



Traditional Ecological Knowledge: A Ethical Study in Ecology, Culture and Identity, Climate change

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Introduction: Traditional Ecological Knowledge is an ongoing accumulation of knowledge, practice and belief about relationships between living beings in a specific ecosystem that is acquired by indigenous people over hundreds or thousands of years through direct contact with environment, handed down through generations, and used for relationships between people, plants, animals, natural phenomena, landscapes, and timing of events for activities such as hunting, fishing, trapping, agriculture, and forestry. It encompasses the world view of a people, which includes ecology, spirituality man and animal relations and many more. It is a collection of knowledge, practices, and beliefs that indigenous and local people have gained over time through their direct contact with the environment. Indigenous Knowledge or Native Science is also known as Traditional Ecological Knowledge. It can investigate the transmission and preservation of traditional ecological knowledge within indigenous communities. And also highlight the significance of this knowledge in guiding sustainable land management practices. It is cumulative body of knowledge, practice, belief evolving by adaptive process and can be handed down through generations by cultural transmission, about the relationship of living beings with one another with their environment. Traditional ecological knowledge is 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.

Objectives of the study: The main objective of this paper is how traditionally ecology should be practice in ancient times. Secondly, what is the main source of climate change. Thirdly, how culture can help to protect our environment.

Methodology: Analytical and descriptive method are used in this research paper. In few areas specially culture and climate parts should be taken from rural areas from where we see the real nature of the paper.

The application of this topic is in the field of ecological management and science is still controversial, as methods of acquiring and collecting knowledge although often including forms of empirical research and experimentation may differ from those most often used to create and validate scientific ecological knowledge. Non-tribal government agencies, such as the U.S. EPA, have established integration programs with some tribal governments in order to incorporate Traditional Ecological Knowledge in environmental plans and climate change tracking. In contrast to the universality towards which contemporary academic pursuits often aim, Traditional Ecological Knowledge is not necessarily a universal concept among various societies, instead referring to a system of knowledge traditions or practices that are heavily dependent on "place". There is a debate whether Indigenous populations retain intellectual property rights over traditional knowledge and whether use of this knowledge requires prior permission and license. This is especially complicated because Traditional Ecological Knowledge is most frequently preserved as oral tradition and as such may lack objectively confirmed documentation. As such, the same methods that could resolve the issue of

documentation to meet legal requirements may compromise the very nature of traditional knowledge. Traditional knowledge is used by its holders to maintain ecological resources necessary for survival. While Traditional Ecological Knowledge and the communities which contain it are threatened in the context of rapid climate change or environmental degradation, it also can help to explain the impacts of those changes within the ecosystem.

Knowledge, practice, and belief

Ecological knowledge was studied through the lens of ethnoecology in understanding how systems of knowledge were developed by a given culture. Harold Colyer Conklin, an American anthropologist took the lead in documenting indigenous ways of understanding the natural world. Conklin and others documented how traditional peoples, such as Philippine horticulturists, had detailed knowledge about the plants and animals where they resided. The direct involvement in gathering, fashioning products from, and using local plants and animals created a scheme in which the biological world and the cultural world were tightly intertwined. The field of Traditional Ecological Knowledge encompasses a broad range of questions related to cultural ecology and ecological anthropology by emphasizing the study of human-nature relations, adaptive processes, which argues that social organization itself is an ecological adaptational response by a group to its local environment, and the practical techniques on which these relationships and culture depend. In 1987 report, *Our Common Future* by the World Commission on Environment and Development was published by the United Nations. The report points out that the successes of the 20th century have given rise to trends that have caused environmental degradation in an ever more polluted world among ever decreasing resources. The report declared that tribal and indigenous peoples had lifestyles that could provide modern societies with lessons for management of resources in complex forest, mountain, and dry land ecosystems. Fulvio Mazzocchi of the Italian National Research Council's Institute of Atmospheric Pollution outlines the characteristics of as follows:

Traditional knowledge has developed a concept of the environment that emphasizes the symbiotic character of humans and nature. It offers an approach to local development that is based on co-evolution with the environment, and on respecting the carrying capacity of ecosystems. This knowledge--based on long-term empirical observations adapted to local conditions--ensures a sound use and control of the environment, and enables indigenous people to adapt to environmental changes. Moreover, it supplies much of the world's population with the principal means to fulfil their basic needs, and forms the basis for decisions and strategies in many practical aspects, including interpretation of meteorological phenomena, medical treatment, water management, production of clothing, navigation, agriculture and husbandry, hunting and fishing, and biological classification systems. Beyond its obvious benefit for the people who rely on this knowledge, it might provide humanity as a whole with new biological and ecological insights; it has potential value for the management of natural resources and might be useful in conservation education as well as in development planning and environmental assessment.

Some anthropologists, such as M. Petriello and A. Stronza, warn that presenting TEK as an "indigenous" construct will cause the privileging of certain types of TEK over others and restricting which groups are thought to possess TEK results in reduced understanding of and collaboration with groups such as campesinos who while not often classified as "indigenous" nevertheless possess TEK.^[7] The term TEK has been criticised as a form of intellectual appropriation that modifies traditional/indigenous knowledges to better fit a conventional Western modern science framework.

Aspects of traditional ecological knowledge

Nicholas Houde, in an article published in *Ecology and Society*, identifies six facets of traditional ecological knowledge: factual observations, management systems, past and current uses, ethics and values, culture and identity, and cosmology.^[9] These aspects emphasize how "cooperative management [can] better identify areas of difference and convergence when attempting to bring two ways of thinking and knowing together.

Management systems

The ethical and sustainable use of resources in regards to management systems. More specifically, issues such as dealing with pest management, resource conversion, multiple cropping patterns, and methods for estimating the state of resources can be thought of as part of such management systems. How resource management can adapt to local environments is another crucial aspect of such considerations.

Past and current uses

The time dimension of Traditional Ecological Knowledge, focusing on past and current uses of the environment transmitted through oral history, such as land use, settlement, occupancy, and harvest levels. Oral history is used to transmit cultural heritage generation to generation about such topics as medicinal plants and the existence of historical sites, and contributes to a sense of family and community.

Ethics and values

The value statements and connections between the belief system and the organization of facts. In regards to Traditional Ecological Knowledge it refers to environmental ethics that keeps exploitative abilities in check. This facet also refers to the expression of values concerning the relationship with the habitats of species and their surrounding environment, the human relationship to environment.

Culture and identity

Traditional ecological knowledge frequently relates to knowledge surrounding plants and foliage. The fifth facet refers to the role of language and images of the past giving life to culture. This facet reflects the stories, values, and social relations that reside in places as contributing to the survival, reproduction, and evolution of aboriginal cultures, and identities while stressing "the restorative benefits of cultural landscapes as places for renewal.

Cosmology

The cosmology that is the foundation of the other aspects. This can vary greatly from one culture to the next. The term 'cosmology' relates to the assumptions and beliefs cultures have about how things work, explains the way in which things are connected, and gives principles that regulate human–animal relations and the role of humans in the world.

Ecosystem management

An example of this is the Australian government giving back land to the Aboriginal people to practice their tradition of controlled fires. This made the areas more biologically diverse and decreased the threat of wildfires and their severity.

Ecosystem management is a multifaceted approach to natural resource management that can incorporate science and Traditional Ecological Knowledge to collate long-term measurements that would otherwise be unavailable. This can be achieved by scientists and researchers collaborating with Indigenous peoples through a consensus decision-making process while meeting the socioeconomic, political and cultural needs of current and future generations. Concerns over instances where indigenous knowledge has been used without consent (cultural appropriation), acknowledgment, or compensation have been raised by some critics.

Ecological restoration

Ecological restoration is the practice of restoring a degraded ecosystem through human intervention. There are many links between ecological restoration and ecosystem management practices involving Traditional Ecological Knowledge. Due to the aforementioned unequal power between indigenous and non-indigenous peoples, equitable partnerships formed in these contexts can help mitigate extant social injustices, as in the case when Indigenous Peoples lead ecological restoration projects.

Effects of environmental degradation

In some areas, environmental degradation has led to a decline in traditional ecological knowledge. For example, at the Aamjiwnaang community of Anishnaabe First Nations people in Sarnia, Ontario, Canada, residents suffer from a "noticeable decrease in male birth ratio which residents attribute to their proximity to petrochemical plants".

Climate change

Indigenous people and Climate Change: fact sheet about the health impacts of climate change on indigenous populations

Climate change is affecting indigenous people in different ways depending on the geographic region which require different adaption and mitigation actions. For example, to immediately deal with these conditions, the indigenous people adjust when they harvest and what they harvest and also adjust their resource use. Climate change can change the accuracy of the information of Traditional Ecological Knowledge. The indigenous people have relied on indicators in nature to plan activities and even for short- term weather predictions. As a result of ever more increasingly unusual conditions, entire indigenous cultures have been disrupted and displaced. As a result, there is a loss of the cultural ties to the lands they once resided on and there is also a loss of the traditional ecological knowledge they had with the land there. Climate change adaptations have the potential to harm indigenous rights. The US EPA promised to take traditional ecological knowledge into consideration in planning adaptations to climate change.

The rising temperature poses a threat for ecosystems including the locations where plants grow, the times that insects emerge throughout the year, and changes to the seasonal habitats of animals. For many harvesting seasons, indigenous people have shifted their activity months earlier due to impacts from climate change, adaptations that becomes more important in the face of a rapidly changing climate. Climate change can therefore affect the availability and quality of environmental resources for indigenous people. For example, as sea ice levels decrease, Alaska Native peoples have experienced changes in their daily lives. Thawing permafrost has damaged buildings and roadways while clean water resources dwindle. Fishing, transportation, social and economic aspects of their lives are destabilized. Additionally, as the temperature gets hotter, disasters such as uncontrolled wild fires become more likely. One Indigenous nation in Australia was recently given back land and they reinstated their traditional practice of controlled burning. This was documented to increase the area's biodiversity and decrease the severity of the wildfires. Traditional ecological knowledge can help provide information about climate change across generations and geography of the actual residents in the area. The National Resource Conservation Service of the United States Department of Agriculture has used methods of the indigenous people to combat climate change conditions.

Conclusion: Cultural ecology is a concept within human geography that focuses on the interaction between human societies and their natural environment. It examines how cultural practices, beliefs, and social systems are shaped by and adapt to the physical environment in which they exist. Cultural ecology explores the ways in which human societies utilize, modify, and are influenced by their environment, as well as how these interactions shape patterns of human behaviour and the distribution of cultures. Here are some key points about its relevance in human geography:

1. Adaptation and subsistence strategies: Cultural ecology studies how human societies adapt to and utilize their environment for sustenance and survival. It explores how different societies develop and employ subsistence strategies such as hunting and gathering, agriculture, pastoralism, or industrial practices based on the availability of natural resources and the constraints of the environment.
2. Environmental determinism: Cultural ecology provides insights into the relationship between the physical environment and human behaviour, but it rejects the deterministic view that environmental factors alone determine cultural development. Instead, it emphasizes that while the environment shapes human societies, culture also plays a significant role in shaping how societies interact with their environment.
3. Human-environment interaction: Cultural ecology examines the reciprocal relationship between humans and their environment. It explores how human activities, such as agriculture, deforestation, or urbanization, can impact ecosystems, resource availability, and environmental sustainability. It also investigates how

environmental changes, such as climate change or natural disasters, can influence human societies and their cultural practices.

4. Landscape and cultural interpretation: Cultural ecology considers how human perceptions and meanings assigned to landscapes and natural features influence cultural practices and beliefs. It explores how societies develop cultural landscapes spaces that bear the imprint of human activity and cultural values through their interactions with the environment.

5. Sustainability and environmental stewardship: Cultural ecology emphasizes the importance of sustainable practices and environmental stewardship. It examines how cultural systems can contribute to or hinder environmental sustainability, highlighting the need for understanding and managing the delicate balance between human needs and ecological constraints.

6. Resilience and vulnerability: Cultural ecology also explores the resilience and vulnerability of human societies in the face of environmental changes and challenges. It examines how different cultural systems and adaptive strategies affect a society's ability to cope with and recover from environmental disruptions, such as natural disasters or climate change impacts.

Cultural ecology provides a framework for understanding the complex relationship between humans and their environment, acknowledging the dynamic interplay between culture and nature. It helps geographers analyze the spatial patterns of human-environment interactions, the impacts of environmental change on cultures, and the potential for sustainable practices in different regions of the world. Climate change is happening due to human activities, and is amenable to action to show its pace and reduce its impact. Now a days it is a global phenomenon so, globally government can take the proper solution.

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