

今日人类学民族学论丛

Anthropology and Ethnology Today Series

国际人类学民族学联合会第十六届大会文集

Book Series of the 16th World Congress of IUAES

黄忠彩 总编

Editor-in-Chief Huang Zhongcai

# 土著知识与可持续发展

## Indigenous Knowledge and Sustainable Development

[美] 杜罗西·比玲斯 [俄] 维亚特切斯拉夫·鲁德内夫◎主编

Edited by Dorothy Billings and Viatcheslav Rudnev

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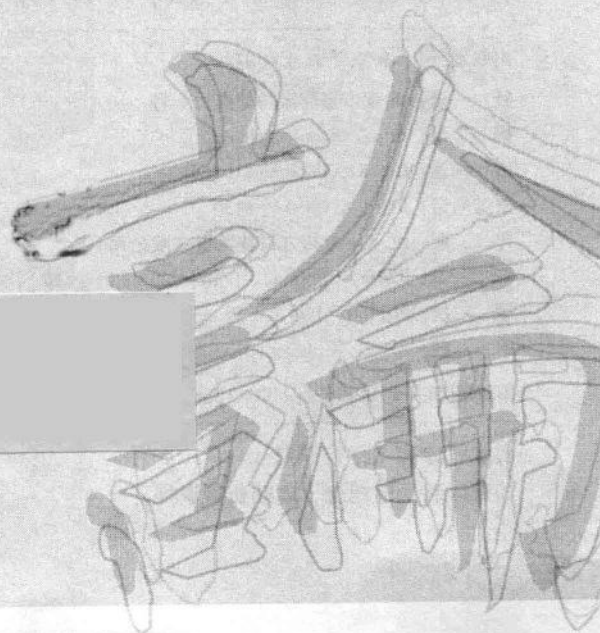
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# Preface

China won the right to host the 16th IUAES World Congress in July, 2003. After six years of preparation, the Congress will be held in Kunming, China during July 27-31, 2009.

The International Union of Anthropological and Ethnological Sciences (IUAES) was established on August 23, 1948, when it merged, in fact, with the International Congress of Anthropological and Ethnological Sciences (ICAES), which was founded in 1934. The latter was the product of various Congresses of Anthropological Sciences, starting in 1865.

The IUAES is one of the member organizations of the International Social Science Council (ISSC) and also of the International Council for Philosophy and Humanistic Studies (ICPHS). The IUAES is also a member of the International Council of Scientific Unions (ICSU). Its aim is to enhance exchange and communication among scholars of all regions of the world, in a collective effort to expand human knowledge. In this way, it hopes to contribute to a better understanding of human society, and to a sustainable future based on harmony between nature and culture. The IUAES once noted a draft statement on the future of world anthropology in "Current Anthropology" (1979): "The scope of anthropology in terms of areas of human interest includes such critical issues of the contemporary world as problems of environmental management, pressure for the progressive reduction of disparities and the restructuring of the world order, the future of the nation-state, ethnic pluralism and the future of national society, and the harmonization of the roles and functions of institutions with the basic and derived biological and psychic drives of man." The IUAES itself consists of national and institutional organizations in more than 50 countries in all parts of the world, and also includes some hundreds of individual members. The research effort and involvement of the IUAES is principally arranged by its scientific commissions, of which, currently, there are twenty-seven, and each of which concentrates on some areas of anthropological interest. They included ethnic relations, aging and the aged, women, children, youth, migration, epidemiology and Aids, tourism, primatology, linguistics, and so on.

The theme of the 16th IUAES World Congress in Kunming, China is "Humanity, Development, and Cultural Diversity". The Anthropologists and Ethnologists around the world will present over 4000 papers, which covered 33 sub-disciplines or research fields as follows: Aging and the Aged Studies, Aids, Archaeological Anthropology, Children, Youth

and Childhood Studies, Communication Anthropology, Development and Economic Anthropology, Educational Anthropology, Enterprise Anthropology, Ecological/Environmental Anthropology, Ethnic Culture Studies, Ethnic Relations and Ethnic Identities, Food and Nutrition Anthropology, Gender and Woman Studies, Globalization Anthropology, Historical Anthropology, Human Ecology, Human Rights Studies, Indigenous Knowledge and Sustainable Development Studies, Legal Anthropology and Legal Pluralism, Linguistic Anthropology, Medical Anthropology and Epidemiology, Migration Anthropology, Museum and Cultural Heritage, Nomadic Peoples Studies, Physical Anthropology and Molecular Anthropology, Psycho-anthropology, Religious Studies, Sport Anthropology, Theoretical Anthropology, Tourism Anthropology, Urban Anthropology, Urgent Anthropological Research, and Yunnan Studies.

As the organizer of the 16th IUAES World Congress, the Chinese Union of Anthropological and Ethnological Sciences (CUAES) decided to edit and publish “Anthropology and Ethnology Today Series”—the paper collection series of the above sub-disciplines or research fields, for example, Physical Anthropology, Molecular Anthropology, Migration Anthropology, Museum and Cultural Heritage, Nomadic Peoples Studies, Linguistic Anthropology, Medical Anthropology, and Ethnic Culture Studies. We hope that the scholars from different parts of the world can share with all the achievements in the book series of this congress.

**Zhou Mingfu, Executive Vice-president**  
**Chinese Union of Anthropological and Ethnological Sciences**

**Huang Zhongcai, Secretary-general**  
**Chinese Union of Anthropological and Ethnological Sciences**

**July 14, 2009**



# Introduction

The last few decades have shown many threats on the global level to the survival of our mainstream society, ecological and humanitarian problems are principal among them. These threats stimulate a revision of our perspective on relationships in Human-Nature-Society system: relationships between people and people as well as between society and nature. The United Nations Conference on Environment and Development (Rio de Janeiro, Brazil, 1992) set fixed standards defining global violations of the environment and adopted the “Agenda 21” focused on the necessity of new solutions for problems of the relationships between nature and society, and citing as a goal a system in which there is a “balance of Nature, Society, and Humans”. Interdisciplinary research was cited as a positive way to search for solutions to new problems and to achieve a pattern of Sustainable Development for Mankind.

Anthropological and ethnological science has original data in this sphere. Folk / indigenous pre-industrial societies have had a different experience in relation to Nature when they solved problems, carrying out Life-support activities under a regime that required the sparing of Nature, as they did not possess elaborate technologies that permitted them to ignore Nature’s own requirements. Analyse of different models of relationships between Nature and Society provide perspectives for seeking the way to solutions for actual current problems in human health and other areas. Special focus on Folk / indigenous technologies and activities for supporting life in relation to Nature on a local level provides much information for understanding characteristics that support the long-term survival of life, using Nature’s resources on the local level, in the pre-industrial period. At the same time, a cross-cultural, interdisciplinary approach to the investigation of Folk/indigenous technologies in using Nature and activity supporting life allows for a better comprehension of Folk culture and the mode of life of peoples and society in the pre-industrial period.

The scope of the 14 contributions to the topic presented in this book is wide-ranging. We extend our great thanks to the anthropologists, ethnologists and scholars in related fields for presenting these papers at the 16th IUAES in Kunming, China in 2009, and for then working to prepare them in the appropriate length for inclusion in this book. Since our Commission was founded in Williamsburg in 1998, we have seen a growing number of

scientists with varied approaches drawn to an interest in indigenous knowledge in its relationship to sustainable development. We hope this development will continue. In the process of editing, we have tried to maintain the style and language of each author in order to keep the specific, unique and enlightening local differences in approach and mode of thinking about this topic.

We hope that papers presented in this volume will be interesting both for scholars working in Ethnological and Anthropological research and also for investigators who are interested in searching for ways to solve modern problems in the Human- Nature-Society system in the context of Sustainability.

Dorothy Billings

Viatcheslav Rudnev

Commission on Indigenous Knowledge and Sustainable Development, IUAES

# Acknowledgements

We would like to express our gratitude to the Secretariat of the 16th Congress of the International Union of Anthropological and Ethnological Sciences for support of the Session “Indigenous Knowledge and Sustainable Development, IUAES,” that made available a fruitful Session’s work at the Congress and the publication of this book.

The Congress was facilitated by our hosts in Kunming, a large and well organized group of people which included students who were knowledgeable, friendly, and helpful in all situations. Many very interesting special events were planned for us, including interesting scientific excursions outside Kunming, and a special exhibition in the Museum at the University which documented the very impressive history of the study of anthropology in China.

Dorothy Billings  
Viatcheslav Rudnev

Co- Chairs, Session on Indigenous Knowledge and Sustainable Development  
at the 16th International Congress of the IUAES.



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## **Folk Wisdom in Using Nature. Some Aspects of Sustainability**

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### **Abstract**

The dependence of society (and humans) on Nature is constantly confirmed by time. This dependency is displayed differently in each epoch, but always stimulates the process of involving society's resources (intellectual and material) into searching for ways to solve problems in Life-support activity by using Nature. In the 21st century, this dependency (and corresponding procedures and technologies in solving decisions) is supplemented or burdened by the unusually active interference of anthropogenic factors. The huge pressing of modern industrial society on Nature has upset the balance of the "Nature—Society—Humans" system. Signs of this are everywhere: in the worsening conditions of the soil, water and air, in the spread of diseases (for instance, allergies) and so on. The changing situation worsens very quickly, for instance, the soil of the land is degrading rapidly. The soil is no longer a renewable resource because it is not renewed now in a former composition within the limits of natural fluctuations of substances and organisms in it.

The problems of ecology have provoked the initiative of the United Nations Conference on Environment and Development (Rio de Janeiro, 1992) which focused on the necessity of solutions for the problems of the relationships between nature and society as a key to Sustainable Development (the key to harmony in relationships between Human, Nature and Society).

The Folk experience in Life-support activity (by using Nature) by peoples of the Eurasian area has shown that Folk knowledge and Folk technology can actually assist in solving some problems caused by the human impact on the Nature, e.g., farming methods, and as a result, offering possibilities for an effective basis for long-term sustainable production at the local level. Using Folk experience in Life-support activity and using Nature on the local level can be useful components for decision making and solving problems of modern society.

I will focus my attention in this paper on Folk technologies used for restoring the fertility of the soil and indigenous technologies for friendly-to-nature Life-support activity as actual data in the context of Sustainability and useful for analysis and definition. I will look at the value of Folk culture on the whole.

## Introduction

Increasing world problems in fundamental areas such as those which support life (declining agricultural production and the exhaustion of natural resources, soils, and water shortages) are a consequence of an imbalance in “Human—Nature—Society” relationships. Al Gore has indicated this imbalance as one of the main threats to society in the 21st century. Speaking in New York on April 14, 2008, UN Secretary General Ban Ki-moon said: “The rapidly escalating crisis of food availability around the World has reached emergency proportions... We need not only short-term emergency measures to meet urgent critical needs and avert starvation in many regions across the World, but also a significant increase in long-term productivity in food grain production.” The prospect of successful guaranteed long-term increases in grain production is a complicated problem and depends, particularly, on soil conditions and adequate rainfall to support populations in the long-term. Soil fertility and other essential natural resources, long at risk due to the powerful pressures of an industrial society in the 20th and 21st centuries, has become a general concern at the global level, and this has led to the concept of Sustainable Development, adopted by United Nations at the conference on Environment and Development in 1992. Searching for ways to realize this concept has become urgent and has led to an active collaboration of specialists in different branches of modern science. The history of diverse human cultures has provided a good deal of data on successful long-term local agrarian experiences in, for example, sustainable soil use in the pre-industrial period. The practical knowledge and experiences of people who have based their economy on the long-term use of limited

resources has validity for understanding and dealing with the problems that face many societies today. For that reason it is, in my opinion, useful to consider what Folk heritage has to offer in this context.

## **Society and Nature**

The process of transforming the natural environment began in ancient times as human activity interfered with Nature by adapting to soils, seasonal changes, rainfall and other environmental factors. By the 19th century human activity had begun to lead to global changes which, today, have profound implications for the future of life on earth. New technologies have allowed the individual in industrial society unprecedented power which compares—in so far as the effect on the environment is concerned — with the forces of nature, but thus far not showing any compensating ability to create ways to offset the damage that is being done to the natural environment.

The effects of excessive human pressure on Nature have been noted for a long time at various local levels, but it is only in recent years that this process has been seen to have dangerous global implications amounting to irreversible damage: declining grain production, near destruction of the fishing industry world-wide, loss of soil and soil fertility, depletion of forest resources, declining fresh water resources (made by hydrological cycle), loss of variety in flora and fauna, all are testament to the dangers of exceeding the limits of the “economic capacity” of the biosphere and, most dangerously, about human disruption of the natural self-regulating processes of the biosphere.

It is precisely this interference with a natural mechanism in the self-regulating biosphere, according to ecologists, which is the precursor of a global ecological crisis.

“Agenda 21”, which was adopted at the United Nations Conference on Environment and Development (Rio de Janeiro, Brazil, 1992), focused attention on the need for new solutions to problems of the relationships between Nature and society. The problem of natural resource use has a special meaning in this context. Natural resources have always provided a foundation for development. Now at last society is becoming anxious about the condition of these resources: reduction of supplies in non-renewable resources and increasing danger for the long-term availability of renewable resources. This problem may be illustrated by soil condition. Soils suitable for agriculture are fundamental renewable resources, if managed properly. Soil fertility has for many centuries provided communities everywhere with opportunities for agriculture, the ability to produce food containing



carbohydrates, one of the basic components of diet. Intensive long-term exploitation of soils in recent years has led to soil exhaustion to such an extent that in many regions the soil have become non-renewable resources. Since soils are fundamental for the sustainable future of society, this has global implications for coming generations. This fact has prompted investigations into ways in which soil restoration can be achieved.

## **Folk Knowledge and Nature**

It is well known that small-scale non-industrial societies which have many generations of trial and error have acquired a deep practical knowledge of their environment. This knowledge is unique and not known to agricultural and forestry experts from other parts of the world.

Ethnological research has shown that in the traditional societies of each nation, there is a lot of knowledge based on long-term, first-hand experience of observing nature in a particular local natural niche. The systematic character of knowledge of the environment is one of the features which can be observed in an analysis of Russian folk culture.

Russian peasants have created a specific form of environmental exploitation in which the opportunities, needs, and interests of society, together with the specific character of natural regional conditions in East Europe, were balanced. Being engaged farmers, Russian peasants have blended organically their economic activities with local environmental conditions. They have actively involved wild flora and fauna as a component of their diet, their medical practices, and in farming, and have used their knowledge as indicators of environmental conditions. First-hand knowledge of nature was used by peasants in solving daily problems and it resulted in an harmonious balance with nature which avoided undue pressure on the environment. The experiences of Russian peasants in areas such as agriculture and weather forecasting illustrate this fact.

Observation of wild flora and fauna served as indicators for peasants in, for example, choice of areas for cultivation and other agricultural works. Russian folk phenological observations, as well as indicators establishing connections between weather conditions of certain "integrated" dates or periods, still have a positive value, though modern meteorologists have not found explanations for it yet. So, rain on Samson Day (July 10th) predicts "seven rainy weeks". The weather in Pokrov (October 14th) predicts the character of "next winter". The practical value of folk phenological observations has repeatedly been revealed. For example, "if bird cherry trees (*Padus*) begin to blossom, there will be no light

frost”, “If bees close up the cells with wax making only a small hole, winter will be cold with severe frost”. Such examples demonstrate the specific character of folk experience in observing nature, particularly knowledge of wild nature, and reveal the value of cross-cultural research and its potential implications for modern natural science (Rudnev, 2003).

## **Folk Knowledge and Soil Preservation as Renewable Resources**

One of the main problems for modern farming is renewal of nutrients in impoverished soil. Practically all the arable lands and most of the grazing lands are, to some extent, damaged by agricultural practices and over-grazing. It is estimated that 480 billion tons of the upper layers of the soils of agricultural lands have been lost. These soils can no longer be considered a renewable resource due to a combination of natural conditions and human activity.

Over the centuries people have used various methods to increase soil fertility: silt from river deposits, volcanic ash, organic fertilizers and another (Naumov, 2002). All these methods are effective, but do not replace all the characteristics of the soils that have been lost. This means that it is impossible to achieve the correct balance originally provided naturally and necessary for sustainable soil renewal. Russian peasants used plants (peas, grass) for fertilizing the soil and practiced crop rotation to allow arable land to recover for later use.

Farming methods based on crop rotation were popular, in wooded areas of the North Russia. Peasants cut down trees to clear land and then used it for growing cereals (Russkii Sever, 1983). Initial harvests (during the first 2-4 years) were heavy, but after that period, peasants left such fields to lie fallow for a few years so that the soil had the chance to rest and the forests to regenerate, further renewing soil fertility (Mjagkov, 1995). These practices which alternately transformed arable land into fallow land were useful for soil renewal in areas of Russia distinguished by poor soils. Actually, Russian peasants draw wild Nature into the process of soil renewal.

Modern agronomy has become interested in the data of folk experience in farming. For instance, many folk phenological indicators which describe environmental conditions are being taken seriously now. Renewal of soil fertility is an important problem today and folk experience in this area is quite useful for understanding local practices. Organic/ecological farming focused on sustainable methods of soil exploitation.

The potentials of the natural environment were used actively by Russian peasants in the pre-industrial period for solving agricultural problems. Now this folk empirical data has a special value for projects directed toward solving modern ecological problems and searching for ways of sustainability for Mankind.

## **Nature and Society: Perspectives for Sustainable Development**

Among a few main models suggesting ways out of the crisis are: improvement of technology and adaptation of our modern society to Nature. Each model requires both a detailed knowledge of the natural environment and the realization that we, members of modern society, need to change.

Actually, in order to preserve soils as renewable resources, mankind needs to change its stereotyped image of the world. It requires a transition from the egocentric to the ecocentric. Aurelio Piccei (president of the club of Rome) has noted: "If we want to change the world, we should first change man." This task is not easy. Our techno-civilization has generated among its "citizens" a definite vision of the world as a system in which values given to our artificial surroundings has the highest priority.

The meaning and value of Folk heritage in exploiting the environment, especially farming traditions in small-scale, non-industrial societies, has been based not only on the technologies that are "friendly" to Nature, but also (and first of all) on the perception that soil (earth) is the source of all life. This sort of perception was particularly widespread among peoples of pre-industrial societies. For instance, noted researchers of the Amazon area cite the words of Kayapo's shaman: "Why white man doesn't like the forest, but the forest is good, the forest looks after us. Why does the white man burn the forest and destroy the trees? Where are the peoples going to live, and the birds? How are my children going to live? What are they going to eat? Where will they get their medicines from? Why does the white man hate the forest so much?" (Seymour and Girardet, 1986).

Changing the present modern human outlook from its present egocentric position to one that understands and respects the natural environment, based on ideas of "ecological ethics", looks especially complex, and is directly connected with the problem of forming a new culture.

Actually, the global ecological crisis and related ecological problems take priority, and the transition to a new model of thinking promises to be accelerated. In this context, making use of Folk heritage, Folk knowledge and experience in observing Nature and using Nature