they are not investing their time and effort in intercropping activities, farmers engage in attending their gardens during the period when the crops on their *milpa* are maturing. In the lowland communities, we observed that the spatial structure of the gardens and the plant composition can vary significantly. Although they commonly are located in the courtyards of the homesteads, the gardens are not restricted to the residential zone and are occasionally found in walking distance of the farmstead. The maintenance of this system demands constant attention. Usually but not exclusively, women are dedicated to gardening, while some work is frequently realised by men, such as the elaboration of seedbeds.

Home gardens are a secondary production system essentially designated for the consumption of the families themselves and in case of surplus for local or regional commercialisation. In most gardens around the residences, orchards dominate. These include several citrus fruits, mango, bananas, plantains, papaya and avocado. In many gardens coffee, cocoa, coconut, pineapple and sugar cane are also grown. We further identified spices such as *pimienta* (*Pimenta dioica*), herbs such as **maak'uy* (*Solanum americana*), tubers such as *malanga* (*Xanthosoma sp.*), as well as *güisquil* (*Sechium edule*), *jícara* (*Crescentia alata*) and *hierba mora* (*Solanum americanum*). The leaves of the **mox* (*Calathea microcephala*), a plant that grows on fallow lands but is also found in home gardens, are used for wrapping *tamales* (maize dumplings). In *Roq-há*, a fruit similar to cocoa called **b'alam* (*Theobroma bicolor*) is grown next to the domestic areas. Besides these plants, palm trees such as the *manaco* are also to be found in home gardens.[31]

Fig. 5.11 A home garden in *Roq-há*

[31] The systematic ethnobotanical investigation conducted by Asher Collins (1999) explored 112 plants grown by *Q'eqchi'* peasants in their home gardens of which 85 were identified as distinct species. In the discussion on their use and frequency, edible plants are said to represent the most important species in the inventories, followed by numerous varieties of flowers grown for ornamental purpose.

5.1.4 Further subsistence activities

The various tasks associated with agricultural and forest gathering patterns are widely augmented by further subsistence activities such as hunting and fishing. Besides the gathering of plants and timber products, the forest fauna is of major importance for the families' nutritional needs. In the two sample communities it has long been common to hunt in the forests adjacent to the fields. To do so, fruit trees have been planted in the forest and the *guamil* to attract wild animals that are regularly hunted by several farmers. It is also very common to hunt the wild animals that damage the crops on the fields under cultivation. As the aforementioned study undertaken by a group of biologists of the USAC has shown, hunting follows an annual cycle, just like other subsistence activities. In general, it is practised during the months of less agricultural activity after the most time intensive work has been completed in February, March, July and August. As a younger informant in *San Benito* explained, he went hunting every fifteen days in the time between June and August when there was less work to do. When the cobs start to appear, another farmer commented, wild animals would frequently invade the fields in search for food. Thus, by protecting food crops from predating animals, hunting, apart from its nutritional value, also contributes to subsistence indirectly. The applied techniques include traps and weapons; dogs are also widely kept for this purpose. Not all men hunt regularly. Some informants reported that they do not hunt for lack of time or appropriate weapons. Several would ask others who own weapons or dogs to hunt on their plots. A few informants explained that they avoid the practice as they observed that the number of animals has decreased notably due to the reduction of their habitat and overhunting. Specifically they referred to species such as the tapir (*Tapirus bairdii*), called *danto,* which has almost disappeared in the area and is only to be found within the limits of the National Park. One of the most abundant species in the area is the armadillo (*Dasypus novemcinctus*).

Table 5.6 Animals commonly hunted by farmers in *San Benito*

Spanish / *Q'eqchi'*	English	Scientific name
Armadillo / *ib'oy*	armadillo	*Dasypus novemcinctus*
Cabro / *yuk*	brocket deer	*Mazama Americana*
Coche de monte / *k'iche' aaq*	peccary	*Tayassu pecari*
Cotuza / *aaqam*		*Dasyprocta punctata*
Mapache / *ow*	racoon	*Procyon lotor*
Pizote / *sis*	coati	*Nasua narica*
Taltuza / *b'a*	gopher	*Orthogeomys sp.*
Tepezcuintle / *halaw*		*Agouti paca*
Venado / *kej*	white-tail deer	*Odocoileus virginianus*

Source: Field identification with Sindy Hernández and informants

In both communities the peasants further augment their diet with fishing. In *San Benito*, which is located on the shores of the river *Las Mulas*, farmers seasonally trap fish, crayfish and shrimps, which enrich their diet in animal protein. In *Roq-há*, there are streams that provide the villagers with fish, but they also move to other more distant communities to fish. Fishing is an activity realised mainly between February and May when the water-level is low. Traditional techniques are applied such as nets to gather shrimps and crayfish, but poisonous plants such as the liana **oxib' xuqut* are also used. Normally, fishing is an activity carried out by men or children; in *San Benito*, the wife of an informant said that she also would engage in this activity. In general, both hunting and fishing are considered by the peasants as rather sporadic and recreational activities. As aforementioned, the production system of the *Q'eqchi'* is complemented by animal husbandry on a rather modest scale. In most families, fairly sizable numbers of up to twenty chickens (**kaxlan*) are maintained for household consumption. Turkeys, pigs and cattle are less frequently held.

Beyond the above outlined subsistence activities, many farmers engage in seasonal wage labour on large *fincas* and coastal plantations.[32] Diminishing returns from farm holdings lead many of them to turn to off-farm earning possibilities. Thus, in times when the *milpa* requires less attention, they work outside their communities for extended periods of up to four months. This additional income, like that earned through the sale of cash crops and production surpluses, provides the families with capital needed to purchase market commodities such as tools, clothes, medicine and foodstuffs they do not produce themselves.[33] Moreover, all informants had to pay yearly instalments for their plots and several farmers reported that they needed the extra monetary income to finance the higher education of their children (500 *Quetzales* per year). Talking about these issues, farmers often expressed their interest in measures to increase on-farm opportunities by processing higher value products, but at the same time pointed to the importance of subsistence needs. This implies that no household is oriented exclusively either to subsistence or external market production. The peasants always try to establish a balance between the two systems. They are willing to adapt to market-oriented systems, given the condition that this is based on the *milpa* farming techniques, which would allow them to remain in their community. In interviews, the concern was frequently expressed that the forest environment had deteriorated due to the extension of the cash crop cultivation. The farmers were clearly aware of its potentially negative impacts.[34]

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[32] According to the season, monthly incomes vary between 100 and 4000 *Q*. A month on a *finca* yields around 800 *Q*.

[33] In both communities several small shops exist where basic items for everyday use can be purchased. For further items, peasants commonly travel to the next larger town of *Ixcán* (*Playa Grande*), which can be reached by pick up or public bus.

[34] Given the absence of an agrarian reform at the national level, it needs to be reminded that the prime causes of forest destruction are not a result of over-intensive small-scale farming systems. On the contrary, they are more structural in nature.

To sum up this section on the empirical dimension of local knowledge expressions, it may be first emphasised that the inhabitants of the lowland communities, though they are not historically linked to the particular landscape through ancestral ties and long-term residency, have adapted to the environment by restoring communal structures and traditional practices to create an immediate relationship with the new lands. In economic terms, they have developed three integrated production systems, namely the shifting agriculture known as *roza y quema* combined with an intensive agroforestry system that includes the maintenance of home gardens and further gathering activities in primary and secondary forests. The established subsistence economy demands intimate and detailed knowledge to cope with the particular conditions of the lowland environment. With minimal technological input, a highly differentiated system of integrated agricultural and silvicultural management has been developed. The peasants have largely retained the traditional farming system, which is confined to seasonal cycles, but have also adapted swidden-fallow agroforestry patterns to the market economy. Their needs and values are reflected in the decision-making processes in the selection and maintenance of crops with specific traits and adaptive characteristics.

A salient feature of the agro-ecosystem is the maintenance of a large variety of species and genetic diversity. Even though the entire farming system is geared to maize cultivation, intercropping is an important feature of *Q'eqchi'* agriculture. Crop variety selection plays an important role in order to reduce the incidence of plant plagues and diseases and withstand periods of drought or crop failure. In addition to the maintenance of crop diversity, the farmers foster the recovery of secondary growth in the fallows. Although the slash and burn practice of shifting agriculture has negative impacts on the forest cover in the area, swidden farming allows for regeneration of secondary forest and thus maintains fertility of soils and limits erosion. But the agro-ecosystem encompasses much more than the swidden cultivation. Through mixed farming strategies and the gathering of wild resources, the peasants shape the landscape to create a high level of heterogeneity. From the resultant diversity, they extract a multitude of products that fulfil their nutritional and socio-economic needs throughout the year. The people strive to incorporate practices that allow them to intensify their production systems while minimising ecological degradation. However, they do not always apply appropriate local techniques, such as soil conservation practices. Knowledge of the use of green manure, for instance, is not evenly distributed.

The above outlined practices are an integral part of the immediate relationship the *Q'eqchi'* establish with their environment and comprise much more than just working with the physical elements such as soil, water, crops and seeds. Inherently, they involve the application of values and rules that reflect a notion of a sacred landscape and the belief that a good harvest can only be obtained if the practices are accomplished according to customary laws. These are related to the indigenous cosmovision that includes the natural, the social and the spiritual world. Even those material engagements generally presented as economic modes of production may have symbolic meanings, like many other forms of the cultural complex.

In the following, attention will be drawn towards the question of how knowledge gained from living within a particular landscape determines the environmental imagery that people construct. It will be shown that underpinning the *seen* dimension is a particular concept of nature that commonly remains *unseen*. Juxtaposing aspects of the cosmovision with an outline of the economic activities serves to illuminate how human engagements with the natural environment reflect social and spiritual dimensions of biodiversity. The aim of the next chapter is to underscore the cultural processes through which places are rendered meaningful by looking at further localised expressions of indigenous knowledge. As mentioned, environmental knowledge and accompanying practices are closely related to commonly held values about how people understand the world and their place therein. Even though these values change with new knowledge and technologies, it has been affirmed by Hatse and De Ceuster (2001a) that we can still speak about culturally specific systems. By means of extensive case studies among rural *Q'eqchi'* communities, they have explored the persistence of cultural beliefs and customs that still form the base upon which traditional agriculture is widely practised and can be seen as functioning to reinforce a community's set of rules for managing resources. As concluded by Ellen and Harris (2000), the failure to take into account the co-existence of the various interconnections between both empirically *and* symbolically motivated criteria within any knowledge system inevitably leads to limited understandings about how knowledge operates and how it is situationally successful. In all resource management systems, the perceptions, attitudes, values, ethical standards and aspirations of those involved are fundamental to its structure and operation. It will be shown that fundamental cultural frameworks such as religious systems can play a vital role in the retention of biodiversity-related knowledge systems.

5.2 The context of meaning – *the symbolic dimension*

When we deal with culture we are dealing with symbols that communicate the soul of a host community.
(Furze et al. 1996: 162)

Building on the previous description of ›real‹ features of indigenous knowledge, the following chapter concentrates on its less apparent ›imagined‹ expressions. It is about the human encounter with the non-human environment, focusing on important attributes of the indigenous worldview. In revealing a mostly unspoken dimension incorporated into common activities, stored in symbols, dramatised in rituals and correlated with cultural values, it seeks to explore selected aspects of what Escobar, referring to local knowledge, has defined as »*a mode of place-based consciousness, a place-specific [...] way of endowing the world with meaning*« (2001: 153). It will be shown that the crucial factors intervening between natural conditions and social structures involve more than knowledge in terms of techniques to manipulate the natural environment. The chapter intends to illustrate the complementary relationship between the *seen* and the *unseen* parts of culture and gives evidence of the *spiritual,* which belongs to *Q'eqchi'* reality as much as the *material* does.

In her account *Sacred Forces of the Mayan Universe,* Garza (2002) exemplifies that all Mayan cultural artefacts are based on their religious concepts of the world. I do not intend to discuss *Q'eqchi'* religious life in its entirety here. Instead I will concentrate on selected aspects that form part of the symbolic sphere. In this realm, the functions of knowledge, as McCarthy (1996: 5) puts it, are to integrate a social order, to provide a coherent and meaningful sense of reality for human beings, to render and to preserve a person's or group's identity and to legitimate action and authority in a given society. Or as Strang writes, cosmological constructions are culturally generated: »they provide a framework for culturally specific modes of thought, categories, values and laws, and they function as idioms of explanation and ways of creating and maintaining an ordered mental universe« (1997: 237). In this way, the indigenous cosmovision contains behavioural instructions and guidelines and values of respect for the integrity of the environment. *Q'eqchi'* communities have developed specific narratives, myths and beliefs that answer fundamental questions about how people should behave towards their environment. According to their beliefs, the entire universe originated from and is permeated by sacred energies that appear in many forms and determine events according to a temporal order. Just as communal labour and co-operative ventures are an integral part of community life, rituals are particularly important elements of cultural continuity whereby »the forces of the invisible world are drawn into the world in order to ensure growth and fertility« (Gray 2000: 64). Discussing meanings stored in religious symbols, dramatised in rituals or contained in myths, Geertz argued that sacred symbols

»relate an ontology and a cosmology to an aesthetics and a morality: Their peculiar power comes from their presumed ability to identify facts with value at the most fundamental level, to give to what is otherwise merely actual, a comprehensive normative import« (1975: 127).

In a ritual, the world as lived and the world as imagined, fused under the agency of a single set of symbolic forms, turn out to be the same world. For Geertz, ritual practice is »consecrated behaviour« (1975: 112). As symbol for the life-cycle of the communities, it maintains the social order and reinforces social and spiritual cohesion within the community. The practical role of such sharing social bonds is well recognised in anthropological literature. Given the relation between cultural processes and spatial representations, the last part of the chapter applies the idea of *cultural landscapes*, based on the notion that land above and beyond its physical representation exists in the minds of people and that their imagery or knowledge of the land is shared and transferred from generation to generation.

5.2.1 The indigenous worldview

> *The documentation to understand social and natural configurations as representations of a characteristic and indivisible contemporary socio-cultural universe in a natural space is an inquiry into an entire social world.* (Seeland 2000: 6)

The starting point of the endeavour to clarify the implicit semioticised configurations of the cultural landscape is the indigenous worldview. Despite ubiquitous attention to the religious realm, the Mayan worldview has not yet been seriously considered in the formulation of theories about indigenous spirituality. In recent writings, the worldview of the Mayan population, which is deeply rooted in pre-Colonial religious concepts, has been described as *cosmovision*.[35] Carrasco has approached the term as »the ways in which Mesoamericans *combined their cosmological notions relating to time and space into a structured and systematic worldview*« (1990: xix). From a historical point of view, he discusses different characteristics of the cosmovision, which include a strong sense of parallelism between the celestial, supernatural forces of the cosmos (macrocosmos) and the biological, human patterns of life on earth (microcosmos). He has further undertaken to document that pre-Columbian traditions continued to play a vital role in the post-colonial communities of Guatemala. Although indigenous and European traditions mingled into a series of new cultural combinations, the Mayan worldview persisted. Throughout his study, Carrasco emphasises that religion is both a matter of the social and material world within which humans dwell. One of the most important points he underlines is that in Mesoamerican religions, time and space are inseparable realities.

Concerning the worldview of the present day *Q'eqchi'*, anthropologists have undertaken to study the interconnections between the physical and the spiritual world, between the microcosm and the macrocosm and thereby explored an all embracing equilibrium model of the universe in which agricultural practices are embedded. In doing so, Hatse and De Ceuster (2001a) have undertaken to document that the cosmovision has to be seen as the principal base upon which the traditional subsistence economy is practised by *Q'eqchi'* peasants. Despite their participation in the ceremonial life of the Christian Church, they have ingeniously adapted their cosmovision to incorporate external elements and firmly remain committed to the traditional worldview, which is constantly being redefined and reconstructed to deal with changes in the social and physical environment. The authors distinguish four main principles of the cosmovision: integrity, structure of time, equilibrium and the notion that all life forms share material and spiritual features. These are reflected not only in agricultural practices but also in other cultural realms such as language, rituals, myths, tales, prayers, music, dreams and other activities of daily life.[36]

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[35] Carrasco 1990; Parra Novo 1993; Lima Soto 1995; Cabarrús 1998; López Austin 2001; Gómez & Pacay Caal 2003.

[36] In spite of differences in patterns of symbolism and forms of cosmic conceptualisation, Villa Rojas (1988: 118ff.) refers to similarities among different Mayan groups in the western highlands, the Yucatec Mayans or the *Lacandon* Indians of Chiapas in Mexico.

First to be mentioned is the principle of *integrity*. An integral worldview assumes that each element of reality has its own place, significance and function within the cosmic order. This holistic vision implies that everything is related to the larger context and it integrates the structure of space and the rhythms of time into a unified whole. It implies the identification with other life based on human receptivity to the non-human world. Humans not only live in the world, they are embedded in it »in such a way that every act affects the universe and everything in the universe resonates in the individual« (Nigh 2002: 455). The sense of oneness and the notion of unity of humans with non-human entities, which means that the world, mountains, rivers, trees, animals, people and even celestial elements are all related and interact with each other in significant ways, has been described as »cosmic connectedness« (Posey 2003). Based on a certain »sameness in mind« (Weber Nicholsen 2002: 23), all living things and natural entities have a role to play in maintaining the web of life. The image of the natural world as a parent of humans reflecting even a form of ›cosmic kinship‹ is found in different origin stories throughout the world and is often sustained by myths and apparently reflected in the following expression as gathered from stories of the *Q'eqchi':*

Nuestro Padre, el sol (qaawa sa'q'e)*, nuestra madre, la luna* (qana 'po)*, nuestras hermanas, las estrellas* (chahim)*, nuestros hermanos, los animales* (xul)*, tanto del aire como de la tierra y nosotros los hombres del maíz* (ch'ol wiinq) *formamos parte, tan pura como sencilla y bella, de la vida en esta nuestra madre Tierra* (loq 'laj na'ch'och')*, en nuestra selva* (k'iche').[37]

The second substantial principle of the cosmovision, addressed by Hatse and De Ceuster (2001a), refers to the *structure of time*. In their analysis, it implies the perception that any form of life is bound to a process of cyclical sequences. Each specific moment is defined by its own significance and purpose. Human existence, social life, agricultural activities as well as nature itself are attached to particular cycles related to the celestial movements. This includes daily, monthly, seasonal and annual components of time. The conception of cyclic periods of time has been described by Villa Rojas (1988) as a key element in the understanding of the meaning of human existence. As the title of his book *The Concepts of Space and Time among the Contemporary Maya* suggests, he gives particular attention to the assumption that time imagined as something divine and eternally flowing, without beginning and end, distributed in recurrent cycles and saturated with determinants of the destiny of humans and the universe, is associated with a specific way of conceiving the *spatial structure* of the universe.[38]

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[37] This wording derived from Queiros et al. (2000: 22) says: »Our father, the sun (*qaawa sa'q'e*), our mother, the moon (*qana 'po*), our sisters, the stars (*chahim*), our brothers, the animals (*xul*), from the air and from the earth, and we, the people of maize (*ch'ol wiinq*), form part, just as pure as modest and beautiful, of the life on our mother Earth (*loq 'laj na'ch'och'*), in our forest (*k'iche'*)« (translation by the author).

[38] How people conceptualise the passage of time is a fundamental ontological reference point inherent to any cultural system. In comparison to many indigenous ontologies emphasising the circularities of time, Howitt (2001) expounds the conception of time underlying the ›Western‹ philosophy, which is characterised by a sequential linearity. A linear construction of time places events and people in a continuum in which the present separates the past and the future. A linear worldview leads

A constitutive element of the spatial concept is the orientation towards the four cardinal points defined by the course of the sun, reflecting the aforementioned principle of holism. Referring to this notion of directionality, Carrasco (1990) mentions the idea of ›axiality‹ that is reflected in the major orientation of ceremonial centres and buildings. The four-quartered world is animated through the continual process of ›sowing and dawning‹, that is, planting and harvesting, burial and rebirth, sunset and sunrise. According to Villa Rojas (1988), the concept of the quartered image of the universe exists throughout Mesoamerica as a surviving element of the ancient Mayan heritage. He draws on varied ethnographic studies undertaken among contemporary Mayan groups and concludes that the peculiar manner of conceiving time and the spatial structure of the universe »constitutes one of the most elaborate creations of the human mind in its eternal desire to penetrate the secrets of existence« (1988: 113).[39]

A third constituent part of the cosmovision is the concept of *equilibrium*. This principle that entails a constant process of preservation and restoration of balance is present in all spheres of life and equally widespread in indigenous cultures throughout the world. Among the *Q'eqchi',* it finds equivalence in the concept of complementarity, which involves adherence to a matrix of binary structures. Just as the sky and the earth are paired as the source of life and generators of the seed of creation, man and woman, day and night, humans and nature, work and leisure form part of this dichotomous principle, which is also expressed in pairs of metaphorical qualities such as the aforementioned ascription of classificatory properties such as ›hot‹ and ›cold‹ to food, health and medicines.[40] These recurrent elements require constant human endeavours to maintain harmony. A disturbance of the ideal harmony may lead to human illness or crop failure. The basic ethical criterion is to live integration and harmony at all levels of reality. This principle of restoring balance within all spheres of life implies the notion, that »whatever you do to other living beings, or nature, can return to affect you. Everything is interconnected, and the imbalance of one part puts the rest in danger« (Montejo 2001: 191). Other authors like Nigh (2002) consider the principle of »metaphysical balance« a key concept of all Mayan cultures. Similarly, Fischer (1999) writes:

towards ideologies of development that imagine growth as development and past as discontinuous with the present. Unlike this rectilinear idea of progress, the sense of time inherent to many indigenous cultures leads to a perception that limitless growth involves disruption rather than development.

[39] According to the ancient belief, the cosmos was conceived as a series of 13 celestial and 9 underworld layers, each inhabited by gods and supernatural beings and forces. These powers entered the earthly level through a series of openings and avenues of communication, including the four cosmic trees at the edges of the world, mountains, caves, the rays of the sun, the motion of the wind, etc. (Carrasco 1990: 67). It is beyond the scope of the chapter to thoroughly explore the historical antecedents of the outlined concepts as studied through codices, hieroglyphics, stelae, panels or colonial texts. For this, see León Portilla (1988), Milbrath (1999), Carrasco (1991), Garza (2005).

[40] Wilson (1995) documents the opposed sets of rules and practices in the context of illness and health among the *Q'eqchi'*. Conceptions of health, disease and curing among Maya communities are also discussed by Nigh (2002).

Seeing unity in diversity is characteristic of Maya cultural logic in a number of domains. Such unity is conceptually associated with balance and harmony both within physical and metaphysical worlds. Indeed, continued human existence is predicated on the maintenance of cyclic cosmic balance, a balance that both affects and reflects earthly conditions. Humans act to maintain cosmic harmony through ritualised reciprocity (1999: 480).

Bound to the principle of equilibrium is the idea of *reciprocity,* which has long been recognised as fundamental to indigenous cultures throughout the world. Carrasco (1990) has clearly described this principle in the Mesoamerican context. In the Mayan world, the relationship between humans and the entire universe is characterised by interdependence. Life is a sacred gift from the deities that humans are responsible to nurture. This nurturance forms an essential part of the mutual relationship. Humans and gods are bound to each other by mutual care and nurturance; the gods create humans, who are therefore in their debt. Ongoing human existence depends on the generous gifts of life, which the gods continue to dispense through children, germination, rain, sunshine or the supply of animals. But the gods are also dependent on humans to care, nurture, acknowledge and renew their powers. With regard to the nature of humans' relationship with the non-human world, Wilson (1995) argues that the traditional production system of the *Q'eqchi'* is largely based on this ideology of reciprocal exchange. Participation in the reciprocal process of planting and harvesting is an archetypical feature of membership. Through this symbolic relationship of reciprocity, they establish what is essentially a social relation with the elements of the inhabited landscape that includes responsibilities and obligations of nurturance. The most obvious example of this familial affinity is the term *Madre Tierra.* Like many other indigenous groups throughout Latin America, the *Q'eqchi'* refer to *Mother Earth* as the one who gives life and provides the essentials for human subsistence:

Nuestra madre Tierra (loq' laj na' ch'och*) nos nutre, nos protege, nos acuna y nos perdona. Cada vez que la atacamos nos perdona, así como todas las madres también perdonan a sus hijos. Pero no olvidemos que la soberbia y la codicia de estos, sus hijos inconsecuentes, la hieren, causándole cada vez que la atacamos heridas profundas y sangrientas que paso a paso van convirtiéndola en desierto* (Queiros et al. 2000: 28).[41]

Finally, the fourth essential principle distinguished by Hatse and De Ceuster (2001a) implies the notion that all is *material* and *spiritual.* The belief that all life forms, including human beings, land, plants and animals, forests, mountains and rivers, houses and food share material and spiritual features, includes the view that all elements are seen to be the visible expression of cosmic principles. That everything is saturated with spiritual significance points to an animistic perception of the world. As a mode of identification, animism endows natural beings with human dispositions and social at-

[41] »Our mother Earth *(loq' laj na' ch'och)* nourishes, protects, fosters and forgives us. Every time we offend her, she forgives us, just as all mothers forgive their children. But we should not forget that the haughtiness and the greed of her inconsistent children do hurt her, causing profound and bloody wounds every time we attack her that gradually will convert her into desert« (translation by the author).

tributes. Each community knows good and bad spirits linked to significant locations of the inhabited geography. The elders are believed to have the knowledge of how to live in harmony with these invisible beings. In this respect, their function is to reconcile individuals or the group to the spirits, their ancestors, themselves, nature and God. A lack of respect for the other forms of life is considered a sin. In general, all these principles and values embedded in the indigenous cosmovision are intimately related with the natural world. The Mayan spirituality, as Secaira (2000) puts it, is characterised by a continual experience of God, manifested in signs and messengers like spirits, persons, dreams, plants, animals and other natural elements. All beings possess visible and palpable aspects as well as an invisible and transcendent dimension that reveals itself in everyday life. Humans are immersed in the living totality of the cosmos and unified by divinity in a condition of sacredness. Nature is venerated for being the manifestation of divinity, which implies that human behaviour toward nature is motivated by integration, not by domination. This principle inherent to the indigenous worldview will be further exemplified in the next sections that highlight symbolic expressions primarily bound to agricultural life.[42]

Fig. 5.12 Graffiti in *Cobán – for mother earth the fight goes on*[43]

[42] For further accounts on the spiritual world of the *Q'eqchi'*, see Carlson and Eachus (1977) and Estrada Monroy (1990).

[43] *Mother Earth* has become a prominent slogan of the pan-Mayan movement fostered by political and social activists.

5.2.2 Agricultural symbolism

And so then they put into words the Creation,
the shaping of our first mother and father.
Only yellow corn and white corn were their bodies.
Only food were the legs and arms of man.
(Popol Vuh) [44]

The *milpa* cycle is an example of a cultural framework for resource management that carries considerable symbolic meaning. Within this productive sphere, maize represents one of the most common cultural markers of Mesoamerican societies and provides a means to understand the links between religious and economic realms (Flores Arenales 1999: 141). For the *Q'eqchi'* and other Mayan groups, spiritual links to nature are particularly expressed in beliefs relating to maize. Building on the myth that the first humans originally were made of corn, the people have a strong sense of identification with their *milp*a and it is of great value to have one's own land on which to cultivate maize, because doing so is a vital aspect of cultural identity; it provides economic security and maintains the relationship with the local landscape.[45] This sense of identification finds a linguistic equivalence in the expression **nink'alek* which translates to ›*I clear the milpa*‹, but literally means ›*I convert into milpa*‹ (Hatse & De Ceuster 2001a: 53). Likewise, it became evident in the words of a young informant in *San Benito* who said: »*Without maize we cannot live*« (field notes, 2002). Maize is the essence of life or, as Nigh puts it, the »central axis of community cultures« (2002: 456), from which the entire cultural, social and religious life of the *Q'eqchi'* evolves. As mentioned above, the term *Q'eqchi'* originally refers to the common language rather than to the entire ethnic group with shared cultural attributes. The people refer to themselves as **ral ch'och*, which means »sons and daughters of the earth« or as **aj k'aleb'aal*, which can be translated as »people of the cornfield« (Wilson 1995: 309).[46] As these expressions indicate, cultural identity is linked with location and points to the significance of maize and associated activities. Its production is the primary work of the men, just as the processing of the grains is one of the main occupations of the women. All informants we worked with considered the cultivation of maize as a highly esteemed and preferred occupation.

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[44] Cited in Carrasco (1990: 24). In addition to the remains of ceremonial centres and iconography of the writing system that survived the conquest, a series of documents remain from the colonial period, including such accounts as the *Popol Vuh*. This is the *Book of Council* of the *Maya-Quiché*, discovered in 1701 in the western highlands of Guatemala. It contains information about the indigenous worldview, related symbols, ritual actions and human destiny on earth and in the afterlife as perceived in the Maya religion of pre- and post-conquest times.

[45] According to the Mayan genesis, humans were not created first. Plants and animals were the first beings and they later helped in the creation of humans (Montejo 2001). The *Popol Vuh* describes the story of the creation of humans: after two failed attempts to create the human body from clay and wood, God finally succeeded in moulding the first Maya, four men and four women, out of maize dough (Gómez & Pacay Caal 2003).

[46] It is worth mentioning here that the *Q'eqchi'* word for ›person‹ is *kristian*, which is derived from the Spanish *christiano*.

As the worldview centres on the idea that the land is the source of human life, the planting of maize is more than an activity of economic production; rather, it comprises a relatedness that implies the vision that the land and the maize themselves are spiritually alive. The understanding revolving around maize is but one of many examples of how indigenous people relate to natural elements. It has been emphasised by anthropologists that many plants represent cultural as well as biological artefacts that highlight the intimate connection between people and their local environments. Scholars like Dudley and Balée (2005) observed that human cultures have been widely conditioned by the plants occurring in their environment. Plants from the natural world are incorporated into the cultural world, whereas humans may be ›turned into plants‹. The origin myths and creation stories of many cultures invoke the mystical properties of plants. They have been perceived and used as fundamental markers of mythology, divinity and ritual. Frequently, indigenous people believe themselves derived from particular plants. Their life cycle provides a metaphorical counterpoint to human existence; while human death results in a return of the body to the soil, plants emerge from the earth and represent the eternal cycle of decay and rebirth. The claim that salient plant forms and botanical processes offer material for symbols, metaphors, mythologies and legends, becomes more than evident in the Mayan context. Maize is the most important food staple and simultaneously a central metaphor for life. The seeds symbolise the nourishing power of nature and the continuity of life. As such they are a critical element in the life cycle of crops and humans and treated as sacred gifts that traditionally were exchanged but could not be bought or sold.

Fig. 5.13 If the community has no mill, women prepare the **nixtamal* (dough) on a **metate* (grinding stone)[47]

[47] Women spend large parts of their time grinding maize for the preparation of *tortillas*. In the morning, they commonly get up at 4:30 to begin with the process, which takes about two hours.

In terms of further symbolic representation, the centre of the cornfield symbolises the entire *milpa* in the same way as the *milpa* symbolises the community, and in a wider sense even the entire cosmic context (Hatse & De Ceuster 2001b: 90). Responsible human action is carried out with consciousness of this linkage. Successful farming depends on maintaining a harmonious relation with cosmic forces through a series of rituals associated with agrarian activities. Gómez and Pacay Caal remark that Mayan farmers are convinced that for a good harvest, not only knowledge and experience but also »the heart of a good person« (2003: 204) are needed. And it is for achieving this state of being that performing rituals is considered imperative. Commonly, the agrarian rituals are performed as prayers directed at the four cardinal directions, each being associated with a specific colour. As an elder informant in *San Benito* explains, these divisions of the world build the four corners of the universe. The east, where the sun rises, is associated with red and the beginning of life as divine entity. The south, where ›the air comes in‹, is associated with yellow. The west, where the sun sets, is associated with black and the north where ›the air goes out‹, is associated with white.[48] The four corners are thought of as a seat of the guardians of the field, preventing the entrance of animals and adverse forces that could damage the crops. The terrestrial surface is distributed into sectors that part from an imaginary centre and extend toward the four directions. Bound to this spatial pattern is the chronological significance of each of the diverse cosmic sectors. As in many other religious traditions, the *Q'eqchi'* consider time to be linked to celestial movements. Rather than being an abstract concept, temporality meets with an eternal dynamic of space and is perceived as a cyclical motion. In ancient times, Carrasco (1990) argues, time was closely observed and each day was considered loaded with celestial and divine influences that determined the inner character and destiny of a person and actions carried out at specific times. According to the findings of Villa Rojas (1988), the attitude toward the temporal dimension of human existence continues to operate as a determinant factor on all levels of daily life. The principle of balance has both spatial and temporal correlates in celestial movements and the agricultural cycle.

The notion that life on earth and the larger cosmos are interconnected is reflected in a deeply practical knowledge of the celestial sphere that the Maya have developed and passed down from generation to generation. The entire agricultural life is organised around the cyclical appearance and regular motion of the sun, moon and the stars. Among the *Q'eqchi'*, the farmers read the apparent yearly journey of the sun, following its daily position rising or setting along the horizon to schedule their agricultural and ceremonial activities or to predict the best times to gather wild foods or to go hunting. Similarly, revolving cyclical patterns of the moon define activities related to the *milpa*. Throughout the agricultural year, the farmers asses the issue of crop tim-

[48] The directional symbolism dates back to the *Popol Vuh*. For details, see Villa Rojas (1988). With regard to the symbolism of colours, blue and green are also considered important colours as they signify the sky, the environment and the centre (Flores Arenales 2001: 54).

ing in accordance with the lunar cycle.[49] Activities such as seeding, planting and harvesting follow calendrical decisions and are undertaken during the full moon (**wara po*). This phase is said to promote fertility and crops that are more resistant to plant diseases and plagues.[50] An informant explained that if the seeding is not carried out at this time, the plants will grow high and will be torn more easily by the wind. The cutting of wood for house construction and the gathering of food and medicinal plants are also carried during the full moon. In contrast, root crops such as yucca are planted during the new moon (**al li po*) and honey is collected at this time as well. An informant commented that if the seeding of maize would take place during the new moon there will not be a good harvest. If planted at this time, the crops tend to be susceptible to insect plagues and the stalks are at risk to be bent by strong winds. This also applies to the cutting of timber; if done during the new moon, the wood is said to be more vulnerable to damage caused by termites and other insects. Likewise, the seeding of vegetables and trees has to be completed when the moon is full or waning in order to ensure growth and fertility. The harvest of maize, beans, rice and citrus fruits takes place during a waxing or full moon, otherwise the yield would rot quickly. Farmers prefer to do agricultural labour during the period of the waning moon, which is generally considered to be a time of repose. In conversations, the moon and the sun were associated with strength, resistance and renewal.

As with the celestial cycle, so are the world of humans, animals and plants renewed constantly in a system of sacrifices, pilgrimages, songs and dances. In particular, the outlined defining elements of the indigenous cosmovision, the influence of the specific local landscape upon the culture and the intimate attachment of people to their land find corresponding symbolic expressions in ritual performances that function to improve or restore harmony if it is disturbed. As has been indicated by Rasmussen (1993), the term *ritual* derives from the Sanskrit word *rita* signifying ›order‹. In his account *Cosmology and Ethics* he further approaches the term by writing: »Telling the arching cosmic story, learning the great narrative and giving it ritual expression, is the ›rite‹ which offers the ›right‹ ordering of existence and the guidance for living the

[49] Knowledge on the moon's influence can be traced back to pre-colonial times. For thousands of years, celestial movements had been observed by the ancestors of the present day *Maya* and led to sophisticated knowledge about calendrical regularities and appropriate seasons for sowing, harvesting, hunting etc. For details on this topic, see Hatse and De Ceuster (2001b: 17ff.). The 260-day Mesoamerican calendar is still used today among some of the Mayan groups to structure agricultural activities. Villa Rojas (1988) gives an account of the cultural continuity of the calendar and its influence among the *Ixil*. He observed that it is not just a means of measuring annual solar time; it also structures the ceremonial cycle of daily life in the spheres of worship, agriculture and social relationships. It influences behaviour in connection with birth, marriage, death and livelihood. In spite of the limited survival of the ancient calendar, the chronological concepts continue to be attached to their manifest preoccupations over the ties that bind humans to the eternal flow of time. For a general account concerning achievements in the field of astronomy, chronology and mathematics developed in pre-Colonial times, see León-Portilla (1988).

[50] This knowledge is based on the observation that there is likely to be more rain at the time when the moon is on the wane, which helps the seeds to sprout. The moon phases not only have an effect on the water content, but the moonlight also has an effect on the growth of the plants. For more details, see Hatse and De Ceuster (2001b: 37f.).

›right‹ way. Ethics and cosmology are inextricable indissoluble« (1993: 178). Following this understanding, an important role of rituals is to symbolically restore and maintain the cosmic order or the ›order of life‹. At the same time, rituals can be seen as what Berkes et al. describe as »mechanisms for cultural internalization« (2000: 1256). Knowledge and social institutions require such mechanisms, so that learning can be encoded and remembered by the group. Rituals, which are a visible cornerstone of Mayan spirituality and express the reciprocal relationship that the peasants try to maintain with nature, help the people remember the values and rules of their society. Among the *Q'eqchi'*, rituals mark significant points in the cultivation cycle. Foremost, agrarian rituals practised at the time of site selection, slashing, sowing, weeding and harvesting are integral to the interaction between humans and the natural world. These expressions of the indigenous cosmovision are also interlinked with other subsistence activities. Through rituals, which are inseparable from everyday knowledge of fertility and health, the social, economic, spiritual and cosmological spheres of the *Q'eqchi'* are intimately related. In the following, the focus will centre on agrarian rituals. In addition, there are numerous other rituals practised at particular occasions such as birth, marriage and death. There are healing rituals and rituals performed at festive occasions of religious significance such as the local patron saints' days. Further specific ceremonies are carried out, for instance, to inaugurate a new construction or when droughts or floods threaten the *milpas*. The »exchange of spiritual food« between humans and spirits, as Dudley and Balée (2005: 621) have termed the principle of reciprocity, becomes obvious in the agrarian rituals practised among the *Q'eqchi',* as will be shown in the following.[51]

5.2.3 Ritual practice

Each culture has its own core symbols. (Wilson 1990: 41)

Certain phases of the cultivation cycle pertaining to site selection, slashing and burning, planting, weeding, clearing and harvesting are accompanied by particular ceremonies. The central ritual in this context, the so-called **mayejak,* is a ceremonial expression of particular importance within the realm of customary practices. It is directed at the earth deity **tzuul taq'a*, which has been defined by Wilson (1995: 53) as a »core image« of the *Q'eqchi'* culture.[52] The *mayejak* forms a central part of a shared system of community worship. It is an obligation that needs to be fulfilled in order to ensure a

[51] For writings dealing with ritual practice, see the studies by Wilson (1995), Parra Novo (1997) and Cabarrús (1998). For a general account dealing with ritual knowledge, see Jennings (2003). The study *Ritual and Religion in the Making of Humanity* by Rappaport (1999) is also to be emphasised here.

[52] In the literature, the term *mayejak* is commonly translated as ›sacrifice‹ or ›offering‹. Literally, *tzuul* means mountain, *taq'a* means valley. The term *tzuul taq'a* exemplifies a phenomenon that Cajete (2001) described when referring to indigenous languages that are replete with environmentally derived references based on the kind of natural characteristics and experiences people have had living in close relationship with their landscape.

good harvest and the protection from the guardian spirit of the hills and the valleys, as one of the elders of *San Benito* explained. If not performed, the growth of the crops will be threatened and the harvest diminished. In the words of another informant, »*the tzuul taq'a is like a God who provides water so that the crops may grow, like a couple, man and woman at once. Before planting, harvesting or cutting timber we ask for permission by praying to the tzuul taq'a*« (field notes, 2003). All of nature, including the land, forest, plants, animals and springs, is considered the property of the *tzuul taq'a*. In other field conversations, farmers expressed their belief that the *tzuul taq'a* resides in mountain caves, providing water, crop and soil fertility. They explained that any action that threatens the beings owned by the *tzuul taq'a* is prohibited and even punished. Interventions such as planting, harvesting, hunting, fishing or gathering forest products may be followed by negative consequences if not conducted ›in the right way‹, which implies the need to ask permission of the deities. These have, according to Wilson (1990), two main functions in rituals: to give license and to participate in the renewal of fertility. As they provide human health and crop fertility, the *Q'eqchi'* create a reciprocal relationship with the *tzuul taq'a* through sacrificial offerings. As mentioned, sacrifice is a major element in the cosmovision. It is done in order to »renew the cosmos« (Carrasco 1990: 153). The ceremonial rejuvenation of time, human life, agriculture and the gods is done by symbolically retracing the cosmic image of the centre and the four quarters. In this way it is believed that sacrifice establishes and maintains the relationship of balance between humans and the local landscape. Or as Wilson (1995: 88) formulates it, it symbolically »inscribes« the land tenure of the community and individual households onto the landscape. According to Wilson, the *tzuul taq'a* ties together various cultural domains encompassing human and agricultural fertility, gender, health care and ethnicity. In his view, it is a recurring symbol that disappears and emerges reinvented in each strategic context and should be seen as a fluid and continually redefined figure, rather than a legacy of an ancient past. By referring to its dualistic nature, he further explains:

The mountain spirit is both male and female, mother and father, good and evil, deity and demon, spirit and matter. S/He unifies the earth and the sky, controlling events on land, as well as the movements of the celestial deities. His/her character is authoritarian and open to manipulation. S/He is both kind and vicious, but always unpredictable and capricious. The Tzuultaq'a figure envelopes all ethnicities, being a Mayan and a Ladino. Yet these dualities always appeal to a greater whole, as twin aspects of a unitary vision of the sacred (1990: 3f.).

In the rural communities, the ›mountain cult‹ is highly localised. The *tzuul taq'a* who resides in mountains located near the villages are individually named and believed to be the true owners of the landscape. Although the Catholic concept of God may have determined aspects of institutional and ritual life, it is not essential to the everyday life of the people. This is governed, as Wilson writes, by the *tzuul taq'a* who are perceived as »god's sentinels here on earth, guarding the fruits of creation from human abuse« (1995: 68). For Siebers (1996), the idea of the *tzuul taq'a* is related both to the central mountains in the *Q'eqchi'* heartland and to the more general idea of the natural envi-

ronment. As they control the land and all who dwell upon it, both the central and the local *tzuul taq'a* symbolise power. Similarly, Hernando Gonzalo denotes that the *tzuul taq'a* »is not just the god to whom everything belongs, the source of all order […] not a category separate from the manifestations of nature, but *nature itself*« (1999: 260; emphasis added).[53]

In conversations about this realm, informants often used the Spanish term c*ostumbre*. If they comply with their customary obligations, the *tzuul taq'a* would reward them with abundance and protection. As to the cultural importance of the *mayejak,* a farmer said: »L*o más importante es que da la tierra […] lo hacemos para que no termine la vida*.« Of primary importance is that the earth provides. The customs need to be performed to assure the continuity of life. A good harvest, protection from plagues and the health of the crops all depend on good relations with the *tzuul taq'a*. The same informant explained that the *mayejak* is performed both by single households as well as by the community as a whole. In the previous year, he recalled, the yields had been poor because the community could not agree on performing the *mayejak* at village level.[54] The individually practised ceremony is realised at the beginning of the *milpa* cycle to ask the *tzuul taq'a* for permission to sow. In the night before the planting, the head of the family puts the seed on the house altar. Accompanied by prayers, candles and **copal pom*[55] are burnt and chicken soup, cocoa or *tamales* are offered to nurture the seeds. This »feeding the seed«, which is called **wa'tesink,* has the function of reactivating the life of the spirit of the maize to let it grow well (Siebers 1994: 226). The next morning, the farmer goes to the plot to be cultivated and burns candles and *copal pom*. He then sows the first few seeds and puts some cocoa and meat or blood of a chicken or turkey on the ground at the centre of the field, thereby asking the *tzuul taq'a* to protect the seeds and the plants. Then the sowing can begin with the help of a group of neighbours and friends. When the whole *milpa* has been sown, the group shares a meal prepared in the meantime by the wife of the *milpa* owner.

According to Flores Arenales (1999), the maize planting ceremony is one of the most important annual ritual activities and ensures not only the economic reproduction of the household unit but also renews bonds of kinship and friendship through labour reciprocity and collective celebration. While talking about this procedure, an informant explained the meaning of the above mentioned symbolic elements, to which the *Q'eqchi'* attribute particular significance. First of all, *copal pom,* which is burned at almost any ceremony, is said to serve as a ›messenger‹ to carry the prayers to the *tzuul taq'a,* the saints and to God. Candles, symbols for light and life, if positioned in the centre of the field, represent the heart of the *milpa*. Departing from the centre, the

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[53] For an early ethnographic account describing the beliefs and prayers directed towards the *tzuul taq'a,* see Sapper (1998 [1904]). More recent insights into this cultural realm have been provided by Parra Novo (1997).

[54] In regard to appropriate timing, Grünberg (2000) mentions that the elders dream of the *tzuul taq'a* and seek advice when the activities and rituals have to be carried out.

[55] *Copal pom* is a dried and hardened resin obtained from the tree *pomche'* (*Protium copal*). As a ritual purifier it is widely used for sanctifying any space and expunging bad spirits.

four cardinal directions, associated with different colours, indicate the integral world-view. Flowers are signs of wealth, natural abundance and the human-nature relation. Cacao is another sacred symbol that stands for harmony and peace. Animals like chickens and turkeys are associated with death and transformation for generating new life. Blood is a substitute for death, life and passion. Combined with the rituals are behavioural regulations and taboos like abstinence, fasting and avoiding certain food items. As one of the elders in *San Benito* said, they practice sexual abstinence thirteen days before and thirteen days after the *mayejak* takes place. If these codes are ignored, the harvest will be poor or damaged by animals. Likewise, misbehaviour can cause human illness as the life cycle of crops and humans are believed to be intertwined.[56]

Unlike Siebers (1996), who observed that such practices were not relevant for cash crops, the *mayejak,* as performed by the farmers we worked with in *San Benito,* had also been adapted to newly introduced crops such as cardamom. A farmer commented on this practice: »*Hay que hacer un mayejak para que sale el cardamomo, para que cresca, se sana. Si no hacen mayejak no sale y viene enfermedad. Eso es costumbre.*« In his experience, a *mayejak* was necessary for the cardamom to grow well. Otherwise, the plants would not thrive and would be likely threatened by disease. This is custom, as he asserted. By contrast, an informant in *Roq-há* said that the *mayejak* was done exclusively for traditional crops like maize and beans. Since *Roq-há* is quite diverse in religious terms, he reported that only the 15 Catholic families in the village would practice the ritual. In reference to the protestant families, he commented: »*Los creyentes nunca hacen mayejak*« – *the believers never do mayejak* (field notes, 2003).[57] Among evangelical families, Siebers (1994) observed that God often substituted for *tzuul taq'a*. At the planting of maize, for instance, most of them did not perform customary rituals as described, but felt the need to pay ritual attention to this particular moment, to ask God for protection and a good harvest.

Among the Catholic community members to whom we talked, other collective rituals were performed by the eldest men and women at particular sites of worship such as lagoons, riverbanks, mountain tops or caves. The latter are considered to be sanctuaries, as it is believed that the *tzuul taq'a* reside therein and guard the forest animals and control the climate, as an informant from the highland community of *Xucaneb* explained. At the time of sowing, elder members of the community would go to a cave to pray for a good harvest. Again, it is essential to provide *copal pom*, candles, cacao beans, and animal blood to the land and the spirits of the elements. Likewise in *Roq-há*, where five days before the seeding of maize takes place, a group of ten male elders would go to the mountain. Women are not involved, because »*the way to the cave is difficult, there are many rocks, mud, ascents and steep descents*«, as was explained by one elder informant. By contrast, in *San Benito*, women were said to participate in ceremonies held at such mountain sites. In both communities, the elders gather in the village

[56] Most of the cultural codes and taboos (**awas*) are idiosyncratic and particular to each community (Wilson 1995: 109).

[57] For an account of the history of the Catholic Church in Alta Verapaz and the influence of Protestant churches on traditional patterns of *Q'eqchi'* culture, see Wilson (1995: 158ff.).

chapel, called *ermita,* in the night before going to the mountain. The ceremony consists again of prayers and offers.[58] On such occasions, Siebers notes that all those who are considered to be important in the universe are addressed, »including God, the known Tzuultaq'as, the saints, the air, the moon, the sun, the village, nearby villages, the priest, the bishop, the pope, the trees, the animals and so on« (1994: 223). Here, it becomes obvious that the rituals are religious expressions in which elements of pre-Hispanic and Christian origin merge. Wilson refers to such syncretic patterns in terms of a »fundamental unity of the sacred« (1995: 79). He further comments:

The mediating role of the mountain spirit might suggest that God and the tzuultaq'as are separate, but I tend toward the view that they are overlapping and indivisible. When asked how many gods there are, traditionalists had varying replies, from ›only one‹ to ›dozens‹. The issue is a nonissue for them, and they change their answers from time to time. The supernatural is one complex, and the figure within it express only different aspects of the whole (1995: 79).

This observation also applies to the significance of saints within the religious realm. As the following picture (Fig. 5.14) illustrates, Catholic families have commonly installed an altar in their home consisting of images most often adorned with flowers, where candles and incense are burned on special occasions. The saints and other figures from the Christian tradition are invoked alongside deities such as the *tzuul taq'a.* Both occupy a similar discursive position in that they mediate between the land and the sky, the people and their God (Wilson 1995: 60).

Fig. 5.14 Religious practice involves the veneration of saints

[58] A detailed description of rituals related to the planting of maize is given by Carter (1969: 71ff.).

Each village has its patron saint, who is believed to promote the unity of the entire community. Many villages such as *San Benito* and *St. Lucía* have been named after a saint. Others, like *Roq-há* have been given names derived from the local language (*roq* means shell and *há* is the *Q'eqchi'* word for water). That villages are frequently named after an aspect of the sacred landscape, has also been mentioned by Wilson (1995: 21), who notes that surnames are also often specific to a locale, while Christian names are traditionally derived from Spanish. According to his findings, there is linguistic evidence that *being* in terms of ›location‹ (as expressed by the Spanish verb *estar*) is much more important than *being* in terms of ›essence‹ (as distinguished by the verb *ser*). The *Q'eqchi'* language does not have a verb for *being* in the latter sense, but only for ›to be located in a place‹ (**waank*). This is reminiscent of the aforementioned comment made by Strang that for indigenous people, *who* they are and *where they are from* are not divisible. The nature of this identification with land creates an »unparalleled collective sense of belonging« (1997: 159f.). The importance of location is the subject of the next chapter. It will be shown that the human engagement with the landscape is endowed with agency and personhood and that places and identities are mutually constituted.

Fig. 5.15 ›Home‹ as drawn by a female informant in *Xucaneb*

5.2.4 The sacred landscape

The context of life is a woven fabric of dialogues, enduring and ephemeral. (Whiston Spirn 1998: 17)

As has been shown, customary religion is intimately related to the natural environment and agricultural activities. Humans attach values to space through social and personal experiences. Thus, no place is devoid of social meaning and many metaphors are grounded in relationships with the landscape. Such metaphors modify human perception, thought and action. In its culturally mediated form, landscape becomes expressed in the imagery of sacred symbols. As has been argued by Strang (1997: 78), each cultural group interacts with the landscape in a way that is consistent with the particular beliefs and values that connect each of their cultural forms into a coherent whole. In view of the multitude of hills and valleys as characteristic salient features of the topography of Alta Verapaz (Fig. 5.16), the focus on the mountain in the spiritual realm of the *Q'eqchi'* is not surprising. The significant role of sacred mountains as influential icons in various manifestations has been described as essential concept of Mayan communities throughout Mesoamerica.[59] As they are believed to be alive and the physical body of the *tzuul taq'a,* the mountains are more than landmarks defining the boundaries within which community life takes place. Among the *Q'eqchi'*, they have the quality of **wiinqilal*, or ›personhood‹, which is a concept that applies only to people and mountains (Wilson 1995: 53).

Fig. 5.16 The mountainous landscape of northern Alta Verapaz

[59] Secaira (2000) mentions that the mountain-valley deity of the *Q'eqchi'* has equivalents among other Mayan groups. The *Kaqchikel*, for instance, call them *Juyub'taq'aj*, the *Ixil* refer to them as *Vitzchaq'ala.* On this issue, see also *The Life and Bounty of the Mesoamerican Sacred Mountain* by Bernal-García (2001). In his article about religion, ritual, and agriculture among the present day *Nahua*, Galicia Silva (2001) notes that specific mountains play the role of a collective totem, the protective substance of a group.

While Wilson (1990: 3) writes of a »religious geography« inhabited by spiritual beings, Hernando Gonzalo refers to landscape as a »mythical place« (1999: 259). In her article dealing with the perception of landscape among the *Q'eqchi'*, she describes the *tzuul taq'a* as an important mechanism for communicating with the sacred:

That is, the landscape is sacred in itself, and just as Q'eqchi' do not differentiate an economic or political sphere within the community's life as a whole, they do not isolate space as an objectifiable, quantifiable, measurable dimension. Space, in their case, is the same as landscape (1999: 259f.).

According to *Q'eqchi'* mythology, there are 13 principal sacred mountains in Alta Verapaz.[60] Pilgrimages and ritual offerings to these venerated mountains are common. For Siebers (1996: 58), these central features that shape the *Q'eqchi'* heartland are symbols of allegiance to the region as a whole. For Wilson (1990: 34), the religious symbolism of the mountains is a central image of traditional identities. The local geography is a cornerstone of community identities, which are imagined through the relationship with the local sacred landscape. The relation with the landscape engenders a perception that it is part of the people and vice versa. Identity is partly formed by the locality, which is often the name of a mountain. The names of many communities are the names of mountains or springs, which themselves are considered manifestations of the mountain spirit. Following Strang (1997), who also points to the fact that the first step taken by newcomers anywhere is to name the country and its important places, it does not astonish that throughout Alta Verapaz, villages are frequently named after the nearest sacred mountain.[61] *Xucaneb*, one of the highland communities we stayed in, is named after one of the most important mountains in the region. Located southeast of the department's capital, the ›king of the mountains‹ is the highest peak of the mountain chain that separates *Cobán* from the basin of the river *Polochiq*. In the course of religious intermixture, it attained sainthood by becoming *San Pablo Xucaneb* (Wilson 1995: 60).[62] As to the meaning the *Q'eqchi'* ascribe to the mountains and the *tzuul taq'a* dwelling therein, Siebers writes as follows:

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[60] The symbolic meaning of this number, which stands for plenitude and perfection (Parra Novo 1997), is also found in other realms of the indigenous cosmovision. According to Wilson (1995), 13 is related to both the number of days in the Mayan month and the number of levels in the sky. For further details on the numerological symbolism, see Hatse and De Ceuster (2001a). According to the finding of Flores Arenales (1999), many people and especially the younger generation are not able to recite all 13 major *tzuul taq'a* in the region. Secaira (1992) mentions that there are more than 13 mountains worshipped as sacred places of local importance. In interviews, a total of 48 different *tzuul taq'a* were named to him, most of which correspond to hills located in highland Alta Verapaz.

[61] The mountain spirits are involved in the construction not only of community and ethnic identities but also of gender identities. As the mountain is considered to be male and the valley female, ideas of masculinity and femininity are bound up with formulations of collective identity (Wilson 1995).

[62] The mountain is also referred to in a legend that has been translated by Burkitt called *The Hills and the Corn* (originally translated as *A Thing that happend in ancient times, through the stealing ov Shukanéps dauter*). The author comments on the tale: »The main business ov the tale iz a hiding and recovery of corn. The persons are hils and animals« (1920: 186).

This way of conceiving their relations with nature makes the Q'eqchi'es appear as active and decisive actors while the natural surroundings are symbolically transformed into a reactive counterpart that can be trusted and dealt with. The image which the Q'eqchi'es have constructed of the Tzuultaq'a allows them to ›solve‹ their dependency on the arbitrary natural surroundings in a symbolic way: they convert nature into something that depends on them rather than the other way around, i.e. on their compliance with the contract they have with the Tzuultaq'a (1996: 154).

In my conversations with informants, the forested and mountainous areas have been described as central points of reference, providing the *Q'eqchi'* with a sense of security, orientation and identification. Villagers referred to the mature forest in general by using the Spanish term *montaña*, which literally means mountain, just as they talked of other elements of nature in terms of *tierra* (land) or *mundo* (world) rather than by using the word *naturaleza* (nature). As in the case of many indigenous cultures, there is no term in any Mayan language that corresponds directly to our notion of ›nature‹ or ›environment‹ (Nigh 2002: 455f.). The land is the base of all cultural values and all relational dimensions of human life. It is the foundation of subsistence, social organisation within the family and the community and the relationship with God. Youth and elders, men and women, would all often highlight the importance of the forest as a source of water, animals and fertility.

A concern frequently referred to in both study areas pertained to the diminishing forest cover. Many farmers expressed their awareness of the ongoing deforestation and agreed about the need to halt this process. Repeatedly, informants made associations with observed climate changes. In the highlands, an elder man had observed that the climate had altered during the past decades: »*The climate has changed due to the clearing of the forests. Nowadays it's perceptibly warmer than in former times*« (field notes, 2002). Several farmers accentuated their willingness to maintain parts of their parcels as forests for future generations. A younger informant in *San Benito*, who stressed that he did not believe in the ›customs‹, expressed his wish to conserve the integrity of the forest: »*I don't like to cut the trees as they will serve my children. For this, I prefer to plant new ones so that the forest remains for them.*« In general, *la montaña* is seen as source of life, water, health and well-being. When talking about the significance of the forest for her community, a woman in *Xucaneb* explained: »*El bosque sirve para sombrar nuestra vida, para el agua. Si no hay bosque, no hay vida.*« In her view, the forest serves to shade humans' lives. It is also essential for the supply of water. If there is no forest, there is no life (field notes, 2001).

Beliefs associated with mountains and forests may grant protection of a wide range of species of animals and plants. Practices such as rituals intended to maintain sanctuaries can work to preserve biological integrity. In many cases, taboos apply to such particularly vulnerable sets of natural resources. Breaking a taboo can result in sanctions such as illness, loss of crops or drought. These regulations may be interpreted as social mechanisms for local conservation practices. In the Mayan worldview, trees play an important role. According to the ancient belief, cosmic trees grow on each of the four corners and in the centre of the world, sustaining the heavens. The

Ceiba (*Ceiba pentandra*), which is notably the tallest tree in the region, is one of these holy trees. Among the *Q'eqchi'* it is still considered a symbol linking earth and heaven and worshipped as a physical expression of life, growth and historical continuity. It has been discovered that the ancient Maya told their histories and cosmologies in ›pictorial programmes‹ carved and painted on buildings throughout their ceremonial centres. One of these cosmic symbols that organises and renews the world is the sacred, flowering tree. This icon reflects a worldwide pattern of religious symbolism, in which the cosmos is linked to a tree or some other form of vegetation. Carrasco writes that the symbol of the *cosmic tree* represents the »world as a living totality, periodically regenerating itself and, because of this regeneration, continually fruitful, rich and inexhaustible« (1990: 100).[63]

Fig. 5.17 The branches of the *Ceiba* hold up the sky and the roots keep the earth together

Taboo associations attached to mountains, caves, particular species of trees like the *Ceiba* and groves such as the *reserva* the villagers of *San Benito* have not incorporated into their agricultural system have played an important role in the protection of ecosystems by the communities. In *Xucaneb,* a woman said: »*There are Maya ruins and a cave up in the mountain. It's a sacred place. The elders go there to pray when there is no water.*« She explains that the mountains are seen as divine sources of water and life. The earth and rain represent vivid entities and during the rituals a relation of respect and reward has to be established with the mountains, caves and sources of water (field notes, 2001).

[63] Anderson (1996) notes that the *Ceiba* is an aquatic symbol because it grows near water and leafs out with the rains. For a general introduction into this field of research in anthropology, see *The Social Life of Trees. Anthropological Perspectives on Tree Symbolism* by Rival (1998).

The caves are also believed to be the home of the afterlife and the place where new life emerges (Flores Arenales 1999: 182). There exist numerous holy caves in the mountains and hills in Alta Verapaz that draw pilgrims from other regions. In this way, the identity based on the collectively constructed landscape is verified and spiritual conceptions that promote biodiversity and environmental awareness grounded in cultural traditions are disseminated. Sacredness for the *Q'eqchi'* has a strong situational aspect and is, according to Wilson (1995: 75), most crystallised in the caves.[64]

Fig. 5.18 Entrance of a cave in Alta Verapaz[65]

[64] For a description of particular rituals performed by the *Q'eqchi'* in caves, see Wilson (1995: 67ff.).
[65] This photo was taken by Alejandro Cacao.

Symbolic elements are not only to be found as cultural expressions in the field of landscape patterns, food procuring activities and rituals related to agriculture.[66] Traditional dancing, for instance, is another form of mythic expression that is also performed in urban centres and repeatedly came across our way throughout our research in the country. Just as rituals and myths are elements that convey cultural understandings, knowledge in the all encompassing sense is also communicated via traditional music and dance-drama. As Carrasco (1990: 29) writes, archaeologists have uncovered figurines depicting dance societies dating back to the period from 1200 to 600 BC. The dancers are dressed in animal motifs such as jaguars, birds and pumas, reflecting the human-animal relationship. The performance of ritual dancing still is widely found in indigenous communities today.[67] In particular, the complex of animal dances as encountered among indigenous peoples throughout the world, occur according to Cajete (2001) as a way of »remembering to remember« relationships.

Animal dances are a commemoratorium of our continued relationship with the animal world. Indigenous dances are not only for renewal and opportunities for remembering to remember; they are also viewed as helping to maintain the balance of all essential relationships of the world. […] The world renewal ceremonies conducted by all indigenous people are reflections of this deep ecological sensibility and sense of responsibility. (Cajete 2001: 627)

Fig. 5.19 Young *Q'eqchi'* men performing the traditional deer dance in the streets of *Cobán*

[66] In many cultures, such orientations are represented in the evolution not only of rituals and mythic themes, but likewise in traditional designs. Traditional art forms are replete with designs that represent people's relationship to animals and plants that have shaped their collective sense of natural affiliation.

[67] In the centuries that followed the conquest, the defeat of the indigenous population and the autonomy of native kingdoms remained strong in ethnic memories and was acted out in the *Dance of the Conquest* and the *Dance of the Moors and the Christians*. In this way, the subordinate population retained their cultural memory (Adams 1988: 284).

Such world renewal ceremonies, as he continues, are ceremonial cycles based on the understanding that people have to continue to remember and perpetuate essential ecological relationships through the life of individual community members and the generations that will follow. Through the cyclical repetition of rituals, people traditionally maintain the memory of their cultural worldview, reproducing the relationship to their places in each generation. Once people break these cycles of remembering, they tend to forget essential life-sustaining relationships. In his discussion dealing with perceptions of nature among indigenous peoples throughout the Americas, he refers to »a dual existence« in the postmodern world, which he further elucidates as follows:

At times, it resembles a kind of schizophrenia characterized by constantly trying to adapt ourselves to a mainstream social, political, and cultural system that is not our own. We are constantly faced with living in a larger society that does not really understand or respect our traditional life symbols, our ecological perspectives, our understandings of relationship to the land, our traditional ways of remembering to remember who we are (2001: 634).

Among others, the cyclical repetition of the *milpa* cycle is a way of ›remembering to remember‹. *Milpa* farming combines multiple functions. As has been shown, the shifting cultivation is not only important in economic terms but simultaneously of major cultural significance because the peasant farmers follow traditional patterns which provide them with a feeling of belonging and identity. Based on the perception of maize as essence of life, the local subsistence production provides social security. Through annual repetition, identity is lived collectively in all daily activities related to agricultural production and associated processes. In this way, the origin of culture is retraced and, as Hatse and De Ceuster put it, the world is recreated continually by humans »in miniature« (2001a: 44). Human society and the agricultural process are seen as set within and dependent upon the cosmic cycles that ensure the process of plant fertilisation, ripening, harvest, decay, death and rebirth. This view, as described by Carrasco, implies that the Maya not only consider the plants and seeds as in need of regeneration, but that the entire cosmos depends on various processes of rebirth; the world is in a continual process of sowing and harvesting, which is conceived of as »a long performance« that hopefully will never end (1990: 98ff.).

To summarise the last part of the *context of meaning*, I have sought to show that humans use symbols as a means of expressing their ideas. Most centrally, it has been illustrated that economic modes of involvement with the physical environment are to be seen as an expression of social relations and cultural values. Among the *Q'eqchi',* the material and the symbolic dimensions of land are perceived as integral aspects of reality. In this way, land embodies culture in both senses of the term: as a site of production in terms of subsistence farming and a site of production in terms of cultural meanings and identity through associations with the local landscape. This even operates within the boundaries of the individual psyche (Wilson 1995: 319). The sitedness of belonging, as Lovell (1999) writes, is constantly re-enacted in order to transcend the vagaries of migration, of movement and of existential uncertainties. The close relationship between villagers and the landscape anchors community identity and strengthens social relations within the villages. Collectively practised rituals are not only performed to strengthen these ties but also to contribute to the reduction of insecurity and to cope with times of transition or crisis. In particular, they play a decisive role in transmitting behavioural habits of practice and attitudes of mind to succeeding generations. Through the ritual practice the communities constantly create and recreate their culture in order to adjust to processes of change and cyclically repeat »collective dramatizations as a way of expressing and renewing their identity« (Galicia Silva 2001: 304).

However, the human-environment relationship is essentially dynamic, it develops through the constant interaction between people and the material world and the symbolic universe of the human mind. It is thus a process of creation and adaptation that also includes the abandonment of practices and beliefs. By applying to Wilson (1993), who argues in his article *Anchored Communities. Identity and History of the Maya-Q'eqchi* that social scientists, unlike their informants, are all too ready to dismiss the past and seeks to inject a more historical and processual dimension into the study of Mayan culture, the next chapter will turn to the transformative character of indigenous knowledge. The families we worked with have to deal permanently with changes occurring in their social and physical environment. These changes derive from many factors and include historical events, political instabilities, social conflicts and economic changes. A number of such currents will be approached in the following. In investigative terms, relatively little attention has been paid so far to the process of diffusion and ways of imparting local knowledge. This fact underlines the view that any understanding should be situated in the larger context of the social space in which the farmers and their families are living and coping with conditions brought about by processes of change. In particular, patterns of knowledge dissemination are influenced by broader socio-economic conditions and historical developments and thus have to be positioned in a social setting that is predominantly in a state of cultural transition.

5.3 The context of change – *the transformational dimension*

Cultural and environmental change are interrelated. (Sponsel 2001: 193)

So far, the foregoing sections have shown that the landscape inhabited by the local communities is formed and characterised by particular land use systems and cultural beliefs that have mutually informed each other. In the following, the attempt to merge practical representations and symbolic configurations will be realised by the endeavour to exemplify the constantly evolving character of indigenous knowledge repertoires. Change of social, economic and physical environments is a critical issue that determines the ways peasants use and perceive natural resources. The chapter is intended to document that the production of knowledge does not reside in category systems or classificatory schemata *per se* but in the processes of human interaction with each other and with their world, leading to the reinforcement or transformation of existing types of knowledge or to the emergence of new forms. Knowledge repertoires embedded in social arrangements are not static, no more than the cultures and communities who have generated them. Farmers are constantly creating and experimenting in response to a changing set of circumstances. Their experiences are a result of knowledge encounters in which local, national and global elements are intricately interwoven. This chapter is about such knowledge complexes. It further looks at ways of imparting knowledge and explores origins of knowledge fragmentation. Finally, it returns to the subject of protected area management and deals with the particularities of knowledge encounters arising in the frame of participatory conservation efforts.

5.3.1 The dynamics of knowledge production

> *[T]he new cannot emerge from imitation, but it can draw on the traditions – a form of holding the environment – that provide gifts to those who follow them.* (Weber Nicholsen 2002: 198)

In general terms, the farmers we worked with have generated sizable understandings of the habitat and growth requirements of many species, seasonal crops and their compatibility with other species. They relate this knowledge to the climatic constraints, soil conditions and other site characteristics of the land they farm. The knowledge has been generated through experimental learning and is passed on through generations, in family and village traditions. Although there is corporate knowledge shared by a majority of the communities, a considerable part is asymmetrically distributed and only held by sections of the population according to gender, age, specialisation and experience.[68] People have areas of particular expertise, and we were often confronted with varying notions within and between different villages. As aforementioned, indigenous knowledge is the result of a continuous process of generation, transmission and adaptation to changing conditions. Being constantly modified by the peasants, it is a dynamic entity permanently re-negotiated between the people and their environment. Despite past and contemporary influences that increasingly undermine local resource use patterns, there remain a great variety of customary practices that contribute to community-based conservation efforts. Although non-traditional economic modes have been imposed and integrated, these are often modified to adhere with customary practices and priorities. Traditional forms of land use remain in practice and are always seen as preferable by the farmers.

However, the study revealed clear evidence for ongoing cultural change among the communities in both study areas. This transformative process affects different realms of the peasants' lives. Most obviously, the transformation of adaptive capacities in the field of agricultural production occurs in the frame of an overall acculturation process through the modernisation of farming practices and incorporation into a market economy. Due to the increased use of chemical products such as fertilisers and pesticides following upon land use intensification and monocropping, traditional techniques to maintain soil fertility or to avoid plant diseases have been widely replaced. Situated knowledge and universal technologies increasingly mingle. This observation also applies to knowledge on plants used for medicinal purpose. Gómez and Pacay Caal (2003) briefly comment on this issue as follows:

[68] As the study concentrated foremost on farming knowledge, gender issues were not a question of primary interest. For this, consider the accounts compiled by Dary (2002), which deal with the topic of gender and biodiversity conservation in indigenous communities of Guatemala and other Central American countries.

The influence of the modern world has left its traces in Maya thinking and agricultural practices. Most farmers in close proximity to roads use chemical fertilisers, whilst many of them have lost the custom of crop rotation. Dependency on chemical inputs is increasing, not only in the fields, but also in the minds of the people. [...] Individualism is replacing collectivism, and the spirit of exchange and co-operation within the communities is faltering (2003: 205).

The dynamic and often inconsistent character of knowledge appeared repeatedly during the field research in manifold ways. The farmers we worked with were not indifferent to the importance of innovations and were particularly interested in experimentation with new crops and plant breeding. Without prior experience, an informant from *San Benito*, for instance, had just started with the cultivation of peanuts (*Arachis hipogeae*). Watermelon (*Citrullus lanatus*) is another recently introduced crop and currently grown by three farmers in the same village. On a minor scale, they plant the crop on about 0.7 ha for which they have to invest at first around 5,000 *Quetzales*. This sum is made up in part of the costly requirement to protect the plants from plagues, for which they are fumigated with eight different ›poisons‹, as the farmers indicate. Eventually, the yield can produce a profit of up to 6,000 *Quetzales*. This also entails that the field has to be watched constantly by a guard. In general, the owner of the plot looks after the field at night to protect the crops from animals and thieves. Subject to the size of the yield, it is later commercialised within the community, sold to middlemen passing by the villages by truck or brought by the farmers themselves to the regional markets of *Cobán* or *Fray Bartolomé de las Casas*. In *Roq-há*, one farmer had started to cultivate sesame (*Sesamun indicum*) without prior experience. The seeds are used for spicing *tamales* and bread. Another farmer from the same village dedicated himself to the cultivation of *chile jalapeño* on a terraced field. He was the only one to employ the technique of terracing, though others had noticed that it results in better harvests but requires more input of time and labour.

In both communities, development organisations such as the *Proyecto Lachuá* and governmental agencies had introduced new crops and technologies.[69] Advanced strains of maize seeds had been disseminated among several villages through a governmental initiative, just as tree seeds were distributed in the course of a forestation programme. In *San Benito*, for example, cashew trees are grown in a tree nursery built by a programme of forest incentives. Although many of these projects have been widely appreciated by the population, reservation was frequently expressed in interviews that such measures were not accompanied by corresponding instruction on the practical application of the proposed initiatives. Apart from mentioning inadequate technical assistance, informants also indicated concerns regarding the paternalistic attitudes of the development agents, who are almost exclusively *Ladinos*.

[69] Historically, no such process of ›development‹ took place in Alta Verapaz; international agencies passed over the isolated area in favour of those with better access to major roads and markets. For a long time, the Catholic Church was the only institution offering assistance in the fields of education, health and agronomy (Wilson 1990: 6).

In the course of field transects, it happened quite often that farmers came up to us and expressed their willingness to broaden their range of produced crops. On such occasions, it was not unusual that an informant would emphasise: »*I would like to plant new crops, but neither do I know of potential crops, nor do I have notions of adequate cropping patterns. Moreover, I lack economic resources to purchase the seeds. Several organisations and projects appeared to tell us what to plant. They stay one day to instruct the villagers and then they disappear. When we plant new seeds or buy animals in the following, it frequently does not work because both die*« (field notes, 2002). In such encounters, it often occurred that farmers would ask us for appropriate technologies that could increase production and at the same time decrease the degradation of the soils. As they had migrated to the area recently, many of them indicated that they lacked continued observation of the lowland conditions and have hardly developed adequate knowledge to use the natural resources, which differ from the environmental conditions of the highlands, where most of them originally came from. Often, such remarks came up when the farmers complained about the poor soil conditions in the area.[70] However, similar comments were repeatedly expressed by people we had talked to in the highland villages as well. In *Chelemhá* for instance, an informant who had unsuccessfully tried to cultivate cardamom in the mountain area said: »*No sabemos cultivar la tierra*« – *we do not know how to cultivate the land.* Another female informant in *Xucaneb* said: »*I would like to plant other crops like carrots or chard, but I don't know where to purchase the seed. I would like to learn how to grow other types of vegetables, but I just don't know how*« (field notes, 2001).

Besides variations in terms of knowledge on agro-biodiversity, we were constantly impressed by the considerable differences in individual notions about medicinal plants. We observed that, though many people apparently have acquired specific notions, these are not necessarily widely distributed among the communities. Many villagers maintain and use sizable knowledge, but others have virtually lost such skills. In particular, the progressive erosion of knowledge on the use of proven herbal remedies led to an impoverishment of traditional medicine and caused an increased dependence upon pharmaceutical products. This shift has been reported to be a widely occurring phenomenon enforced by the influx of foreign pharmaceuticals. Again, this observation applies to both study areas. In *San Lucas*, for instance, I was told by a woman that

[70] This finding corresponds with a long-term study undertaken by Atran et al. (2002) among indigenous and non-indigenous farmers in the lowlands of the Petén north of Alta Verapaz. Their investigation concerned with ›cognitive models‹ of ecological relationships revealed that the *Itza' Maya*, who have lived in the area for centuries, plant more crops and tree species than do neighbouring *Q'eqchi',* who immigrated to the area from the highlands. *Itza'* also farm in ways that are less harmful to the soil and more productive and reveal a more sophisticated understanding of forest ecology than do other groups. Their intimate knowledge linked to their cosmovision and spiritual traditions guides sustainable farming practices. Like nearby *Ladinos,* they engage in less damaging practices than do immigrant *Q'eqchi'*. *Ladinos* social organisation favours learning from the *Itza'*, while *Q'eqchi'* social organisation does not. While the research of Atran et al. suggests that the practices of the *Q'eqchi'* migrants are more destructive to the forest environment than other ethnic groups farming in the Petén, the findings of another comparative study undertaken in the surroundings of the National Park *Sierra de Lacandón* by Carr (2004) revealed that given similar physical and socio-economic conditions, *Q'eqchi'* and *Ladino* land use systems are remarkable similar.

in former times there was someone who was exceptionally knowledgeable about medicinal plants. Nowadays, these plants are still to be found in the nearby forest, but the knowledge of how to use them had disappeared. In her view, this happened once the people came to believe the pharmaceuticals to have more prestige and power. In *Xucaneb,* a woman who had been working for years as a *guardian de salud* (health promoter) replied to my questions on the use of medicinal plants in her community: »*La gente no cree. Cree en la medicina química. Yo conozco 14 plantas. Yo sé, porque yo aprendí de nuevo de mi abuela, pero la gente no quiere. Usted mentira dice la gente. Algunas ancianas sí quieren. Mis abuelas usaban [plantas medicinales]. No explicaron a sus hijos. Se perdió el conocimiento.*« Here she explained that the people in the village did not believe in the healing effects of medicinal plants, instead they believed in chemical products. As she had been taught by her grandmother, she knew about the use of 14 medicinal plants. With the exception of some elderly women, the people were not interested in their use. Some of them even said that she was lying. According to her explanation, knowledge is diminishing as older generations pass away and younger generations set aside their traditional ways and adapt to new lifestyles: »*The young people are no longer interested in or do not have the opportunity for learning customary knowledge*« (field notes, 2001). This is a notion we became repeatedly confronted with in the course of conversations about the transforming character of knowledge.[71]

However, despite the influx of foreign medicines, it seemed that a new interest in traditional medicine is currently emerging.[72] A midwife whom I met in *Mestelá* reported that she provided women with medicinal plants during pregnancy, post-natal care and in general cases of illness. She learned these procedures in the local *centro de salud* (health post) and was often asked to apply them during her treatments. Another case of revitalising traditional knowledge came across our way in *Roq-há*. By chance, we talked to the owner of the village shop about activities related to the *milpa* cycle. He mentioned that he had by chance found a copy of the ancient Mayan calendar in a library in *Cobán*, which has widely disappeared from the *Q'eqchi'* area. As it was written in *Quiché,* he wanted to find someone to translate it into *Q'eqchi'* so that the villagers could readapt their agricultural activities to the *Agenda Maya.*

With a view to general patterns of cultural change in Mayan communities, Nigh (2002) asserts that many of the beliefs and customs that can be seen as functioning to reinforce rules and values for managing common resources are increasingly questioned by the younger generation. Commonly, younger men seemed to be less acquainted with customary practices. In particular, this observation applies to the field of rituals and perceptions related to the principles of the indigenous cosmovision. As has been mentioned previously, accumulated experience in this domain is most often

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[71] This finding is confirmed by an ethnobotanical record provided by Chaves Herrera (2001), who undertook to explore the use of medicinal plants among several communities in the surroundings of the *Laguna Lachuá* Park.

[72] For a brief introduction to Mayan ›ethnomedicine‹, see Berlin & Berlin (2000). Consider also the study *Indian Medicine in Highland Guatemala* by Orellana (1987).

held exclusively by the elders of the communities. Frequently, informants referred to the elderly as ›those who know‹ and who play a decisive role in the process of knowledge transmission.[73] While the younger men care for the physical well-being of the land, the elders are expected to protect the spiritual resources and provide traditional leadership in defining nurturing environmental interaction. Despite their altered role, the elders are esteemed in village life for they regulate the seasonal timing of a number of community and ceremonial activities. According to Cajete, the elders are venerated, not simply because they are old but because they are »embodiments of an indigenous way of learning and understanding. This understanding is reflected in the ways that they carry themselves, in the ways that they speak, and in the ways of being who they are. Indigenous elders reflect an indigenous way of being affiliated with life« (2001: 621). Their perceptions of life provide the foundation for the continuity of their culture through time. Throughout their lives, they have reflected those understandings that can only come as a part of long experience with living in a place and understanding it in very direct and intimate ways. Tied to the deference towards the elders is the emphasis that the *Q'eqchi'* place on children as a vital part of their existence. They ensure the transfer of their way of life and the accompanying worldview to the next generation. Talking about children, an elder woman commented: »*Son una bendición de Dios*« – *they are a blessing of God*. In the following, the focus will remain on the children and the matter of learning and educational traits.

5.3.2 Knowledge transmission in educational settings

> *We learn, understand, and influence others through interaction with them and with the environment. This wide interaction is usually a complicated, unstructured, and only partially conscious process. Learning runs ahead of conscious systematisation, and action often runs ahead of reflection.* (Anderson 1996: 113)

Since all patterns of *Q'eqchi'* life are interrelated, the process of knowledge production is intimately interwoven with ways of imparting knowledge in everyday life. The social process of learning and sharing knowledge, through which environmental relationships and values are reproduced, is informed by different learning systems. Most centrally, education is received from within the community, with the *land* as a major medium of learning that is embedded in a social framework, an economic template, a belief system and a comprehensive moral order. Within this context, the pathways of intergenerational knowledge transmission are configured by different learning situations. Since indigenous knowledge is an embodied practice, children in large part learn through informal apprenticeship.

[73] It must be mentioned here that 9 of 10 inhabitants of the *Ecoregión Lachuá* are younger than 50 years (Reinoso et al. 2001).

Fig. 5.20 The son of an informant carrying *talquetzal*

In general, knowledge is shared and communicated orally and through performance. This educational path has been termed by Gómez (2006) as ›experiential learning‹. Within the defined social network, every member of the community and every child in the family has particular obligations. Learning begins at a very early age, so that the children may discover their gifts and qualities and be trained for the role they will undertake in their personal and community lives. Usually, children at the age of six to eight begin to join their parents in their specific labour domains. By accompanying their fathers and other male relatives, young boys learn the basics of subsistence agriculture and related activities, while girls observe their mothers, grandmothers and elder sisters in their respective fields of domestic production. Children usually join both of their parents in the forest when collecting timber and non-timber products (Fig. 5.20). In this time they spend together, parents teach them to recognise tree and crop species, identify edible plants, cut firewood and come to know the best woods for house construction, etc. Growing up this way, by watching and imitating, children acquire the specific capabilities tacitly, unobtrusively and unreflectively as part of their socialisation. It is primarily a sensory way of learning as part of doing and recognising. These experiences that shape the children's years of adolescence are the principal time in which they attain their familiarity with the forest and when the foundation is laid for their relationship with the natural world. However, the process of knowledge acquisition is extended throughout their entire lives.

The farmers we worked with definitely desired to maintain the land for the well-being of their children and grandchildren. They wanted them to learn how to use the resources of the surrounding world in a sustainable manner. »*If the local resources vanish, the traditional way of learning will equally cease to exist*«, was the comment of a concerned farmer (field notes, 2003). As Anderson (1996: 79) has observed, not much capital is invested in the Mayan landscape, but the total investment in labour and learning is incredible. He asserts that children learn in the process of doing, but admittedly they receive continual instruction. This means that education is not a mindless matter of just copying the parents, who work hard to motivate their children. The performative and implicit character of knowledge transmission becomes particularly evident in the symbolic realm within which the principles of the indigenous cosmovision and environmental imagery are transferred intergenerationally through the annual, cyclical repetition of livelihood activities associated with rituals as a type of communication that uses visual displays as its language. As with the process of growing up, Anderson emphasises the realm of rituals, which have a major teaching function:

They involve the Maya emotionally in their agriculture. They mark out stages and processes for all to see. Children learn the world through ritual and are thus taught not only the facts but how to react to them. They learn to be grateful to the forces of nature, to God or gods. They learn that their food is the product of a complex interaction between themselves, the natural world, and whatever powers lie behind all of this. They learn that food production is serious, indeed passionately and intensely serious. They learn, above all, to treat resources with respect, and not to use everything up (1996: 82).

The above comment implies that every aspect of learning includes the learning of values. This notion pertains to the informal way of learning but likewise applies to the official education system that has been widely established in the rural communities. While most of our male informants either never entered primary school or completed just a few years before dropping out, most of their children today complete primary, secondary and even higher education levels. However, when we joined farmers in their daily activities, it often occurred that we were accompanied by their sons who were engaged in the *milpa* farming even when they normally should have been attending classes at school. The prevailing low level of school attendance in rural areas of Alta Verapaz may be explained by the following words of an informant who expressed his conviction that children should foremost learn to maintain and use the specific resources their lives immediately depend on: »*At school they do not learn what they need to learn for their future life as peasants. I need them here where they learn what is relevant for them*« (field notes, 2003). He further asserted that the detailed information he felt was essential, i.e. knowledge of local species and customary practices, is primarily derived through immediate experience and direct observation. In contrast, the skills taught at school would lead to an alienation from traditional forms of knowledge. This gap between what parents want their children to learn and what their children are taught at school repeatedly became evident in conversations on the issue. The extinction of experience has much to do with processes of acculturation that promote language shift

and cultural assimilation. By emphasising that »language is culture and culture is language«, Barreiro (2001: 24) points to the need for retention of traditional languages in order to safeguard the wisdom of the older generations and the knowledge and values that create culture. When conversing about the formal schooling system, an informant in *San Benito* expressed a divergent opinion: »*Es lo más importante en la vida saber y aprender*« – *the most important thing in life is to know and to learn*. When asked about future plans, his 19-year-old son replied: »*Nowadays the young people have to study, to acquire knowledge in order to be capable of solving problems*« (field notes, 2002). These comments seem to be in line with what Siebers (1996) observed with respect to perceptions of education among *Q'eqchi'* peasants. His finding revealed that they consider access to education an important issue for the improvement of relations with *Ladinos* and also with members of other Mayan groups. To be able to communicate in Spanish and to learn to read and write is, according to his observations, highly appreciated.[74] But he also mentions that although parents in general are motivated to send their children to school, they often take them out before they finish, either because they are supposed to get married or because they have to work in order to help their parents. Despite a national programme of bilingual education that was set up as early as in the 1980s with the objective of attending to the educational needs of the Mayan population, he states that in most schools, instruction is given in Spanish, while the children in general only speak *Q'eqchi'* when they enter school (1996: 64f.). However, current educational policies emphasise the need to begin the first years of schooling in the mother-tongue and then gradually shift to classes in Spanish (Flores Arenales 1999: 123).[75]

Fig. 5.21 Classroom setting in *Roq-há*[76]

[74] As to elementary education, 74 percent of the communities in Alta Verapaz have a primary school. However, the rate of illiteracy is 58 percent, with a higher rate of 70 percent among women (Letona 1999: 37). In *San Benito*, for instance, none of our informants' wives had a formal education. The large majority of their daughters today go to school and even in some cases receive higher educations.

[75] Further facets of questions related to the field of education will be discussed in chapter 5.4.3 where education as a means of conserving indigenous knowledge will be dealt with.

[76] Subjects of primary school education (6 grades) include reading and writing (Spanish), mathematics, natural sciences and social studies.

The informal way in which children come to know takes place in the process of immediate action. It is characterised by specificity and intimacy with the local environment, unlike formal education, which takes place at a distance and thereby does not relate specifically to local conditions. Anderson writes: »The lecture teaches passivity rather than knowledge« (1996: 133). The standardised and generalised education of the formal system bears little relation to the immediate environment, but deals instead with abstractions and scientific or quantitative ways of classifying the world. These are dominated by a rational deconstruction of the material world into ever smaller components, as the picture of the human cell (Fig. 5.22) demonstrates.

Fig. 5.22 The human cell structure at the school in *Roq-há*

When discussing implications related to different education systems, it has to be reminded that the long period of political repression and the historical neglect of the indigenous population in all fields of national society are reflected in educational policy. In the past, official programmes were used by succeeding governments as a tool for assimilation, to displace indigenous languages and cultures and to promote a process of enforced acculturation. Until recently, indigenous knowledge and languages have been excluded from the formal education system, which contributed to a severe decline in cultural self-reliance. By this means, many of the traditional ways of knowing became disregarded because they were not considered appropriate ways of teaching by the formal system imposed on indigenous people. Teaching from the oral tradition was not practised as a regular way of passing knowledge from one generation to the next. Most often, Mayan beliefs were only considered as ›folklore‹ or ›superstition‹ (Montejo 2001: 192f.). However, the political impact of indigenous issues has increased in the process of post-war reconciliation, and alternative bilingual and multicultural teaching models and efforts to incorporate local knowledge into the formal system are on the way to being implemented. As a result of the peace agreements, the school curricula have been modified to meet local needs and interests.

The aforementioned AIDPI, which emphasises the crucial role of education in the national peace process, contains measures for reviving and conserving indigenous languages. It states as follows:

The educational system is one of the most important vehicles for the transmittal and development of cultural values and knowledge. It must respond to the cultural and linguistic diversity of Guatemala, recognizing and strengthening the indigenous cultural identity, the Mayan educational values and systems and those of the other indigenous peoples, the access to formal and non-formal education, and including in the national study plans the indigenous educational concepts (MINUGUA 2001: 17f.).[77]

As has been shown, the context in which socialisation takes place plays an important role in an individual's use and perception of the environment. Thus, agencies of socialisation such as the family, the community, informal and formal education need to be taken into consideration when reflecting on factors that entail changes within processes of knowledge generation, dissemination and transmission. A loss of knowledge and a loss of language, it has been objected by Whiston Spirn, »limits the celebration of landscape as a partnership between people, place, and other life and further reduces the capacity to understand and imagine possible human relationships with nonhuman nature« (1998: 23).

Since their livelihoods essentially depend on sophisticated environmental knowledge, the farmers we worked with in the lowlands are keen observers of their natural setting and of associated ecological processes. Though they all have migrated to the area from other parts of the department, they have complex repertoires of knowledge, including practical and symbolic values and attributes.[78] Nevertheless, a major finding of our study is that traditional land use practices and accumulated knowledge of domestic plants have been seriously eroded in the past decades.[79] In interviews, mostly elderly respondents, men and women alike, frequently expressed their preoccupation with the perceived erosion of customary practices. As agricultural knowledge combines the physical and spiritual maintenance of natural resources, this perception also includes the abandonment of practices and beliefs related to the symbolic realm. On the whole an acculturation process has developed at diverse levels in different places, and the situation varies as to the transformation and the continued maintenance of ancient cultural traits. Most strikingly, longstanding experiences with the cultivation of

[77] Since the signing of the peace agreements, the gap between the growth of GDP (gross domestic product) and public investment in education has increased significantly. Despite the fact that the budgetary allocation is adequate for the general increase of educational coverage and that the design of the educational reform responds to the commitments of the agreement, access by the indigenous peoples to education continues to be deficient (MINUGUA 2001).

[78] In his ethnoecological analysis *New Lands and Old Traditions*, Carter (1969) revealed that *Q'eqchi'* migrants from the highlands could successfully move to the lowlands and with a minimum of technical adjustment establish a productive agricultural system. Because of the simplicity of highland swidden methods, they could be adapted quickly to the new conditions. Although he concentrated on technical aspects of the *milpa* cycle, he observed that one of the effects of migration had been the lessening of ›supernatural‹ sanctions.

[79] This is also a major finding of the fieldwork undertaken by Hatse and De Ceuster (2001b) among *Q'eqchi'* communities in rural Alta Verapaz.

local maize species have been exposed to fragmentation as the communities have undergone changes and lost their social cohesion under the impact of external forces. As initially outlined, Guatemalan farmers cultivated more than 600 maize varieties in the past. This variety has been widely replaced by high-yield species introduced through programmes intended to intensify agricultural production. While Siebers (1994) observed in the 1990s that few *Q'eqchi'* would use these hybrid seeds, our investigation revealed that the cultivation of such varieties has become common practice and that many traditional crops have disappeared. The next chapter will explore some of the causal constraints that lie behind this process.

5.3.3 Origins of knowledge fragmentation

Memory is the most important resource of any rural producer. (Toledo 1992: 10)

As Zent (1999) states, few scientific studies concerned with indigenous knowledge and resource management systems have focused explicitly on knowledge loss. He argues that it makes little sense to attempt to conserve knowledge without first attempting to analyse the local patterns of knowledge loss itself. Accordingly, there is a need to identify specific causal variables underlying the transformation and fragmentation in order to develop strategies to achieve the protection of knowledge systems as claimed in article 8(j) of the CBD. The loss of knowledge is not a natural and inevitable process, since it is largely of social and political origin. If indigenous knowledge is disappearing, it is, according to Agrawal (1995), primarily because processes of modernisation and cultural homogenisation threaten the lifestyles of indigenous people.

In the present case, there is no single explanatory variable to be presented but rather numerous socio-economic determinants that each have their effects on the modes of *Q'eqchi'* livelihood across dynamic spatial and temporal scales. On the whole it can be assumed that the integrationist policy towards the indigenous population in the past has been influential in the transformation of traditional notions and customary practices. Of major significance have been the implications of the civil war, which has been accompanied by considerable political and socio-cultural change for the indigenous communities throughout the country. When talking about the causes that provoked the widely perceived loss of knowledge, a staff member of ADICI, a local NGO working in rural areas of Alta Verapaz, referred to the determining role played by *la violencia*. He emphasised a process of alienation in terms of oral traditions and beliefs associated with agricultural activities that was provoked by the death of the elders of communities (personal communication, 2002). This observation is shared by Julio Morales, one of the biologists engaged in the co-management of the *Laguna Lachuá* Park. In a lecture given about *Q'eqchi'* hunting practices, he stressed the striking knowledge repertoires of the people he had been working with. He further assessed cultural upheavals communities in the area had to go through, which together implied a traumatic break with the past. Among these changes, he differentiated two major is-

sues: the consequences of the civil war and the religious fundamentalism that has spread in the area more recently.[80]

In view of the consequences of the war, different levels of violence may be identified that affected the population in rural areas throughout Guatemala. In order to regain control over communities accused of supporting the guerrilla movement, entire villages were destroyed throughout Alta Verapaz by the military in the 1980s. When referring to the time of war, the term **nim rahilal* is commonly used, which means »the great suffering« (Flores Arenales 2001: 4).[81] The army attacks led to displacement from original lands, mass migrations and the abandoning of traditional practices. As massacres became routine, many people fled their original homelands and lost a large percentage of their seed stocks, especially for garden crops.[82] Since indigenous knowledge foremost is learned and updated through direct observation of the environment, removing people from their ancestral territories may break the intergenerational education cycle. In particular, the promotion of settlement nucleation and the forced enculturation of the Mayan groups into the dominant *ladino* culture have contributed to the interruption of knowledge transmission. The destruction of social organisation through relocation had devastating effects. The military concentrated the population in well-controlled areas to create an »ideologically new« indigenous population, presenting itself as the »saviour« of the people (Wilson 1990: 25f.). The strategy of clustering members of different ethnic groups into new settlements had severe effects on social cohesion within these newly established ›model villages‹.[83] It resulted in the dissolution of relations of trust between and within communities and left a deep sense of powerlessness. This issue is crucial as the new communities were highly heterogeneous, comprised of people from different areas with different customs, even different languages and religions and different experiences of the violence. Consequently, networks among peasants through which farmers formerly obtained and exchanged their seed stocks were disrupted or even destroyed. In the slow process of rebuilding the village economy, the communities concentrated foremost on re-establishing maize crops as a central link of social life. Thousands of *Q'eqchi'*, mainly elders, died in this process and with them valuable knowledge disappeared.

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[80] The talk was given on the occasion of a workshop on *Reflection, Analysis and Proposal of Nature Conservation among the Maya-Q'eqchi'* in which numerous institutions and scientists engaged in the field of conservation and development in Alta Verapaz participated, 27 May to 1 June 2002, in *Cobán*.

[81] Anthropological perspectives on cultural impacts of the civil war have been complied by Carmack in *Harvest of Violence* (1988). Although much has been written about the social effects of the political crisis during the 1980s, few assessments have been presented concerned with the psychological effects this period has had on the social relations and cultural patterns of knowledge transmission.

[82] In communities that were not affected by the war, Wilson (1995: 42) observed that garden products were much in evidence and constituted a large percentage of the villagers' diet.

[83] In emphasising the relations between space, power and culture, Stepputat (1999) has examined *The Politics of Displacement* during the armed conflict. He argues that the army, through the massive displacement of population and the organisation of civil patrols, produced a dichotomous space of ›villages‹ and ›wilderness‹, and that the reorganisation of space enabled the army to control the conflict.

When talking about this issue, a peasant in *Roq-há* said: »*No hay quien enseña a los jovenes*« – *there is no one to teach the youth* (field notes, 2003). Being asked whether he would perform any agricultural rituals or practices related to the *tzuul taq'a*, another younger informant (29 years old) of *Roq-há* declined and referred to his childhood he had spent in *Panzós*.[84] By pointing to the ›problems‹ in the area, he recounted that his father was killed by the military when he was eight years old, so that he did not come to learn the ›customs‹. Other informants mentioned the selective persecution of local leaders and elders of the communities. The sudden absence of authority caused severe disorientation. In particular, the physical disappearance of community members did not only affect individuals and families but disintegrated the social body of the entire community in terms of long-term social paralysis and silence, as Flores Arenales (2001) writes. In the same vein, it has been observed by Green (2003) that the role of violence and fear are crucial to an explanation of the loss of a sense of social collectivity in many communities at the end of the 20th and the beginning of the 21st century. Intergenerational connections and gender relations are profoundly weakened and distorted when communal and family structures are targeted by state violence. She states:

Loss of trust in one's known world and unrelenting engagement with violence in everyday life from which one is not able to extricate oneself influence patterns of sociality. [...] roles, values and behaviour adopted by subsequent generations, that are sources of vulnerability as well as resilience and strength through the generations, have a lot to do with family communication patterns, the role of silence as well as family structures and community cohesion (2003: 54f.).

The historical legacy of trauma, which Green describes as a collective and cumulative ›soul wound‹, may last into subsequent generations. The dismantling effects of the »inter-generational psychological drama« (Wilson 1993: 134) have also notably altered the situation in *Roq-há* in terms of a lack of unity. As mentioned, an informant from this village reported that he had been forced by the army to kill members of his own neighbourhood whose relatives today still live next door.[85] Such experiences entail that people live constantly with the memories of past traumatic experiences and lost or ›disappeared‹ family members. Because the memories are all-pervasive in present-day life, Davis (1988) sees them as part of a more encompassing ›culture of fear‹. Apart from their impact on social networks, Adams (1988: 290) mentions the internal organisation of communities, which has also suffered seriously; destroyed co-operative and other organisational structures broke down. According to his observations, communities reacted with both unity and fragmentation. However, it will take years to overcome fear and silence and to achieve social cohesion.

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[84] The place became famous as the location of the first massacre against the *Q'eqchi'* in 1978.

[85] According to Green (2003), it was common that men were forced by the military to commit such acts under penalty of torture and death, either their own or that of their families. She points to the striking feature that the violent acts waged against the civilian population were planned and perpetrated by a *ladino* minority, but were mostly carried out by a majority of Mayan soldiers.

Even isolated communities far from the capital have not been left untouched by the events of the past decades: »they have lived through a traumatic period of political violence and civil strife during which thousands of their relatives, and neighbours were killed, uprooted, or forced into exile« (Davis 1988: 30f.). Adams points to the psychological implications that emerged among the indigenous population as a result of the genocidal policies, which seriously affected their self-perception. How these experiences altered the indigenous life-world becomes clear in the following account of a *Q'eqchi'* elder as narrated at a council of indigenous leaders in 1982:

There is a war in my country. It is very terrible. More and more, it falls on us Indians. Two armies are fighting; they are using Indians to kill each other. There are guerrillas of the left, who recruit and push our young men to join their side. Sometimes they kill our Indian leaders that won't let their young men go with them. And there is the army. They are a killing machine that comes to burn and massacre our communities. We, as Maya Indians, have a different vision. We offer copal-pom to our old spirits, and to the spirits of nature. We have ancient knowledge. This knowledge is stored in the memory of elders. But we are being killed by the thousands. And, among the many lives lost, too often, we also lose one of these human treasures. Too often now, elders are killed who are the memory of our peoples. Not only lives are we losing in this horrible war; we are losing big pieces of our memory, our culture, in this war (cited in Barreiro 2001: 2).

That past experiences are lost or fragmented through mechanisms of dissociation, trauma or psychological negation has been observed by Flores Arenales (1999). The extent and intensity of the violence applied against civilians was without parallel in the recent history of Latin America. As a consequence, ›silence‹ became a social convention as never before and making reference to the violence was an established taboo. Flores Arenales cites the words of a *Q'eqchi'* who recalls: »*we lost our memory with the war. Because of the pain that we suffered we lost our memory*« (1999: 190). When a social universe has been destroyed and the cultural frame of reference violently distorted, people seek to re-establish the social order individually and on a communal level. By restoring the conceptual universe to which they relate, he writes further, the *Q'eqchi'* who had been affected seriously by the structural violence try to reconfigure their identity in a less confusing environment. In this process, memory plays an essential role in reassembling past events in a coherent narrative (1999: 198).

In the light of these considerations, the cultural effects of the experienced violence in terms of ›displaced knowledge‹ becomes evident in the reply of an elder informant to my question as to the origins of the widely perceived process of knowledge loss: »*Nos hemos olvidado de la tierra*« – *we have forgotten the earth* (field notes, 2003). Weber Nicholsen develops an argument that may serve to help understand this comment and the above mentioned ›culture of silence‹. She explains that experience that is unbearably painful is remarkably difficult to communicate, and those affected tend to fall mute. The very fact of not being heard gives rise to a shame that is further silencing. The more violently painful the experience, the more oppressive and traumatic is the lack of reception, and the greater the muteness and the shame: »This is why war leads

to so much muteness« (2002: 12). In this way, past events in the form of memories can become lost or fragmented, particularly through dissociate mechanisms such as psychological trauma. She further writes:

For in a very immediate way, trauma destroys the individual's sense of a safe world in which to live. It is as though the individual is enabled to live life through being ›held‹ within a containing context that is both cultural and natural – a ›world‹. This world is the background, and provides a foundation and a shelter, as it were. One might think of it as a background fabric that holds the individual, a fabric woven of various contextual threads, from family to community to natural world to divinity, all imbued with a sense of strength, goodness, and authority, all permeated with the energy of life (2002: 132).

Among anthropologists who have focused on the cultural effects of the decades of violence, Wilson (1990) describes the ramifications on traditional religious life as disastrous. He examines how several decades of civil war and conversion have affected community-based identity. Since ›sacredness‹ among the *Q'eqchi'* has a strong situational aspect, he emphasises that displacement from their original lands has created a chasm between the people and the mountain deities. Due to its localised nature, the mountain cult was often abandoned when people moved to other places. Certain groups that had hid in the mountains where able to maintain their relationship with the *tzuul taq'a*, while others could not continue to practice the customary rituals due to the death of community elders in the counterinsurgency movement and the persecution of the population. In particular, spiritual leaders were fiercely persecuted. Under nomadic war conditions, the worship of the *tzuul taq'a* could not be continued: »*Most of the time was just spent surviving, finding enough to eat and avoiding the military*« (1990: 18). However, individual rituals were more likely to survive than collective offerings because they require less financial investment, less co-ordination of people or specialist knowledge. The rituals that survived the repression were those, which were not place or time specific. In this context, Wilson also observed that traditional healing methods had not been affected by the repression to the extent that the earth cult was. Other scholars like Garrard-Burnett (2005: 1067) have suggested that the impacts of the war, including the physical displacement of the Mayan people from their traditional sacred landscapes may have opened a social space for Protestantism.[86] In this vein, Secaira, although not explicitly concerned with patterns of change, comments: »The Q'eqchi' traditional beliefs around the land and the milpa are part of a respectful attitude toward nature and it is unfortunate that in the process of migration, conversion to Protestantism and Ladinization, the Q'eqchi' have started to lose this attitude« (1992: 112).

[86] At the beginning of the 20th century, the Nazarene Church was the first Protestant church established in Alta Verapaz. It was followed by other congregations that increasingly converted large numbers of the *Q'eqchi'* in the 1960s and 1970s (Siebers 1996: 52). The increased religious polarisation dates back to the years of war, when Catholic lay leaders were being harassed by local military commanders (Davis 1988: 10).

During fieldwork, the influence of the constantly growing number of Protestant Churches in the area became clearly evident in the case of *Roq-há*. As has been mentioned, the community was divided by the presence of six different Churches that have been established in the past years. It can be assumed that the church communities partly substitute for the local community as a source of identification. The increasing diffusion of Protestantism was commented by an elder informant, who was one of the first to come to the community: »*Before the war, there was only one Catholic church, but two years after the end of the conflict the first evangelical church was established, and then the others followed*« (field notes, 2003). Since these denominations were increasingly brought into the area, being less tolerant regarding the incorporation of traditional beliefs and customs, their growing influence had transforming effects upon the social structures within the communities and led to severe disruptions in the traditional cosmovision. In general, these state-funded churches prohibit the members of the parish from practising rituals such as sacrificial offerings to the *tzuul taq'a*. This provoked a growing division among communities and the lack of confidence among the villagers, which made the restoration of the religious realm more difficult (Hatse & De Ceuster 2001a: 79f.). Discussing policies that evangelical churches try to implement in the villages in the area, Siebers writes:

In general these evangelical churches force a rupture with existing Q'eqchi' religion and social structure. The local community is substituted by the community of believers [...]. These churches proclaim a religious discourse stressing individual relations with God and individual moral responsibility. This discourse rejects personalized views on nature and has no direct relevance to economic activities, but there are clear religious motivations for believing individuals to improve their economic performance (1994: 221).

Siebers further points to the phenomenon that the *Q'eqchi'* integrate some of the practices of these churches into their ›meaning making process‹ although in a modified way. Simultaneously, they continue to use practices, symbols and representations stemming from their customs*:* »Out of this ›input‹ of selectively adopted and adapted external meanings and practices and reinvented tradition the Q'eqchi'es are continuously making their own blend of religion« (1994: 222). In syncretised religions, Wilson notes, »there is an ever-shifting flux, a sequence of oscillations. The pendulum swings between an indigenizing of Christianity and the Christianizing of indigenous beliefs« (1995: 304). In spite of numerous adaptive processes, Villa Rojas (1988) argues generally that one can still recognise ancient traits in practices and customs that have persisted among the more isolated groups. In particular, such survivals are obvious in terms of material culture but also noticeable in concepts present in the indigenous worldview, becoming tangible in diverse divinatory practices.

That pre-Columbian life patterns generally persist in contemporary *Q'eqchi'* culture has been set out in various ethnographic accounts.[87] There are few studies focussed on the social and psychological implications caused by the civil war and the partial destruction of the material, social and symbolic worlds of indigenous communities by the military regimes.[88] The decades of structural disempowerment had a devastating impact on *Q'eqchi'* community life, traditional beliefs and customary practices and led to a deep distrust in any state agency and institutions associated with the state.

The Q'eqchi'es want to keep the government away from their life-world as far as possible. Everything related to the government and politics frightens them. They do not consider themselves to belong to any national political entity and do not feel that there might be something to gain from joining a political party or project of whatever colour. (Siebers 1996: 66)

In his study *Creolization and Modernization at the Periphery* Siebers further argues that any agency is only able to work with the people if it manages to create a relation of trust and confidence with the members of the particular community. However, the latter have often rejected, abandoned or undermined ›projects‹, which they regarded as an imposition on them. By questioning which role culture plays in the development processes, Siebers points to the normative character of the concept of ›development. It does not just refer to any process of social change, it supposes that within this process the actors concerned are becoming ›better off‹ and that they are able to ›improve‹ their situation. However, the problem remains of how to define what ›better off‹ is. Siebers concludes that »the social actors themselves should be asked what they consider to be a significant improvement of their own situation« (1994: 209). These thoughts lead to the last section of this chapter. It looks at cross-cultural communication in the context of protected area management, where traditional values coincide with the material and empirical concerns of science-based conservation research.

[87] A recent example is afforded by the investigations of Hatse and De Ceuster. Their findings appeared in *Cosmovisión y espiritualidad en la agricultura q'eqchi'* (2001a). Further writings include the works of Wilson (1995) and Siebers (1996).

[88] Among these are the commendable works of Wilson. See for instance his paper *Machine Guns and Mountain Spirits. The Cultural Effects of State Repression among the Q'eqchi' of Guatemala* (1990). More generally, the later study *Maya Resurgence in Guatemala. Q'eqchi' Experiences* (1995) emphasises continuities and changes in religious life and identity.

5.3.4 Knowledge encounters in conservational settings

> *People with different world-views may have a very hard time understanding each other. They may have little or no common ground of experience, and the words of one may make little sense to the other. Different world-views, based on different metaphors, lead people to have different experiences – actually to live in different realities.* (Schroeder 1996: 20)

From an anthropological perspective, the most crucial aspect of conservation is the need to involve people in the protection of biological diversity. As has been outlined, the co-management arrangement as established in the surroundings of the National Park *Laguna Lachuá* is based on an integrated development-oriented conservation scheme. Despite the participatory approach that emphasises the need to assess human and ecosystem well-being together, the protected area represents a »contested space«, defined by Low and Lawrence-Zúñiga as »geographic locations where conflicts in the form of opposition, confrontation, subversion, and/or resistance engage actors whose social positions are defined by differential control of resources and access to power« (2003: 18). However, not only conflicting interests meet in this situation, which reflects the collision of multiple realities and differing configurations of knowledge. The values of people living in the surroundings of the National Park mingle with the ideological impetus underlying protectionist management policy.

The general observation made by Howitt (2001) that cross-cultural communication is fundamental to most resource management settings in order to realise the implications of a multicultural definition of environment thus applies to the present case. In the words of my research partner Sindy Hernández, the encounters between the local population and the park management involve the fusion of distinct worldviews: »*Two worlds meet – on the one hand the concept of conservation, the governmental administration, the scientists and all their particular interests, and on the other hand, the communities that are either homogenous entities in terms of particular interests, experiences, expectations, practices and knowledges*« (personal communication, 2003). While people-oriented initiatives are today recognised as being a necessity, there is still a tendency to underestimate factors that may impair communication efforts between park agents and local residents. The conditions under which people decide to share their knowledge and articulate their needs and priorities require increased acceptance and respect of alternative forms of knowledge, as well as a willingness on the part of official agents and researchers to accommodate and integrate different modes of perception into their own paradigms. In this sense, it has been affirmed by Nakashima and Roué that in the search for a way forward, »it is important to come back to the question of culture and worldview« (2002: 323).

Our experience has shown that interaction between different stakeholders rarely leads to a mutual comprehension, as the process of negotiation builds upon a number of misunderstandings that result out of different languages, cognitions, expectations, and attitudes. Thus, it is important to keep in mind that any negotiation on conservation issues and natural resource management systems between state agencies and local residents takes place within a particular historically and politically charged context. A

critical point is the way knowledge and related practices are conceptualised by those who use them; and thus the way they are ›managed‹ or ›implemented‹ by local practitioners can be very different to how NGOs and governments might ideally proceed. The practical consequence is that any measure and initiative to protect, promote and facilitate the use of indigenous knowledge will have a much greater chance of success if it is designed and presented in terms that are meaningful to the knowledge-holders themselves. In interviews, it often occurred that people mentioned that official institutions and non-governmental organisations did not address their real problems and needs. Measures that had been implemented by official bodies were perceived as impositions in a process of substitution of local knowledge. ›Projects‹ were even considered as causing more problems by displacing integral practices and offering alternatives only in technical terms that were not adapted to the specific local conditions.

Taking into account such reservations and the history of conflicts, the general lack of participation in political terms and in particular the lack of communication between local people and state agencies, it was interesting to observe an open discussion on resource use practices between villagers, park guards and administrative agents. Initiated for the first time in September 2002 by members of the *Escuela de Biología*, this encounter eventually led to the elaboration of the aforementioned hunting calendar. After consultation, a joint agreement to carry out a previously developed study project was reached. In this process, the biologists had earned a supportive and advisory role in the communities and came to function as intermediaries between the villagers and the employees of the *Proyecto Lachuá.* A key element in the approach as understood by the scientists implied an ongoing open dialogue and the finding of compromises by means of concerted negotiation between the management personnel and the resource-dependent population living in proximity to the ecologically valuable area. The endeavour to achieve communication across the gap of differing worldviews rested on the assumption that conflicts cannot be resolved until a relationship has been established that both sides thought worth saving. Community-based conservation is a long term process. It takes time to gain the trust of people and to neutralise the effects of mistrust. As the farmers often do not practice conservation for its own sake, but give social values to particular local resources, the scientists tried to adopt concepts and categories that were relevant and meaningful to the people they worked with. This endeavour to strengthen the dialogue between indigenous and scientific knowledge is an example of integrated management with the target of biodiversity conservation within the context of human resource use patterns. The combined use of indigenous and scientific knowledge may create synergies for a sustainable management within and outside the park boundaries. Having realised that the designation of the park as an island worth protecting is insufficient to guarantee the long term protection of the natural abundance in the area, it is planned to further incorporate local and scientific information in the design of educational materials to contribute to resolving the conflicts between conservation efforts and the priorities of the local residents.

Since the year 2000, negotiations have been ongoing between the *Escuela de Biología* and members of the community councils to elaborate a proposal for the improvement of the education situation.[89] As mentioned before, the formal education system has been widely perceived as a cultural imposition. To remedy this situation, it has been considered to incorporate indigenous knowledge into the school curricula in order to enhance principles of informal education. Combined with this plan is the idea to re-evaluate indigenous concepts of the use of biodiversity. The addition of local knowledge about ecosystems and their elements, soils, climate, crops, plants and animals, etc. into formal schooling is a new element in an integrative conservation strategy. As often proposed by informants, such an approach is intended to encounter the erosion of knowledge as an emanation of the indigenous cosmovision by putting in place mechanisms for its revitalisation. Its incorporation into the formal education system has been considered as an initial step to address local concerns and may serve as a significant tool for conserving natural and cultural values. In discussions on this topic, farmers suggested that school schedules should be adapted to the seasonal nature of local production activities. Recognising the value of both knowledge and associated beliefs, a possible route involves a re-learning of traditional practices that have been lost, such as soil conservation methods, terracing techniques, production of organic fertiliser and pesticides, intercropping with nitrogen-fixing plants or raising plants in home gardens. Integrating traditional and scientific information for the design of educational components of conservation strategies could make important contributions to resolving the conflicts between conservationist interests and the needs of local residents. In the long term, this approach may contribute to the effectiveness of conservation by improving the information base and by facilitating the design of appropriate measures compatible with local use and tradition. At the same time it may re-value the cultural concepts of the *Q'eqchi'* and reduce the degree of cultural subordination.

Although the scientists have tried to facilitate the process of communication within and between the communities and the park agents, there is not much they can do on the issue of land entitlement. The lack of secure land tenure illustrates that environmental conflicts at the local level often do not only reflect different values and senses of place but are linked to conflicts of interest that originate far beyond park limits and require consideration of much larger political and legal issues. A fundamental prerequisite in order to provide long term security for local conservation efforts in the area is to legalise communal resource-use rights, which would also entail the reaffirmation of cultural identity. Although supporting and negotiating local property rights is a complex political and legal process, land security is an issue of major concern for the local population. But apart from this issue, the mediating role of the group of scientists could ease the difficulties in achieving communication and trust between the urban-based park authorities and the local population as basic prerequisite to further constructive conflict resolution. Julio Morales, who had initiated the study

[89] To date the biologists have also provided support in terms of establishing a public library and via the participation of students as guest teachers at the school in *St. Lucía*.

on hunting practices, summarised briefly that the conflict was all about the question of whether the land belonged to the state or the *tzuul taq'a* (personal comment, 2002). The same biologist asserted that the long term success of conservation will depend as much on dialogue as on direct development investments. Thus, it is essential to listen to the people's opinions, experiences, needs and priorities. In their work the biologists have undertaken to avoid systemic positivism by not taking for granted the notion that surface phenomena meeting scientific classification categories of nature, space and time, are inter-culturally valid. In this respect, they were aware that the encounter between the two different knowledge systems needs to be understood as a meeting of cultures. Observing such an encounter on the occasion of the aforementioned workshop on wildlife management, I realised that the scientists – despite their attentiveness as to different worldviews and perceptions – could hardly abstract from their own paradigms to accept other ways of perceiving the world. Combined with an obvious emphasis on measurement, they read landscape first of all in scientific terms. After all, biologists reduce the landscape to generic classes of features and resources; it is primarily a habitat to be assessed in quantitative terms. As their compilation of ecological data was based on a boundary-dominated view of the land, different scales and *ways of seeing* actually came together in this meeting of cultures. The bird's-eye view of the satellite image clearly illustrates this observation (Fig. 5.23). In following the discussion, I experienced that people from different cultures or professions, despite being in the same geographical place, perceive landscapes differently and construct with those perceived landscapes entirely different environmental relationships.

Fig. 5.23 An interpreter explains the view from a satellite image

People see what they have learnt to see. They do this according to their cultural knowledge and beliefs, locating value in the things that their culture values. However, it needs to be recalled that humans do not have different capacities to value; they employ the same processes of defining and locating value. The difference »lies in what they choose to prioritise and encourage and, perhaps most importantly, where they locate values within their environment. These cultural choices form a coherent pattern that informs every aspect of their lives, creating a particular mode of interaction with the landscape« (Strang 1997: 276). Given the importance of such values, any participatory venture designed for nature conservation should strengthen communities' efforts to reassert traditions and values inherent to the human-environment interaction.

Whether indigenous knowledge can become part of an applied science in the framework of a community-based conservation strategy remains to be seen. In the present case, the complex relationships between environmental management and principles inherent to the cosmovision have yet to be teased out to allow for an equitable advancement of conservation. According to Seeland, integration largely depends on the cognitive compatibility of customary and modern scientific approaches, and the meaning of knowledge in a given setting, which is predominantly in a state of cultural transition. He reminds to take into account that knowledge »in the interface of a cultural lag between foreign development agencies and national administrations, regional and local interests of economically and socially dominant classes is an aspect of consciousness in a context of power« (2000: 11). Pointing the way forward, he argues that in contemporary development processes, indigenous knowledge will always be a blend of different stages of modern and traditional elements. The diversity of cultural knowledge and the corresponding norms and values inevitably leads to a process of negotiation within society. A central question in this process is the readiness of the social actors to accept or even embark on discussions concerning forms of knowledge other than their own. Given the fact that human beings essentially relate to each other from positions of interest and need, Flores Arenales claims that it would be important

to seek out the points of contact between these different interests which allows for the development of unified projects from different perspectives. However, and this is a basic ethical point, this must be done without sacrificing the main interests of one party to those of the other, as has tended to be the case in several collaborative experiences. In this sense it is important to find mechanisms and situations which enable us to ›mediate‹ positions (1999: 46f.).

Considering that indigenous knowledge of biodiversity appears to be disappearing even faster than biodiversity itself, relatively few conservation efforts have focussed on the preservation of knowledge. It has been suggested by Zent (1999: 122) that natural conservation policy can be strengthened by instituting an integrated biocultural approach in which indigenous knowledge is recognised as a valuable resource and action is taken to preserve this knowledge *in situ*. Given the increasing acknowledgement that experiences of indigenous peoples have a major role to play in biodiversity conservation, the first and most important task in this context is to encounter

the erosion of indigenous knowledge by putting in place mechanisms for its revitalisation and protection. This must be achieved in close collaboration with the communities concerned, including their institutions, traditions, language and modes of subsistence, maintaining those conditions that will allow them to develop further.

An alternative community-based approach that could serve as starting point for protecting indigenous knowledge has been outlined by Secaira (1992: 124f.). By stressing the need to establish a convergence of interests between farmers who need to innovate and conservationists who want to protect the forests in the area, he proposes to facilitate the flow of innovations and experiences through the promotion of *farmer-to-farmer* interaction (e.g. in terms of knowledge exchange about the use of green manure). Conservationists, through the construction of alliances with indigenous and peasant movements, have the opportunity to increase political awareness and to empower rural communities, thereby contributing in the struggle for a more equal distribution of land and power. Respect and sensitivity to local cultures are essential requirements of a participatory conservation and development strategy and any effort to support the communities should address maintaining customary legal structures, informal arrangements and local institutions such as councils of elders and informal ways of imparting indigenous knowledge.

Even though the recognition of indigenous knowledge is a necessary condition for participatory processes in contemporary resource management, it alone is not a sufficient condition to ensure long term sustainability. The process by which pre-existing knowledge and new information interact needs to be explored, so that research approaches can be designed to facilitate the acquisition of knowledge by farmers and counteract knowledge erosion. Departing from expressions such as »*Nos hemos olvidado de la tierra*« – *we have forgotten the earth*, it would be revealing to further inquire about the underlying reasons for the widely perceived loss, combining findings from psychology, cognitive science and other disciplines engaged with the phenomena of social memory and processes of remembering. In the present case, I would postulate a coherent relation between the modes of memory and individual and collective traumatic experiences of the war. To conclude with this theme, stimulating thoughts on the emotional impact of environmental deterioration expressed by Weber Nicholson (2000: 1f.) are worth mentioning. In revealing *the unspoken dimensions of environmental concern*, she observes that with few exceptions, people writing about the natural environment and people concerned with the interior of the psyche have not yet drawn intensely on each other's work. In raising the question of how human development relies on the natural environment and how culture facilitates or disrupts this process, she presents the hypothesis that humans are hampered in their meeting the contemporary environmental crisis by a severe and pervasive apathy based largely upon feelings and attitudes of which they are unconscious. Exploring the conjunction of peoples' attachment to and their destructiveness toward the natural world remains a challenging endeavour.

5.4 Outcomes and prospects

Cultural analysis is intrinsically incomplete. (Geertz 1975: 29)

A central purpose of my investigation has been, in the words of Cajete, »to present a broader, more inclusive view of the indigenous understanding of the natural world« (2001: 619). As such, it does not presume to be an ›objective‹ treatise, but rather developed a ›subjective‹ and culturally contexted perspective of indigenous environmental relationships. The pivotal importance of context as an analytical device has been highlighted throughout the thesis. Socio-cultural life, spirituality and biodiversity combine to provide the context for indigenous knowledge and sustainable production methods. It is thus that my research emphasises a holistic approach. And holism, as Grenier (1998) reminds us, is based on the view that systems are more than the sum of their parts. However, any case study relies at least to some extent on reduction and simplification. The above comment made by Geertz that cultural analysis always appears to be partial in a sense of incompleteness also applies to the present work. However, it has been limited to those themes that seemed relevant to me. Built on conceptual lines drawn from several strands of anthropological research, I have described numerous facets of how indigenous knowledge is acquired, represented and transformed. Moving to the task of examining natural resource use patterns, it became evident that this was not a question of recording knowledge contents as sets of information; rather, it became clear that it was more meaningful to describe them in the relevant framework of social, economic, historical and ecological processes.

By exemplifying the multi-layered character of indigenous knowledge, I have intentionally avoided analysing particularly useful techniques or single species, cognitive structures or linguistic terms. Rather, I have tried to reveal the process through which farmers and their families produce and reproduce their material conditions, social organisation and cultural values. Consistent with the emphasis on viewing knowledge as a process of interaction is my argument that it should be conceptualised in terms of a diversity of flows of information that are highly infused with spiritual associations, expressed through language, ritual, art and action within human relations with the material and imaginative world. This process neatly ties together the biological, the social, the historical and the psychological, acknowledging each as a formative, interactive part of culture.

However, indigenous knowledge is no *panacea* that will solve the complex, multi-layered problems at any level. Nor are there final answers that could be presented; rather, I have uncovered a number of contexts with the intention to shift the discussion towards the realisation that knowledge expressions are observable material threads of interaction simultaneously imbued with non-observable transrational referents. I have traced both the practical aspects of economic activities and their underlying symbolic meanings. In examining the *seen* dimension, the *unseen* was brought to the surface. By raising questions of how *Q'eqchi'* describe, experience and ultimately value the land, and how they represent these readings, reproducing particular visions of the environment over time, beliefs and principles inherent to the indigenous worldview like social and moral precepts became apparent. Just as it was not intended to reduce indigenous knowledge to a ›mental economy‹ or ›cultural model‹ that marginalise thoughts and feelings through which people perceive their world and which guide their actions, the foregoing discussion did not intend to reveal the environment as a mere ›cultural construction‹. I have tried to document that culture is materially and spiritually built upon the world. The social meanings of sites are articulated through a complex system of ideational associations. They are embedded in processes of interaction with the environment as a whole that provides the medium through which values are created and expressed. Here, landscape forms a crucial part of this medium as it is shaped and characterised by cultural beliefs and management systems. Place, valued in its particularity is infused with meaning as a part of ways of life. In reading the physical landscape, people also read a symbolic and socio-cultural landscape. For indigenous and farming communities such as the *Q'eqchi',* their relationship to the land is an essential part of their identity, and this is, as has been shown, in part formed by the locality. Cultural identities connected with such a sense of place need to be taken into account in the field of biodiversity conservation.

5.4.1 The *seen* and the *unseen*

> *[T]his oneness of land, people, knowledge and culture is the only basis for meaningful consideration of biodiversity.* (Christie & Mooney 2000: 320)

Knowledge inherent to indigenous resource management is a complex process of learning and remembering. Despite the dislocation during the war, the farmers of the two lowland communities have re-established social structures and communal practices that function as cultural points of reference. They have generated a detailed complex of empirical knowledge integrated with spiritual aspects of their lives and bound up with emotional ties to the landscape they inhabit. In daily interactions with their environment, the farmers and their families assess land suitability for multiple uses. The established land use system is labour- and knowledge-intensive and entails considerable physical intimacy with the landscape and in this way influences the creation of affective concern. This relationship is a very immediate and tactile engagement. The resource use patterns are directed towards a steady, cyclical reproduction of customary modes instead of economic growth and expansion. Since their arrival in the area, they managed to preserve a complex environmental interaction that fulfils their basic needs while confronting transformational pressures from the outside world. A large body of experiences providing information about biodiversity, ecology and resource management has been developed, of which I have only explored a limited part. I have further described how the process of knowledge generation is influenced by broader socio-economic, political and historical factors and also involves the conjunctive adoption of external notions. To a certain extent, introduced technologies are valued and people showed particular interest in widening their knowledge repertoires to cope with processes of change. This resonates with another important aspiration as to the transmission of knowledge. Within the communities, learning is a process of imitation and apprenticeship at the same time. In contrast to the formal school system, it is the role of learning by means of doing and direct engagement with the environment that characterises intergenerational knowledge transfer. In this course, language has a functional role of conveying information. Knowledge transmission is further bound to social regulations, religious sanctions and processes of cultural internalisation, including rituals and ceremonies that provide appropriate environmental ethics and values of respect, sharing, reciprocity and humility.

However, the interaction with the environment is not to be seen as an entirely non-destructive and harmonious symbiosis, as there are instances where the people fail to cope well with environmental and economic changes. In many cases, economic necessity has pushed the farmers to increase their control over the land. Concern about the soils becoming increasingly degraded was frequently expressed, and farmers pointed to the decreased quality and availability of water and mentioned problems with introduced weeds. The study gave further evidence of a decline in the variety of local species used in agriculture and agroforestry. Since the farmers have only recently migrated to the area, agriculture is partly in an experimental stage. Many informants

carry on plant experimentation with new varieties. While adapting exogenous crops and practices, they are aware that the activities have an interfering impact. This interference is compensated through the symbolic regeneration of the land they use. Although the traditional economy is the basis for cultural values, it has been permeated by the market economy and involves the parallel adoption of external notions. Not only through the cultivation of non-traditional crops, the increased use of chemical products such as fertilisers, pesticides or advanced seed varieties promoted by agricultural industries, but also through temporary wage labour on cash crop plantations, the farmers are drawn into circuits of the global economy. In this way, global capitalism has penetrated rural subsistence activities and must thus not to be excluded from an ethnoecological analysis.

Moreover it is important to stress that the loss of forest cover and the entailed impoverishment of biodiversity do not result directly from the development of economic activities that are ecologically damaging, but rather from the intensification of land use linked to the predominance of small holdings. This is a phenomenon linked to historical currents that have lead to extremely unequal land distribution based on an ongoing exclusion of the indigenous population from Guatemalan society. In a history of land alienation dating from colonial times, the *Q'eqchi'* have been forced to leave their homelands and move to marginal lands as in the case of the inhabitants of the communities adjacent to the National Park *Laguna Lachuá*. Conflicts over land have placed considerable pressure on their spatial and social organisation. As Wilson (1995) writes, the single most important feature of the economic landscape is the unequal distribution of land. This finding corresponds to the analysis of Wilshusen et al. (2003), who further identify the interrelatedness of land scarcity, large-scale uncontrolled migration or forced relocation, ecological degradation, population dynamics and violence as the most pressing threats to biodiversity. Following a similar line of argument, Gadgil et al. (1993) comment on this process, which can be expected to increase in intensity, as follows:

as traditional peoples are integrated into the global economy, and come under trade, acculturation and population pressure, they lose their attachment to their own restricted resource catchments. This may lead to a loss of motivation in sustainable uses of a diversity of local resources, along with the pertinent indigenous knowledge. The feedbacks between ecological carrying capacity of the local environment and social self-regulatory mechanisms, the shared values of local institutions, are cut. Thus, decoupling indigenous groups from their local resource base is likely to reduce resilience of their social/cultural systems as well as the local ecosystems, making both more fragile (1993: 156).

Beyond the relationships of power and control, it has been shown that competing resource management systems are not simply reflections of competing vested interests, or competing views of the utility of land for society. Such conflicts reflect, in Howitt's terms, »much deeper ontological schisms between worldviews – between ways of seeing the world and ways of thinking about peoples' places within the world« (2001: 59).

This insight points to the importance of religious worldviews as an effective part of ecological systems. A deepened understanding of ecology needs to combine with an understanding of religions that, in Sullivan's words, »form the rich soil of memory and practice, belief and relationship where life on earth is rooted« (2001: xiii). This is one of the major features I have intended to demonstrate. It is highly important to recognise that the biodiversity generated in the local agro-ecosystem is a product of biophysical *and* social processes, just as the land use system combines the material and spiritual maintenance of resources. The latter involves a set of rituals the peasants have developed that answer fundamental questions about how humans should behave towards the environment. In this way, the *Q'eqchi'* peasants constantly create and recreate their culture in order to adjust to external pressures, reinforce their relationship with the local landscape and cyclically repeat collective dramatisations as a way of expressing and renewing their identity. Despite profound dislocations and social disruptions the *Q'eqchi'* have experienced in the past, the worship of the guardian spirits is still carried out and rituals are still practised individually and collectively to restore productivity and fertility, to strengthen social relations and to retain the belief in the sacred power associated with the natural elements.

It has been claimed that understanding the natural world as a sacred realm invoked by spiritual beings does not necessarily call for an ethic of environmental protection. However, the worldview of the *Q'eqchi'* emphasises the need for balance within the interdependent web of relationships between humans and the natural environment. Indigenous ethics with respect to the physical world is a matter of reciprocal appropriation in which humans invest themselves in the landscape and at the same time incorporate the landscape into their most fundamental experiences. In this sense, the indigenous knowledge of the peasant farmers is to be understood as the capacity to maintain the equilibrium and the relationship of reciprocity, which is seen as the recreation of life. The entire *milpa* process is a reciprocal activity, which is intimately bound to cultural identity. The symbolic perception of land and the rituals related to the land's fertility are fundamental elements of the indigenous culture. At its heart lies the perception that all parts of the universe are interrelated. A central tenet critical to the formation of environmental values is that the cosmovision is non-human centred. There is no distinction made between secular and sacred realms of life. Despite the influence of the Christian Churches, these beliefs have constantly been redefined and still form the basis of spiritual life. The cosmovision itself forms an essential dimension of indigenous knowledge to be considered within development and conservation initiatives. According to Hatse and De Ceuster (2001a), it is one of the aspects most often ignored or denied in the fields of development cooperation and scientific research. For an endogenous and sustainable approach applied in agricultural communities, however, it is indispensable to know and value the indigenous worldview as an explanatory frame that gives meaning to human life. It integrates the natural and the social world into a whole and addresses the need for respect for all that exists as well as the need for transformational change to regain balance and harmony in the cosmos.

In particular, the principle of reciprocity is essential for balance in life. Because these notions assume the identity of the knower and the known, realisation of interdependence means embodying and living it. Such interconnectional perspectives, as Massanari writes,

»represent significant frameworks for environmental ethics because of their commitment to an eco-centric, as opposed to an anthropocentric or egocentric, understanding. Realizing the interdependent self leads naturally to an eco-centric view characterized by a reflective and active interconnection with all things« (1997: 277).

This perception integrates human beings into the natural world, with a responsibility to care for it according to ancestral customs. The natural world is expected to nurture in turn, providing physical and spiritual sustenance. This is a way of taking care of the divine forces so that they will continue to regenerate the cosmos. The exemplified image of the natural world as the parent of humans is readily understandable: humans are dependent upon the natural world, which gives them life and provides for them. In this way, it has been shown that the subsistence farming practices comprise more than just working with elements such as soil, crops and seeds. They involve the application of values and rules that reflect a notion of a sacred landscape. People form and attach significance to features bound to their social existence and environment that can be perceived in a material and in an imaginary way. The local landscape is created through experience and engagement with the world. The landscape is interwoven with understandings of belonging in terms of rootedness, equilibrium, cohesion and the anchoring of ownership of the land by the territorial imagery representing nature.

Ecosystems are in part socially constructed, and resource management and conservation practices are based on a variety of social processes. At its core, the ethnographic research revealed the importance of symbolic devices such as images and normative representations that appeared as a relevant aspect of knowledge processes. These phenomena only became intelligible in situated contexts. To study knowledge means to study social interaction and involves the notion of multiple realities that collide in interface situations. The concept of *interface* has been discussed by Arce and Long (1992). They refer to studies of interface situations in the field of rural development that aim to explore the discontinuities of face-to-face encounters between individuals with differing interest, resources and power and the dynamic character of the interactions that take place, showing how actors' interests, perceptions, values and relationships are reinforced or reshaped by this social interactional process. Such an approach focuses upon the interplay of different constructions of *reality* developed by the various parties and traces out their social implications and proved to be of value for analysing the production, dissemination and transformation of knowledge.

5.4.2 From present to future

> *Cultural change transpires not only in a linear, diachronic fashion but also in cycles, returning to refashion prior cultural signs.* (Wilson 1995: 304)

A central objective of the foregoing chapters was to bring together different frames in a way that distinguishes but does not separate human communities, the natural world, material needs and sacred realms. As to the local context, the study not only focused on knowledge repertoires developed by rural peasants in Alta Verapaz. At the same time, it was intended to retrace the historical and present-day situation of the *Q'eqchi'* to provide a better comprehension of the people's past and current claims to land for sustenance and well-being. As Barreiro (2001) writes, for many indigenous peoples, the experience of poverty is synonymous with the loss of land, which is synonymous with the loss of culture or way of life that induces happiness. The struggle for territory is essentially a cultural struggle for autonomy and self-determination.

Historically, colonial and post-colonial governments have attempted to destroy traditional institutions both through administrative and armed means. The entire socio-economic structure of the country has rested upon the foundation of a subjugated and impoverished indigenous population. Like other Mayan groups, the *Q'eqchi'* have resisted the policies of oppression and assimilation and retained many distinguishing cultural features that set them apart from the mainstream *ladino* culture. As has been accentuated by Huizer (1994), such resistance to doctrines and regimes of nation-states can also be seen as an expression of indigenous knowledge. Beginning with the encounters with early European colonists, the *Q'eqchi'* population has been challenged by increasingly rationalised consumption of the environment valued as private property. In the face of this ideological imposition, communities have strived to retain values and principles inherent to their worldview. However, four centuries of contact with imported ways of life have given rise to hybrid, though coherent, cultural systems, as commented by Villa Rojas. In regard to the encounter of traditional practices and concepts dating from pre-Colonial times and European influences, he writes that what exists today among the contemporary Maya is »a sui generis product« constituted of elements of both origins that have grown to accommodate themselves in terms of »a functional whole« (1988: 114). Equally, Adams observed that the indigenous peoples maintained distinctive lifeways, which he further specifies as

> *products of an evolution of cultures resulting from interaction with the non-indigenous population that lived off them. While they have rebelled from time to time, their principal concern has been to survive in a natural environment consistently degraded by political and economic forces far beyond their control* (1988: 277f.).

Almost two decades ago, Davis (1988) wrote in *Sowing the Seeds of Violence* that the full scope of the social and cultural upheaval caused by the armed conflict would not be known until several decades had passed, when another generation of anthropologists with the historical distance needed to trace out the implications of the experienced violence had emerged. In the same volume, *Harvest of Violence,* Adams (1988) notes that from an anthropological perspective, an understanding of what has occurred in Guatemala is not easy because the knowledge and experience of tens of thousands had been lost with their deaths. Although the present work did not set out to systematically investigate the cultural consequences of the political violence, it became obvious throughout the research that any question related to environmental policies, protected area management and the cultural embeddedness of indigenous knowledge requires a consideration of the broader social and historical currents in order to achieve a more profound understanding. The effects of the oppressive military regimes and the dislocations of the Mayan population during the height of the counterinsurgency campaigns in the 1980s left their traces within the communities and in the minds and souls of the people. Despite the democratic opening process in the past decade, which has raised hopes within the country and received much international acclaim, much distrust and social imbalance remain within all domains of national society and are clearly notable in any intercultural setting. Throughout the centuries, violence has impregnated the whole of society; silence and fear are deeply rooted within the national culture (Flores Arenales 1999: 166).

Fig. 5.24 A wall painting in *Ixcán* reminds of the times of war

Far from being acknowledged in society, the reality of the indigenous population in Guatemala has been and still is subjected to socio-cultural discrimination, economic exclusion and political suppression. The anti-democratic nature of the political tradition has its roots in an economic structure marked by the concentration of productive wealth in the hands of a privileged minority. This elite established the foundation of an exclusionary system, including elements of racism, which is the most profound manifestation of a violent social system. The state gradually evolved as an instrument for the protection of this structure, guaranteeing the continuation of inequality and injustice (Stavenhagen 2003: 6). Consequently, there has been much political unrest in the area well into the 21st century. The situation has been described by Amry as follows:

After 200 years of assimilationist policies, the majority of the people in Guatemala is still indigenous, providing the failure of these policies. The Maya population, living in conditions of extreme and growing poverty, has and continues to be the object of exploitation which it cannot escape because its economic base, land, has been expropriated in favour of agro-business which now controls the best lands. The distribution of land has led to an economically ineffective and ecologically devastating structure of land use, with the best lands being used for extensively (mostly for cattle raising) and intensive exploitation of unfit land by smallholders producing for their own needs. Nonetheless, indigenous people have succeeded resisting the destruction of their culture and of customary law as a part of this culture. As a consequence, Guatemalan reality remains of pluricultural nature, with the Mayas constituting the largest and most vulnerable group. Guatemala's legal system continues being a monistic system, based on the idea of a single nation, people and law. Cultural difference was treated as dysfunctional and was answered by policies ranging from integrationism to genocide. Though the Guatemalan Constitution now recognises the existence of indigenous people, the basic monistic scheme remains unchanged. Undermined by the effects of the civil war and growing poverty, this system faces rising and particularly brutal criminality, impunity and a legal system unable to cope with the crisis (1999: 60).

Given this less promising assessment, the question of what prospects there are arises. For several authors, cultural reconstruction is ongoing and tradition, as Wilson puts it, is continually readjusted to changing circumstances within a »monumental matrix carried forward from the past« (1993: 135). However, despite the recognition of indigenous rights, the formal acknowledgment frequently remains nominal. Even where the law is to some extent favourable to the indigenous population, its application is often at fault as strong national interests oppose those of rural communities. Although national policy in Guatemala has undergone revisions with the change of administration since the end of the civil war, its general purpose has not been significantly altered. According to observations made by Stavenhagen (2003), the indigenous population is still widely marginalised in all domains of national society. Although the *Agreement on Identity and Rights* lays down specific objectives and targets that the government is committed to attain, there are serious delays in their implementation. As long as the country's resources are controlled by the governing elites, who have succeeded in systematically excluding the indigenous people from nation-building, the latter will be unable to play a role as equal citizens in the future. The AIDPI points to a modifica-

tion of this structure as a means of guaranteeing peace and human rights in a framework of democracy, but the changes proposed have not been effectively addressed and a »monocultural model« persists (Stavenhagen 2003: 8ff.). Notwithstanding, with the movement towards decentralisation informing the post-conflict period, more participatory processes can be expected to grow in the years to come.

By examining the environmental sector, Berger (1997: 113ff.) states that the government has discovered that much-needed development funds may be obtained by working the environmental angle; the environment has become an integral part of the neoliberal economic policy and rhetoric of the state and private sectors. Thus, environmentalism in Guatemala remains vulnerable to the perception of what ›ecology‹ means abroad. Although it is still largely an elite and urban-based movement, the division and isolation of segments by location and projects led to a closer cooperation with local populations. This may result in directives for research and policy being informed by perceptions and priorities suggested by local entities themselves, especially in cases where they are involved in resource management projects. From a different perspective, Hallum (2003) seeks to illuminate the significance of religion for environmentalism and to illustrate how religion may motivate environmental praxis, even across cultures. Drawing on a comparative study among indigenous communities, she argues in her account *Ecotheology and Environmental Praxis in Guatemala* that religious beliefs have more influence in changing societal behaviour then does scientific knowledge. Shared values and the common religious theme of ›caring for creation‹ can be a motivational ethic even in transnational networks. As to the situation in the northern lowlands, she writes:

One can argue that the residents of the immigrant communities in the Petén and other places in Guatemala apparently feel less reverence for the Earth because everything is so uncertain and because it is not the place *of their ancestors who were left behind in burial mounds. When indigenous communities and generations are torn apart by war or forced migrations due to lack of land, the ethic of treating the* religious *topography with reverence also begins to unravel* (2003: 65).

Although Guatemala has the best environmental laws in Central America, legal systems and official regulations will not be sufficient for the preservation of the remaining forests in the area if the people themselves, who seemingly have lost their traditional religious grounding, do not feel responsible to preserve and care for the natural resources. As many of the colonists who left their ancestral lands also left their ancestral religions, an affirmation of beliefs in the sacredness of nature can act to override short term interests. Without a basic environmental ethic, Hallum concludes, the laws are clearly inadequate (2003: 61ff.). By questioning what the future of the Mesoamerican cultures and their religious imagination might hold, Carrasco establishes that the patterns of the future may be seen in the patterns of its past. Following his view, both Mesoamerican cosmology and history were characterised by what he terms »eccentric periodicities« – periods of stability interrupted by collapses, rebellions, transformations and new beginnings (1990: 154f.).

As to the state of such currents evolving at present, indigenous movements should be mentioned, which partly emerged in conjunction with the growth of indigenous rights organisations in the 1980s.[90] Playing a crucial role in the political arena, the so called pan-Mayan movement involves reclaiming traditional religious ceremonies and themes in Mayan spirituality, teaching indigenous languages in schools, presenting indigenous candidates for political offices and other assertions of ethnic identity and cultural affirmation. Ten years ago, Siebers (1996) wrote that there was hardly any basis for talking about ›the Mayas‹ as a relevant social category among the *Q'eqchi'*. Pointing to the fact that only a minority of *Q'eqchi'* speakers can communicate in Spanish, thus preventing most of them from establishing relations with members of other Mayan groups, he questioned the tendency of many groups within the indigenous movement to use the term Maya as a central category to refer to all Maya groups.

In comparison, the more recent work of Schackt (2004) gives evidence of a shared Mayan identity as a phenomenon of prevailing relevance. In the aftermath of the civil war, he observes that the term Maya is currently in everyday use.[91] Although many have an ambivalent attitude, there seems to be a tendency among the *Q'eqchi'* to identify themselves as descendants of the ancient ancestors. Equally, Wilson (1995) refers to an overt, conscious ethnic identity as a relatively new social concept varying according to location and context. Nevertheless, in his book *Maya Resurgence in Guatemala. Q'eqchi' Experiences,* he has undertaken to demonstrate that there is no single, coherent ethnic identity: »Instead, many social actors, internal and external to Q'eqchi' communities, compete for the right to determine what is to be Q'eqchi'. This means that there is a plurality of dissenting discourses on history that cannot be worked into one coherent version« (1995: 16). In the wake of the current revival of Mayan culture, the role of religion and spirituality has been of particular significance. Schackt (2004) asserts that many Mayan groups maintain an awareness of ancestral connections with the land and its associated gods and spirits and maintain a ritual relationship with the ancient ruins that exist in their territory. According to Secaira (2005), this spiritual realm is experiencing an unprecedented revival, especially among young intellectuals in search of ways to distinguish themselves from mainstream society and reaffirm their Mayan identity. Looking forward, he states that although poverty, discrimination, technology and cultural change have all modified the relationship of the Maya with nature, they still have a basic ethic and attitude different from *ladino* peoples, who have been subject to more ›Western‹ influence.

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[90] Within this movement of ethnic revivalism there are different factions. Among them, a particular grouping emerged that is engaged in the field of environmental protection. For this, see Secaira (2000).

[91] Linked to the peace process of the 1990s, the government accepted the term *Maya* as the official ethnic designation for all of the 21 different groups classified on linguistic grounds. As established in the AIDPI, ›Mayan Identity‹ is officially defined as a set of elements, including direct descent from the ancient Maya; language of common Mayan heritage; a view of the world inherited from their ancestors; common culture including philosophy, scientific and technological knowledge, artistic and aesthetic conceptions, communal organisation and a sense of their own identity (Amry 1999: 61f.).

In his article *On the Crossroads between Tradition and Modernity. Religious and Economic Development of the Q'eqchi'es of Guatemala*, Siebers (1994) wrote that local communities have constantly adopted and adapted their economic modes and religious traditions according to their own needs and meanings. Both are part of an ever changing and dynamic process of meaning making. In spite of transforming patterns, the deification of important aspects of nature continues as a crucial feature of religious symbolism. Through their proximate interaction with the natural world, farmers create an environmental interaction that continually affirms identity in a sense that rural life is perceived in a systemic way that acknowledges the interrelatedness of all elements. This integrates human beings within the entirety of all existence with a responsibility to care for nature according to ancestral law. In exchange, the natural world is expected to nurture in its turn, providing physical, emotional and spiritual sustenance. By evoking the mountain's sanctity a contractual, reciprocal relationship is established and constantly confirmed.

Another aspect that will increase in importance in the future is the fact that knowledge repertoires are a result of encounters in which local and global, traditional and modern elements are intricately intermingled. The process of knowledge accumulation includes the constant absorption of notions introduced from outside. As described above, agricultural knowledge embedded in traditional cultivation practices has been mixed with elements of modern technologies introduced through NGOs or governmental institutions. Even in remote areas, where such institutions do not work due to reduced accessibility, peasants are within reach of national and even international radio broadcasting.[92] The role of communication media has been briefly mentioned in the prologue. Almost every family owns a radio, while television is still not widespread due to the lack of electricity in the area. It will be a future task to inquire on the transforming impact of this latter media, locally called **mu sa' kaxon,* which literally means »shadow in a box« (Wilson 1995: 275), which surely will appear in the communities at the moment when an adequate power supply is provided. Media programmes far removed from the reality of rural life will confront the people with imagery depicting other ways of life, worldviews and values. Yet, it is interesting to see that people even in remote areas have opinions about occurrences of global scope, as became evident in the initially outlined conversation with a peasant from *San Benito*, who associated the clouds of smoke originating from burning forest with the war in the Middle East.[93] The radio also disseminates advertising for agro-chemical products,

[92] Flores Arenales analyses the role of mass media as a tool commonly used by the government and churches in the past to stimulate changes in attitudes and perceptions among the indigenous peoples: »Independently of the approaches of these educational programmes, all the projects, consciously or not, ultimately aimed to promote social change in order to facilitate the integration of the indigenous population into the nation« (1999: 95).

[93] The Iraq crisis in 2003 indeed had an impact on the local livelihoods of peasant farmers in Alta Verapaz. As the position of the Guatemalan government was associated with the United States and their foreign policies in the Middle East, Saudi Arabia ceased the import of cardamom from Guatemala, what eventually affected the economy of the farmers at the local level. This incident gives evidence for the interconnectedness of local modes of production and global power structures and il-

educational and religious programmes and information on international sporting events.[94] Although admittedly not taken up as an explicit theme in this work, the following photograph (Fig. 5.25) illustrates some of the *seen* examples of global phenomena that have an obvious impact on local life. Next to the symbols of Catholicism, capitalism and national unity, images of the global soccer phenomenon appear in the interior of an informant's home in *San Benito*.

Fig. 5.25 An assembly of global imagery in a local household

Here, as in many other contexts, the dichotomy between *traditional* and *modern* loses its meaning as both dimensions are constantly interacting in ongoing processes of social and ethnic construction. Flores Arenales has assessed the particular ways by which local communities develop a process of ethnic reconstruction, combining external and internal cultural symbols in the larger frame of the recovery of the social memory. He is one of the few scholars who address the experiential side of war: »An organised recollection of the past provides not only personal or collective sense of temporality, but also makes possible the transmission of knowledge to the next generation« (1999: 199).

lustrates the dynamic transformations the farmers are experiencing under the worldwide economic and political forces.

[94] It occurred that informants, foremost young men, asked me about my favourite soccer team and would be disappointed to hear that the German ethnographer did not even have the slightest idea as to the members of the national team of her own country. This led to my personal finding that any anthropologist should acquire at least some basic knowledge on soccer while preparing fieldwork.

The *Q'eqchi'*, like any other culture in the world, are in a constant process of identity construction through ›hybrid‹ representations, which combine external aspects with their own cultural background. He further establishes:

Today, Q'eqchi' are more culturally diversified than ever before. Paradoxically, this works in two simultaneous and contradictory ways: on the one hand it weakens group identity within a dominant order that ideologically, politically and economically struggles to uniformise different societies and cultures. On the other hand, however, social diversification can also broaden the chances for cultural survival by combining material and symbolic elements of exchange with the inevitable and constant process of negotiation with the external world (1999: 195).

5.4.3 Towards a conservation of bio-cultural diversity

> *Humans' survival as a species depends upon adapting ourselves and our landscapes – settlements, buildings, rivers, fields, forests – in new, life-sustaining ways, shaping contexts that acknowledge connections to air, earth, water, life, and to each other, and that help us feel and understand these connections, landscapes that are functional, sustainable, meaningful, and artful.* (Whiston Spirn 1998: 26)

By drawing on examples from multiscale ethnographic experiences, the foregoing chapters have applied a political ecology approach to the study of cultural contexts of both global and local aspects of biodiversity conservation and knowledge production. As has been described, a primary goal of contemporary conservation and development programmes is to promote biodiversity protection while improving human living standards. In political and scientific debates, conservation efforts have been discussed to better accommodate the needs and expectations of local and indigenous communities living adjacent to protected areas. A co-management approach, it is argued, may offer an alternative to conventional protectionist strategies that impose restrictions on resource exploitation. Like many other anthropological studies, my investigation revealed an inextricable link between cultural and biological diversity. This recognition leads to the claim that maintaining biological diversity should simultaneously involve concern for the loss of cultural, linguistic and religious diversity. Here, the point is not that indigenous peoples should live in ways that outsiders assume to be traditional in the sense of »frozen in time«, as argued by Minnis and Elisens (2000: 17), but rather the dynamic nature of cultural and biological adaptations should be acknowledged. Strategies and policies oriented at community development and mainstreaming indigenous people's issues in conservation should follow this scheme, as it has been widely experienced that conflicts and resistance associated with conservation initiatives surface not only as a result of conflicting interests but also when contravening institutional and cultural practices interfere in the same setting. This notion underlines how important it is to study the politics of conservation so as to better understand such situations as the case of the *Laguna Lachuá* National Park, where state-mandated control repeatedly interfered with occupations of landless peasants.

Another important insight of the present research is that conserving biodiversity in protected areas cannot be regarded solely as an issue of resource management at the local level. As the example has shown, tensions surrounding their establishment do not arise exclusively from local conflicts. Threats to protected areas and their neighbours often originate far from park boundaries and require the consideration of much broader issues than conservationists are accustomed to dealing with. In the Guatemalan context, especially the implications of the war have to be taken into account as they affect social and political spheres of the country long after the formal re-establishment of democratic structures. However, there cannot be provided final answers to the crucial questions of how to manage protected areas to support both biological and cultural diversity. Each particular situation requires an individual analysis to determine the most appropriate actions to be implemented in order to promote equity in biological diversity conservation projects, to which effect great creativity is required. A single response may not be valid for all cases. In all cultures, people interact with their surroundings, which became meaningful to them, not only as sources of food and shelter. I have presented indigenous perceptions of nature as expressed through cultural knowledge, which may enrich our collective understanding by providing local specificity to global issues.

Taking the ever-present quest for participatory approaches seriously, research designs need to be adapted to the provisions addressed by the CBD in regard to *in situ* conservation. As initially outlined, they include the need to protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements, the exchange of results of scientific research and the repatriation of information and the encouragement of methods for cooperation for the development and use of indigenous technologies. In accordance with these claims, I suggest that the exemplified complex of *knowledge*, *practice* and *belief* may act as an effective basis for biodiversity conservation. There is a need to document actual systems of management with the entire ideological background included as part of the overall picture. The ability to learn from indigenous knowledge and to apply its lessons in the contemporary world necessitates that we consider the context within which knowledge is produced. To ignore this context, benefits neither local resource users nor contemporary resource managers. Any type of intervention will be all the more sustainable the more it takes into account socio-cultural conditions and human-nature relationships as composed of a multitude of interactions. As has been shown in this study, such interactions range from material necessities of subsistence to cultural, ethical and aesthetic valuations of what is perceived as environment. I have emphasised that social systems are dynamic and that any methodology seeking to advance the inclusion of indigenous knowledge research into conservation practice should accommodate this dynamism. The explicit incorporation of indigenous knowledge into a more broadly based and holistically conceived bio-cultural conservation strategy offers a more consistent and effective approach to the conservation than does the exclusive focus on natural species and conventional ecosystem integrity of conventional approaches.

As to the question of how to translate this approach into practice, the findings of scholars analysing the language-knowledge-environment connection offer insights worth mentioning. Concerned with this relatively new object of study, Maffi (2001) emphasises that linguistic and biological diversity are not to be seen as parallel products of external factors that independently affect both; rather, they are intimately related parts of a whole and mutually reinforcing. As knowledge is encoded in language, its protection may pass through pathways such as conserving the local language, ensuring knowledge transmission within the societies themselves, empowering indigenous societies to increase their control over processes of change, and ensuring continued access to the environments upon which their ways of life depend. Socio-linguistic studies revealed that when children cease to learn their community's language, indigenous knowledge is in danger of being lost.[95] Thus, efforts toward language revitalisation may also result in preserving environmental knowledge. This also means that an understanding of the process of language loss becomes important. Preserving languages and the cultural integrity would be easier if we better understood the processes and forces that encourage or impede the transfer of indigenous knowledge within societies (Kempton 2001: 58). Weber Nicholsen suggests that we can think of both landscape and language as parts of the same »total consciousness« (2002: 31). With emphasis on the relatedness of language not only to the human mind but also to the body, she writes that »language is woven into the seeing, feeling, touching, and dreaming of the whole mind« (2002: 30).

Apart form these considerations on the links between language and environment, Maffi (2001) further asserts that it is still an uphill battle against the political and economic forces that lie behind the bio-cultural diversity crisis, mainly the forces of globalisation and the socio-cultural attitudes and behaviours they induce. The only long-run solution, it has been argued by Banuri and Apffel Marglin »is a continuous questioning of the instrumental attitude towards nature, of the values which underlie modern society, and the goals which have been used to legitimise these values« (1993: 20). The authors conclude their considerations on the politics of knowledge by defining three major issues that need to be addressed. The first is a political one and implies the need of transferring power to local communities through decentralisation. The second is an economic one, as they claim the need to question the imperatives of modern technology, particularly in the field of agriculture and forestry. The third is the most important consequence they draw from their discussion of ›modern‹ and ›non-modern‹ systems of knowledge and lies in the cultural sphere: »when all is said and done, the question is that of the relationship between humans and the natural environment« (1993: 20f.).

[95] For an account on the correlation between ethnobotanical knowledge and social variables of bilingualism and formal schooling, see for instance Zent (1999). His finding indicates that the erosion of local taxonomies is directly linked to the erosion of local knowledge. This issue points to the need to maintain the integrity of linguistic systems if knowledge systems are to persist.

If the creation of knowledge reflects a social process of perception, Arizpe et al. (1996) have argued, then socially and politically sustainable solutions to environmental problems can only be successfully negotiated if the differences of perceptions and assessments of such problems between diverse social groups are well understood. The use of natural resources has a great deal to do with the way in which societies are reproduced, which implies that natural sustainability must be premised on social sustainability. If we agree that the internal dynamics of human societies shape the behaviour of individuals in those societies toward nature, then a future task remains to ask »what kinds of concept those societies have about nature« (1996: 34f.). The question of what should be done in the future has been answered by Weber Nicholsen as follows: »We should foster the mental space that will allow for creative links to be made that can then become the basis for creative – and hence unpredictable and unprescribable – actions« (2002: 1999).

As to such claims for creative actions, environmental education has been widely considered by conservation agencies as an initial step in improving people's attitudes towards conservation. Hence, many implemented co-management arrangements such as the *Laguna Lachuá* National Park include environmental education programmes that address local concerns and aim to communicate resource management objectives and natural values of the protected area. The idea behind this strategy became clearly evident in an interview I conducted with one of the park managers during fieldwork. When talking about external threats to the integrity of the resources within the Park, he stressed the necessity to »*educate the local residents because they are unaware of the ecological diversity in their habitats and ignorant of conservational initiatives*« (personal communication, 2002). Repeatedly I heard similar comments such as »*the peasants are destroying nature out of lack of consciousness*«. They are clearly seen as functional partners in the conservation scheme, who have to be made ›aware‹ of the importance of biodiversity conservation as achieved through the establishment of the protected area. In my opinion, there is no need for educational measures on this level. Farmers most often were aware of the issues and problems of forest conservation in the area, but saw themselves unable to act correspondingly because their economic situation forced them to act in a way that would negatively affect the balance of the ecological conditions. But I agree with Fiallo and Jacobson (1995), who emphasise the need for further research to understand local people's attitudes towards protected areas. As nature conservation as a science which separates the phenomenon of biological diversity from cultural diversity is not an inherent value among the indigenous peoples, the relatedness of culture and nature through which they conceptualise their world might serve as a better basis for a meaningful consideration of alternative conservation measures. To do so, co-management needs to be modified to realise the implications of a multicultural definition of environment. The implementation of such an approach demands an entirely different epistemology for cultural affirmation, which may be derived from environmental ethics and principles rooted in the indigenous cosmovision.

One western analysis would say that environmental degradation is caused by relations between people: unequal access to the land and extension of the agroexport economy. For the elders, however, ecological crisis results form the breakdown in relations between people and the conscious environment, specifically the mountain spirits that inhabit and constitute the landscape. Science is not seen as a valid source of explanation for ecological problems; instead, it is part of those problems. (Wilson 1995: 290f.)

The recognition that science and scientific resource management are themselves cultural constructions and thus provide but one worldview among many may be the first step along the path towards an appreciation of the diverse sets of knowledge that underlie cultural systems of environmental management throughout the world. However, critical voices have objected that understanding the natural world as a sacred sphere does not necessarily call for an ethic of environmental conservation or stewardship. Indeed, beliefs may have little to do with actual behaviour towards the environment as often economic needs are more decisive for human actions than customary beliefs. It cannot be assumed that people's perceptions and norms are mirrored in their actual behaviour. But social institutions in general and the integrated concept of nature and culture inherent to the indigenous cosmovision in particular nevertheless imply manifold conservational aspects to be acknowledged. As they provide philosophical principles of ethical responsibility and social norms of reciprocity, accountability and respect for ecosystem integrity that promote ecologically sustainable behaviour, it is important to reconsider the value of indigenous cosmologies to foster environmental management. The basic principle of *equilibrium*, for instance, which is part of the cosmovision of many indigenous societies, has been framed by scholars like Bodley (2002: 163) in terms of »cultural resilience«. It is increasingly acknowledged as a key feature of long-term human adaptability to minimise human-caused detrimental impacts to the environment, which emphasises the dynamic aspects of human and natural systems. These considerations are contrary to long established beliefs about evolutionary progress, and they challenge the ideology that unlimited growth is a natural process and the best way to improve human well-being.

This realisation led numerous authors to rethink a new resource management science that is better adapted to serve the needs of ecological sustainability in terms of a synthesis of socio-ecological paradigms. By this means, it has been argued by Montejo that *ecology* is not just something, to talk about, out of scientific curiosity, but should be rather seen as a »way of life« (2001: 191). First of all, he asserts, »a change in human attitude toward nature is needed« (2001: 193). Likewise, Anderson suggests that conservation is »a form of mutual caring respect. Focally, it is respect for our fellow humans. More broadly, it is respect for the world« (1996: 184). In his view, conservation cannot be looked at in isolation. To save the diversity of life will require that most people develop some form of environmental morality and that the political process accommodates environmental goals. This twofold process will not be an easy task. One solution would be to make conservation a part of the religiously sanctioned ethical code. This does not mean »that ecology must be religious, but that anyone inter-

ested in convincing people to manage the environment in any particular way would be well advised to embed it in a rich texture of emotion and experience« (1996: 167). Reason may help to decide between conflicting means to an end, but people's ends are determined be needs and emotions, and perceptions are necessarily and inextricably involved with feelings. By applying to Max Weber who saw modern society as having become progressively »disenchanted« with the world, Anderson further asserts that »we have lost the enchantment of life in a spiritual cosmos, we have cut ourselves off, by a narrow rationality, from the great unity of things« (1996: 168). This implies that any solution to the world ecological crisis must have not only economic but also psychological dimensions. His suggestion aims at involving people in a genuine love of their environments. The opposite approach – leaving ecology to ›scientists‹ and ›experts‹ is not viable, as they preach objectivity, rationality and dispassionate examination of the facts: »Yet being human, they are impassioned and biased« (1996: 169). Scientists and environmentalists have erred by assuming that people act in their rational self-interest. By emphasising that humans are emotional beings, he further delineates: »We know, more or less, how to manage the resources – at least how to conserve them. The problem is now to motivate people to do it. Motivation is an emotional matter. Knowledge is necessary, but knowledge without emotional drive does not produce ›action‹« (1996: 123). In the end, he concludes, education of the public, and in particular of the young, is the only hope. Human survival depends on educating upcoming generations in ecologically morality. Specifically environmental education must involve people in their environments directly. Current educational forms that reduce them into »mindless, passive sponges for information, are counterproductive« (1996: 179). As to future tasks, it has been similarly argued by Cajete that we need

to move beyond the idealization and patronization of indigenous knowledge, something that can inadvertently lead to marginalization of the most profound indigenous epistemologies regarding interaction of human beings and nature. Indigenous people must be supported in their collective attempts to restore their traditions while also recreating and revitalizing themselves in ways they feel are appropriate in contemporary society. One of the places where this can happen is in the area of indigenous-based environmental education (2001: 637).

5.4.4 Rethinking scientific assumptions

> *[I]f you want to understand what a science is, you should look in the first instance not at its theories or its findings, and certainly not at what its apologists say about it; you should look at what the practitioners of it do.* (Geertz 1975: 5)

In their recent article entitled *Understanding Ecological Knowledge*, Menzies and Butler (2006) argue that despite the growing awareness of the importance of indigenous knowledge for natural resource management, the current regulations and practices in many regimes still do not provide effective formal mechanisms for the integration of such knowledge into active management. Equally, scientific investigation is often carried out by outsiders for other outsiders, with the result that the outcomes most often are inaccessible to the local communities from which data have originally been obtained. However, a significant rethinking has taken place within the global environmental discourse, leading to a conservational philosophy that includes social and cultural values alongside ecological and economic ones. It may even seem that a general cognition has evolved in political and scientific discourse, that »reason and intelligence alone are the source of our understanding is sheer illusion« (Goldsmith 1993: 79). Notwithstanding, the process of incorporating indigenous perspectives and the application of local knowledge into conservation and development programmes remains a complex and difficult task. Although perceptions of nature and their rhetorical representations within the larger public and scientific discourse have changed in the last years, unresolved questions remain with regard to resource ›managerialism‹. In order to avoid anthropocentrism and ethnocentrism in favour of an »ontological equality«, Posey (2003: 136) argues that this requires shifting priorities from *instrumental values* (i.e. how is biodiversity useful to humans) to *intrinsic values* that imply the understanding that all life is valuable whether it might be of use to humans or not. This is not an easy task within a world dominated by economics and global trade.

Within the realm of academic discourse, this claim for ›ontological equality‹ finds an analogue in the call for interdisciplinarity, which has almost become ›a mantra‹, as formulated by Sillitoe (2002a). The continuously expressed demand of inter-, multi-, or transdisciplinary approaches reflects the need to evolve a research methodology that contextualises narrow scientific enquiries within a broader perspective. In striving to meet this challenge, Stedman Edwards reminds to consider that:

Changes in policies on valuation of resources and increased scientific research do not constitute a fundamental rethinking of our development path. Measures of development are still largely based on indicators of economic growth, income, and consumption. In other words, the standard of development remains increased resource use. Sustained growth, rather than sustainable development, is the basis of the reigning development model. Economic expansion based on resource throughput had been central to development achievements to date. But development achievements have been insufficient, and further progress through expansion of resource use jeopardize biodiversity. The problems inherent in the current model include increasing inequity and reinforcement of the political and economic structures that

promote poverty and inequity; and dependence on ever greater resource use because of population growth and consumption patterns. The failure of the development model to resolve the problems of poverty and inequity, rapid population growth, and inattention to the value of environmental resources, is at the root of its impacts on resource use and biodiversity (1998: 82f.).

Stedman-Edwards argues that specialised disciplines provide sophisticated tools for analysing many aspects of the current questions related to biodiversity conservation, but interdisciplinary communication is often obstructed by specialised languages, perspectives and methods. In order to gain a comprehensive understanding of the causes of biodiversity loss that goes beyond a summation of conventional approaches, the social sciences must be further called on. As theory, methodology and analysis linking socio-economic variables and environmental degradation are in the early stages, experiences with truly interdisciplinary work is minimal. Interdisciplinarity is not just a needed approach in terms of combining variables, which so far have not been brought together, but it is necessary to become aware of the »unconscious values and hidden agendas« to be brought into the light of critical review, as has been emphasised by Metzner (1993: 168). This endeavour will entail redeploying paradigms and reorienting a technoscientific development approach, as Escobar (1999: 15) puts it, to create a new »bioculturalism«, which he sees as a new type of transdisciplinarity.

When I was initially offered the research position within the interdisciplinary project on *Valuation and Conservation of Biodiversity,* I asked one of the initiators of the programme about their expectations regarding an anthropological contribution to the overall research frame. The person suggested: »*We thought you could focus on natural resource use patterns and concepts of nature among primitive people inhabiting areas of conservation concern in Guatemala.*« At first I thought this comment to be meant ironically; I could hardly imagine that a scientist, even an economist, would today use a pejorative term such as *primitive* to refer to an autochthonous population. However, I came to realise that the term was used in all seriousness and actually reflected inherent ethnocentric assumptions, which I should repeatedly become confronted with in the following. The belief in the cultural superiority of science underlying this way of thinking is still to be found, even though the imposition of values commonly occurs in more subtle manners. Although the discourse has altered and indigenous knowledge has become a hallmark of much research and policy in the environmental arena, I became aware that reality is still reduced to the physical domain and colleagues from the natural sciences and economics have difficulty in accepting even the possibility of the existence of alternative worldviews and different values emanating from cultures with ›traditional lifestyles‹ that were not compatible with their own worldview and values. I was often taken aback by their refusal to acknowledge that all knowledge, including science, is in some sense local or situated.

Throughout the joint research process, my experiences confirmed the observation Anderson (1996) expressed in his book *Ecologies of the Heart* that academics are ›creatures of reason‹ who expect people to act on base of enlightened and carefully planned self-interest. Reason may help humans to decide between conflicting means to an end,

but their ends are set by needs and emotions, and perceptions are inextricably involved with feelings. Although increasing attention is paid to the emotional dimension, the conventional scientific disciplines continue to dominate the overall approach, including technical issues such as monitoring and assessment of biodiversity, taxonomy approaches and economic valuation. Despite the use of participatory rhetoric, much research continues to be undertaken according to the principles of the disciplinary conventions, funding priorities and interests of the researchers themselves. In spite of recent ›paradigmatic shifts‹ within the academic sphere and in the field of environmental politics and development issues, the lack of acceptance of significant cultural traits such as the spiritual dimension of resource management, not as a particular way of knowing nature but as a complete philosophy, continues to be inherent in intercultural encounters, as the following experience may exemplify.

In 2002, during my second stay in Guatemala, I was once accompanied by a colleague from the German research group on the way from *Cobán* to the study area. While we passed through the landscape towards the northern lowlands of Alta Verapaz, I mentioned insights I had gained into the traditional beliefs of the *Q'eqchi'* and thereby touched on the crucial role of divine beings such as the *tzuul taq'a*. The colleague, an economist who had worked in many so called developing countries and thus most probably experienced other ways of imbuing the world with significance, replied to my observation: »*But what benefit do the people see in believing in such mountain spirits?*« At the moment, I felt unsure how to respond to this expression of scepticism and did not dare to reply briefly with the words of Anderson, who argues that humans are »creatures of emotion, not creatures of reason« (1996: 12). They are not first of all oriented toward ›profit maximisation‹ and neither can we explain behaviour exclusively in terms of cost and benefit calculations and individual self-interest. However, I agree to the objection that specific knowledge systems, adaptive processes and behavioural patterns which pertain to the sustainable management of natural resources are to be seen as the result of decision-making processes to encounter security and minimise risk. But it has to be reminded that the need for security is essentially motivated by emotions. Fundamentally, people fear insecurity and long for cohesion in their lives. Thus, they create social institutions and economic modes to face these very basic emotional needs for secure living conditions and cohesion within the spheres they live in. Humans need to understand themselves and their place in the world. And even more so, they need to ›make sense‹ of their world. Security and profit are a means for living, but not the end. Humans are not self-referential, but transcend their individual existence. Customary practices such as the outlined rituals can be interpreted as ways to encounter this intimate need as they constantly help to maintain social coherence and strengthen their sense of identity and belonging. The same principle applies to the perception of nature, as has been illustrated in the case of the *tzuul taq'a*. Such explanatory structures as the *Q'eqchi'* have built around the local landscape they live in may satisfy their need for intelligibility. As they mediate between humans and their natural environment, the deities and spirits give meaning to their existence by telling

them both what they are and what their relation is to the basic means of human orientation, time and place within a larger cosmic context.

Having returned to Germany, when presenting provisional results of the fieldwork undertaken in Guatemala, a colleague, a physical geographer himself, suggested to somehow quantify the obtained ethnographic data in order to make them more accessible for the natural scientists. I tried to counter in terms of Stedman-Edwards (1998) who argued that human behaviour cannot be understood in purely quantitative terms. However, the scientific community tends to prefer quantitative over qualitative data. This observation reminds of the critical thoughts as expressed by Agrawal (2002) on the *scientisation* of indigenous knowledge that needs to be put into technical or scientific language to make it meaningful. This notion is confirmed in an observation that anthropologists involved in multidisciplinary collaboration often agree upon; it is more likely that social scientists are expected to move towards the paradigms of natural or economic sciences than vice versa. Just as indigenous knowledge is only taken seriously and perceived to be of value if it contains relevant information in scientific terms. A number of similar experiences confirmed me in my refusal to attempt to somehow ›model‹ indigenous knowledge or to make it suit externally generated concepts. I repeatedly reminded myself and others that knowledge acquired by social scientists is most often particularistic and, as Long Martello and Jasanoff write, »resides, when all is said and done, in people, not places« (2004: 12).

In line with scholars like Howitt (2001), who comments that complex and dynamic resource management systems cannot be reduced to summary statistics of production, reserves, prices or costs, I followed the path of qualitative assessment, arguing that a genuinely holistic interaction of humans with the environment is too complex to be reduced to a quantifiable dimension of space. Notwithstanding, the obsession with measurements keeps on dominating the economic factor in the environmental relationship, accompanied by a linear mode of thinking combined with ideas about development through the medium of science and technology. In the following, I found myself arguing that *culture* is not just a variable among others to be considered but determines the entire context humans are moving in. Just as social life is not simply an aspect to be taken into account in the frame of natural resource management but shapes the complete setting of any given society. Patterns of social relations, values, behavioural regulations and religious beliefs are not just an explanatory ›add-on‹, they, rather, constitute essential parts of the economic, political, organisational and discursive contexts to be taken into account. Moreover, I argued that culture is a dynamic multi-layered process; in order to understand present conditions we should always consider how they became as they are. Such a perspective may even give answers to questions concerning future developments and suggestions of how to encounter problems related to environmental change. Towards this end, both in terms of the search for meaningful approaches to environmental politics and in terms of analytical perspectives, Hajer and Fischer have claimed that we need

to learn to move beyond the kinds of uni-dimensional thought associated with eco-managerialism. Beyond the ›one-best-way‹ of scientific management, we need to move to an anti-reductionist approach to the environment. […] Towards this end, our policy-making models must be reoriented around more sophisticated socio-cultural assumptions that recognize the great variety of experiences involved in an effort to find different ways to achieve the same goals (1999: 17, 20).

The same understanding applies to how to approach knowledge so that it may be best conceived and studied as culture, as several authors have suggested. The experience of multi-disciplinary research practice as well as field-based encounters between environmentalists, local residents and scientists brought about the notion that science itself takes place in a cultural context of which scientists in many cases are unaware. The exercise of examining environmental relations and constructions of nature from a cross-cultural perspective not only enhanced my understanding of indigenous perceptions but also provided an insight into cultural implications underlying the ontology and epistemology of science, of which anthropology is also a part. All scientific institutions arise from a cultural core of ideology and worldview. It has to be reminded that culture is both the object of anthropological analysis and the enterprise in which anthropologists subjectively engage, as remarked by Milton (1993). Despite the paradigm of approaching ›emic‹ perspectives and avoiding ethnocentric assumptions, anthropologists likewise depart from logical frameworks inherent to their own discourses and ›Western‹ rationality, eager to define, analyse, categorise, clarify, interpret and thereby often simplify according to their own research conventions. In this way, even anthropologists impose their own analytical knowledge on indigenous ways of knowing, especially when it comes to inherent spiritual connections. What if spirits where spirits and not a symbol or metaphor for something else? In her contribution *Training to See What the Natives See,* Edith Turner (2001) questions the capacity of anthropologists to take informants' beliefs in phenomena such as spirits seriously. For her, there is a need to break out of the academic worldview in order to avoid misconceptions and to experience the studied culture in terms of ›going native‹. She asserts that

anthropologists have studiedly ignored the central matter of this kind of information – central in the people's own view – and only used the material as if it were metaphor or symbol, not reality, commenting that such and such ›metaphor‹ is congruent with the function, structure, or psychological mindset of the society. … So one asks, what are the ethics of this kind of analysis, this dissection? May we continue in this age of multi-power as well as multi-cultures to enter a foreign society, however politely, measure it up according to our own standards, then come back home and dissect it in a way entirely estranged from the ethos of the people concerned? …We eventually have to face the issue head on, and ask, ›What are spirits?‹ (2001: 261).

By appealing to the concept of ›distancing‹ as provided by Fabian[96], Agrawal (2002) suggests that ethnographic discourse rests upon personal, prolonged interaction with ›the other‹, but ethnographic knowledge interprets the other in terms of spatial and temporal distance, so that the other's empirical presence turns into his theoretical absence. The methods of learning firsthand about indigenous knowledge require a shared time and a shared conception of time between the ›indigenous‹ and the researcher. And it is in fieldwork that knowledge is first gained, before it becomes reified as indigenous knowledge. Writing about the research transforms the ›indigenous‹ into a category that is more conceptual-theoretical then intersubjectively constructed. These critical insights lead to my concluding claim that scientists should not only widen their scope towards tenets of other disciplines, but likewise should reflect on the inherent values and ethics of their own analytical approaches and models of science that serve as an ideal for enquiry and explanation and consider alternative ways of defining reality that include pathways between the natural and the cultural realms. The cultural construction dividing culture and nature, differentiating rationality from spirituality and the empirical from the symbolic have provided science with its very foundations, and still remain an everyday reality of scientific thought and practice. In comparison, an integral concept of reality implies that the material and the spiritual dimensions of culture are not considered as opposed spheres but rather as non-fragmental extensions of human society.

Although studies of environmental management have called into question ideas about the adequacy, universality and superiority of much scientific knowledge, it continues to be seen widely as the only valid source of knowledge. In her account *Nature, Culture and Biodiversity*, Milton (1997) has shown that the segregation of nature and culture is still inherent to the current conservation worldview. At the same time, authors like Grenier (1998) assert that all of the precepts of conventional science have been challenged, including its rationalism, objectivism, reductionism and positivism. To her it seems that science is changing. Many academics and practitioners are trying to introduce more holistic concepts to accommodate the interconnectedness of biological, social and psychological phenomena. Since many scholars regard the artificial segregation of nature and culture as a major source of most of the world's environmental problems, Dove (2001) suggests that anthropological insights may interrogate the continued evolution of thinking about this divide. Despite its common position as recipient rather than donor discipline, anthropological perceptions offer an option, within reigning paradigms for understanding the environment, for thinking ›outside the box‹. Strengthened by its own reflexivity and due to conceptual tools for studying institutions and ideational systems, anthropology is likely to continue to play an important role in critiquing and presenting alternatives to conventional thinking about human environmental relations. In particular, the assessment of indigenous knowledge alongside scientific criteria will remain a contentious issue.

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[96] Johannes Fabian, *Time and the Other. How Anthropology Makes its Object* (1983).

In discussing *Science and Magic, Two Roads to Knowledge*, Lévi-Strauss (2001) argues that instead of opposing magic and science, it would be better to see them as two parallel modes of acquiring knowledge; both require the same sort of mental operations that do not differ so much in kind as in the different types of phenomena to which they are applied. Both techniques assume centuries of active and methodological observation, of bold hypotheses tested by means of endlessly repeated experiments. The achievement to transform a weed into a cultivated plant, for instance, required a genuinely scientific attitude, sustained and watchful interest and a desire for knowledge for its own sake.

There is only one solution to the paradox, namely, that there are two distinct modes of scientific thought. These are certainly not caused by different stages of development of the human mind but rather by strategic levels at which nature is accessible to scientific enquiry: one roughly adapted to that of perception and the imagination, the other at a remove from it. It is as if the necessary connections which are the object of all science […] could be arrived at by two different routes, one very close to, and the other more remote from, sensible intuition. (Lévi-Strauss 2001: 246f.)

6 CONCLUDING REMARKS – *from local to global*

In the past two decades, biodiversity conservation has become a highly prominent issue of environmental discourse in international and national fora. Fifteen years after the negotiations in Rio, the CBD has become one of the most important instruments guiding the sustainable use and protection of the global natural resources. While seeking to establish common transboundary approaches to issues of conservation and sustainable development, the agreement incorporates an integrative perspective recognising the significant role played by society in conservation. As much of the world's biodiversity occurs on or adjacent to land inhabited by indigenous and local communities, it has been acknowledged that it can only be protected effectively if the close interdependence between cultures and ecosystems is maintained. Just as the appreciation of people-oriented resource management has increased, has a growth in concern about the social impacts of the imposition of protected areas on local populations emerged. Given the geographic overlap of high concentrations of both biological and cultural diversity, especially in tropical rainforest areas, it became apparent that cultural ramifications of human-nature relationships need to be considered. These developments have led to the rise of an integrated approach towards *bio-cultural diversity*, suggesting that the challenge to counter the process of environmental deterioration is one of perpetuating the diversity of life in the natural and cultural realms.

The question of how this endeavour may be realised has been of enduring interest to environmental anthropologists, who have drawn special attention to the contributions that knowledge as generated by local and indigenous communities can make to conservation objectives. In principle, research in this field rests on the common ground that conservation in terms of protected area management is not about resources, but first of all about people. It is further assumed that it is the social process, which most notably determines the use of natural phenomena within the economy of a society. Recent currents in anthropological thought offer a way out of essentialism, which demands adherence to what does or does not count as biodiversity-related knowledge. An emerging body of scholarship has revealed different paths of engagement and critical reflection on conservational issues exploring the concept of biodiversity as a social construct and historical discourse. When seen from this perspective, particular issues within the ongoing biodiversity debates such as questions on territorial control, development approaches, intellectual property rights, genetic resources and conservation itself take on new dimensions. They can no longer be reduced to managerial criteria and economising prescriptions. Conservation is a complex subject that cannot be addressed without recognising the encompassing relationship between discursive, political, economic, social and ecological facets. According to Arizpe et al. (1996), the issue of facing these interdependencies across local, national and global dynamics is at present at an impasse. As to the progress of global forms of governance and science, the authors identify two possible outcomes:

it could either reconfirm inequalities both nationally and internationally so as to continue to favor the rich nations, or it could become a charter to argue that, just as in any nation, blatant inequalities in standards of life are unsustainable for all at the global level. For this we need science. It needs to create a new research program, in the strict sense of a paradigm, on global change, understood as both a natural and a social process. On the human dimensions of global change it requires not only the definition of new topics and experimentation with new methodologies but also the formulation of new premises, which will inevitably lead to reopening an ethical and philosophical debate on the purpose of contemporary societies. Science can either act as a mere spectator to this debate, restricting itself to empirically showing how processes – apocalypse or salvation – go forward, or it can open itself up to his debate, becoming involved in it and venturing to be far more intellectually creative than it has been in the past few decades (1996: 101).

Although it is comprehensible that working with an established paradigm is less troublesome than adapting to a new one, further shifts need to emerge if the complexity of relationships underlying processes of biodiversity loss is to be approached and solutions to environmental problems are to be found based on the provisions of the CBD. Global environmental policy frameworks and local initiatives only can be successfully negotiated if differences in perceptions and assessments are understood. In the quest for a global solution to the conservation of biodiversity, local knowledge, customary practices, social values and religious beliefs provide a foundation upon which practical solutions responsive to the needs of the humans involved should be

based on. A cross-cultural concept of conservation to produce more balanced, interactive and knowledge-enhancing relations needs to be further advanced in future environmental governance. Finally, we need to develop a mindset »that *there is no alternative*, that there can be no retreat from indigenous knowledge. It must always be the point of departure and the final destination« (Ellen 2002: 256). Regarding future forms of scholarly engagement with transnational environmental discourse, Brosius (1999) suggests that anthropology has a critical role to play not only in contributing to understandings of human impacts on the environment, but also in showing how the environment is constructed and represented. As environmental concerns have come to occupy a central place in national and international debates, he points to the need for critical perspectives focusing on the diverse and often contested visions of the environment and perceptions as to origins and solutions of environmental problems.

In this way, by applying a concept of culture that allows for an examination of a particular case in the context of an even greater whole, I applied to phenomenological, hermeneutic and constructivist paradigms to develop an analytical strategy of contextualisation. It became obvious that cultural analysis of social processes associated with environmental issues elicits queries along manifold lines of inquiry. Thus, I did not propose one grand theory but rather an ensemble of conceptual strands informing understandings of material and symbolic dimensions of human thought and action. By combining materialist and idealist approaches, I have taken a middle ground to negotiate through ›spaces of politics‹, ›spaces of science‹ and ›spaces-in-the making‹, as Schumacher (1998) has distinguished these different realms of inquiry. By doing so, the previous chapters elicited multidimensional dynamics in various scales and diverse connections between nature and culture, which adopt specific shapes according to the social, political, historical and geographic context.

My aim was not to elevate precapitalist modes of indigenous lifeways as a panacea for complex ecological problems, such as the loss of biodiversity, which is rooted in global developments and economic inequalities. Yet, in documenting the cultural aspects of landscapes, the study explored the coherence of diverse expressions of knowledge and intended to remind of alternative worldviews and possibilities that exist among such cultures as the *Q'eqchi',* who have imagined themselves more intimately in their respective ambient world. In this course, I revealed that ›holism‹ is not just an anthropological device but foremost a particular way of making sense of the world. The *Q'eqchi'* do not perceive their lives in terms of social structures, economic systems, ecological principles, religious beliefs or moral commitments. These concerns cannot be reduced to a question of theoretical models in which formalist patterns are used to interpret religious activities or in which highly specialised socio-linguistic ethnographies are used to describe peoples and their ways of knowing as types to be classified and catalogued in terms of mere information. It is all about process. And process means that there is no beginning and no end. Forward-looking, Posey reflects upon the role of anthropologists, who in his view are still some of the only people

trying to tell the great epic myths of human struggle. And if we don't try to understand the knowledge systems of indigenous peoples, then who will? Increasingly, however, the nature of telling *has become one that results from dialogue and partnership with indigenous peoples, rather than observation and distant analysis. Gone are the days when anthropologists described ›their peoples‹ as objects of study. We are now more likely to be called on as advisors or helpers in efforts by local communities to record their own knowledge, inventory their own resources, and map their own lands and territories in ways* they *see most culturally and politically appropriate. That is, in fact, the only way that the study of indigenous knowledge can advance without fragmenting the cosmic connectedness between land, culture and knowledge* (2002: 39).

In accordance with these ideas, I realised that the ethnographic explorations in the above sense not only revealed the interface of the *seen* und the *unseen* dimension of indigenous knowledge; rather, they constantly evolved in interface situations at different sites where different people, cultures, life-worlds, disciplines, languages and values met. Following the device of multi-sited ethnography, I unfolded wider entities, institutions and discourses from a global to a local scale. The juxtaposition of universal and particular configurations served as foundational texture of the approach, which connects aspects of the global environmental agenda with national and local ramifications. By this means, I also endeavoured to illuminate the intensely political character of diverse levels of process and interaction. Issues of this complexity could only be grasped by bringing together perspectives from several disciplinary fields. By weaving together local and global themes, images and epistemologies, the study revealed what Posey meant by »universal knowledge as expressed through the local« (2002: 28).

Or as Long Martello and Jasanoff put it, »the modern local is importantly constituted through its methods of producing situated knowledge; communal affiliations arise and are sustained by knowing the world in particular ways« (2004: 14). Although capitalist-oriented globalisation and economic development are based on abstract and infinite notions of commodity production and standardisation, notions that obliterate the particularity of place and local context, the authors mention that globalisation processes have helped at the same time to diversify the types of knowledges recognised and used in environment-development policies. The coming together of different cultures in the international scene reveals important differences in ways of knowing throughout the world. The emergence of local forms of knowledge as a matter for achieving sustainable development may replace the founding assumptions on the former development promise, which rested on the belief that development and conservation initiatives could be universalised in space and time.

Changing notions of locality and globality, then, are more than mere academic curiosities. They have important consequences for the configuration of power and the efficacy of governance in environment and development contexts. They also have far-reaching implications for the production of knowledge acceptable to an emerging global polity. [...] The interplay of the local and the global influences the kinds of knowledges about the environment that are discovered, accepted as authoritative, and put to use in decision making. (Long Martello & Jasanoff 2004: 18)

However, Hajer and Fischer (1999) remind to bear in mind that local contexts do not necessarily fit into global discourse. Just as there is a need for biodiversity, they claim that there is a need for diversity in human expression that reflects the particular historical, cultural and biophysical realities that have evolved throughout the world. In essence, diversity alludes to the idea of abundance and variety. It entails acknowledging differences, dissimilarities, individualities, specificity and uniqueness. When referring to diversity, the objective does not only involve recognition about the difference of the ›other‹, but also an understanding of the entire setting, the universe as the ultimate integration of diversity. Addressing the subject of biological diversity implies considering life itself from all its different concepts. Conservationist efforts to formulate global environmental ethics need to be attentive to cultural particularities and diversity, though not in the sense of a unified worldview or a single global ethic. As to this recognition, Shiva concludes:

The peasants who treat seeds as sacred, see in them the connection to the universe. Reflexive categories harmonize balance from planets to plants to people. In most sustainable traditional cultures, the great and the small have been linked so that limits, restraints, responsibilities are always transparent and cannot be externalised. The great exists in the small and hence every act has not only global but cosmic implications. To tread gently on the earth becomes the natural way to be. Demands in a planetary consciousness are made on the self, not on others (1993: 154).

EPILOGUE

At the end of my last stay in the Guatemalan lowlands, I had a conversation with an informant in *San Benito* about the meaning of life. We shared our ideas about what is of major importance to us regardless of different cultural backgrounds. I asked the farmer with whom we had been working for a long time: »*Don Arturo, please tell me what does happiness mean to you?*« Without hesitation he repeated: »*I'm happy when the milpa is growing well and all the members of my family are healthy.*« It took me a long way until I *really* understood what identification means in terms of an intimate relationship between people and land, which leads to an integrated use of the natural environment and to a high degree of affective concern for all of its parts. In this way, I became aware of the natural sense of place residing within each of us in terms of an ›inner landscape‹, what Richard Howitt (1991) meant by ›places of the heart‹, which implies that people would only be willing to conserve what they appreciate and even love. In this sense, I return to Eugene Anderson (1996) who wrote that any resource management strategy that leaves out of account human feelings simply will not work and by citing Edward Goldsmith's ideas about the revision of paradigms underlying scientific thinking: »The ecology we need is not the ecology that involves viewing the biosphere on which we depend for our survival at a distance and with scientific detachment. We will not save our planet through a conscious, rational and unemotional decision, signing an ecological contract with it on the basis of a cost-benefit analysis. A moral and emotional commitment is required« (1993: 77). In the words of Arturo Escobar, »this is to say we need new narratives of life and culture« (1996: 65).

In order to accomplish this vision, which assumes a transforming process of awareness, I believe that there is a primary need to accept the existence of different ways of knowing, seeing and feeling reality, which is a social world composed of an enormous cultural diversity. In the end, I return to the initially quoted excerpt from *Q'eqchi'* stories (Queiros et al. 2000) that remind us to realise that »*the way only becomes the way when you walk it. The way begins in each of our hearts and we all need to enclose it in our consciousness and our ideals. We cannot keep on living apart from our sister Nature. We must learn not to hold on to material things, just as to be able to do everything for others. [...] Nothing of what happens is accidental, everything that succeeds has significance and a deep educational dimension, but this may just be understood by those open hearts, who are willing to change.*« This ideal assumes different ways of teaching and transferring the essence of who we are to the generations to come. The task then may be to rethink education in a perspective that places indigenous knowledge at the very basis of cultural affirmation. For this, an ancient concept of indigenous education may offer an inspiring outset. Gregory Cajete (2001) has described this concept in an attempt to present a window into indigenous reality while at the same time offering a mirror through which environmental scholars may reflect upon their insights on the interwoven character of indigenous traditions and ecology.

The Pre-Columbian Aztecs had a beautiful metaphor which describes the essential qualities and spirit of indigenous education. They said that a ›complete‹ education had to address four interrelated processes within concentric rings of greater contexts of relationship. First, they believed that education should help individuals ›find their face‹. That is simply to say that each individual should be transformed through the process of education and find the special ›place‹ where resides one's unique qualities of self. For the Aztec, a key purpose of education was to help them find one's character, to help find one's identity, to help find one's true relationship with oneself, with one's community, and with the natural world. It is this process of searching for innate and important relationships that helps us define our ›authentic‹ face. A second goal of a complete education was to help students ›find their hearts‹, that is, to help individuals find that particular place within themselves where desire and motivation reside. Simply said, it is about searching for the passion that allows us to energize those things we feel are important. For the Aztec, ›heart‹ reflected the essence of the soul. The third goal was to help individuals to find that kind of work, that kind of foundation, that kind of vocation, that thing that would enable them to express most fully who they are. It is an education that helps them to express their individual faces, express their hearts, and express the authentic truthfulness of their being. All this was aimed at achieving a fourth goal of becoming ›complete‹ as a man or a woman. In earlier times this goal was embodied in the indigenous man and woman. It is not only a complete man which makes the world, but a complete woman, and it is the interaction and the harmony of these two ways of being human which gives human life its song. So the relative state of completeness may be said to be an ultimate purpose of indigenous education. (Cajete 2001: 621f.)

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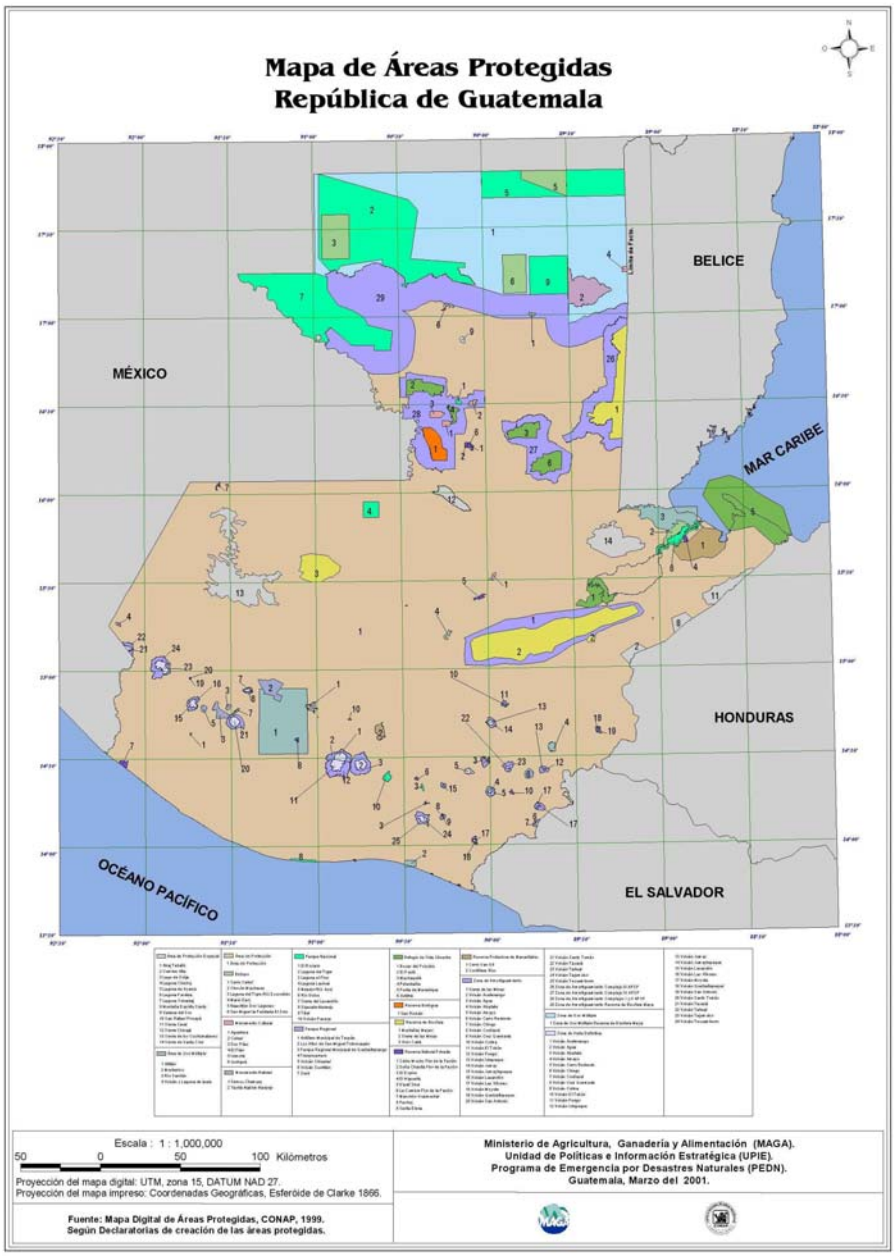
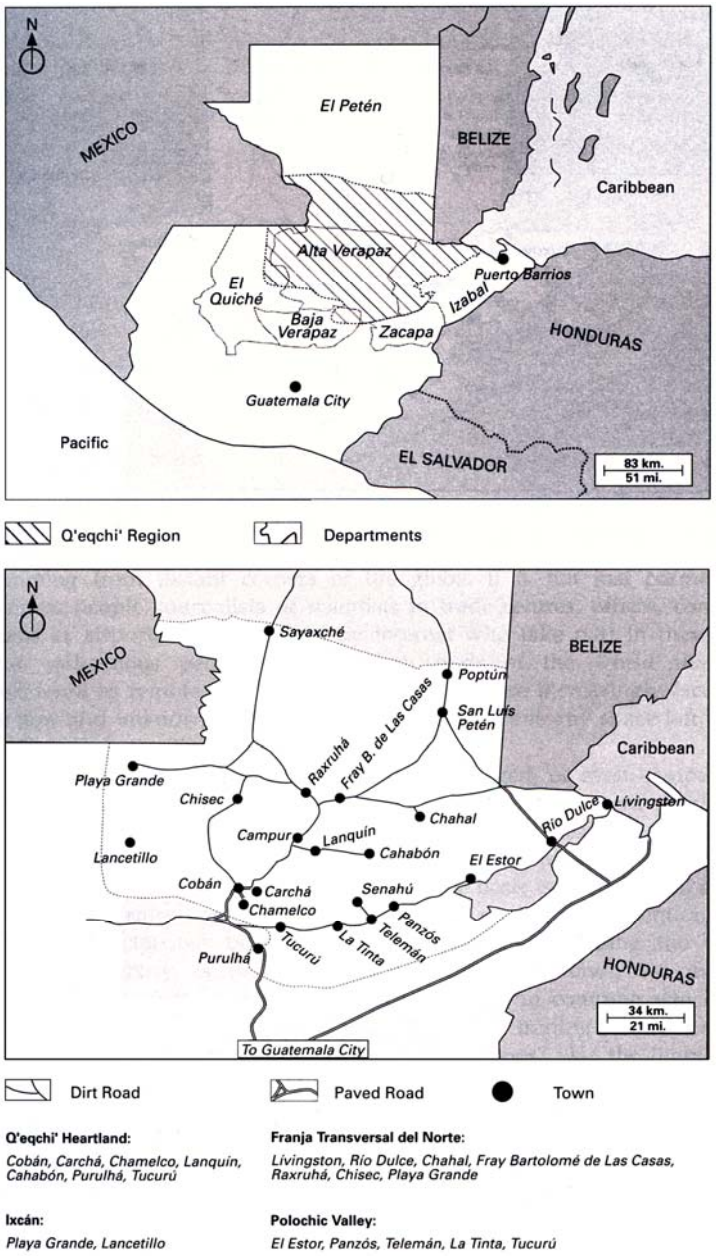
APPENDIX

Map 4.2 Protected areas in Guatemala



Source: Ministerio de Agricultura, Ganadería y Alimentación (2001)

Map 4.3 Alta Verapaz and major settlements in the *Q'eqchi'* region



Source: Siebers 1996: ix, xi