

Between Belief and Behavior: The Evolution and Sustainability of Human-Nature Symbiosis in Sherpa Culture

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Abstract. This paper examines the dynamics of human-nature symbiosis in Sherpa cultures in the Himalaya using a holistic approach to faith practice. It stresses the role of Sherpa ecological knowledge and spiritual practices in enabling sustainable high-altitude living, and delves into how climate change, tourism, modernization, and decentralization have challenged this historical symbiosis. Drawing on a literature review, the authors conclude that Sherpa cultures have historically integrated sacred places, rituals and adaptive livelihoods, such as rotational cultivation and vertical migration, into a social ecosystem. But rapid glacier melt, farming instability, and increasing tourism-market values undermine ecological knowledge and cultural inheritance. Meanwhile, the disconnect between conservation policies and indigenous practices further deepens the disconnect between spiritual values and ecological practices. To overcome these challenges, the research suggests holistic approaches such as community-based co-management, local capacity building for ecological roles, sustainable tourism transformation and ecological compensation. It suggests that, in order to be sustainable, it is not enough to maintain cultural beliefs, but to rebuild the dynamic connections between beliefs and ecological practices. By focusing on the dynamic "belief-practice nexus", the study offers a comprehensive approach to determining and enhancing human-environment relations in vulnerable mountain environments, and provides both theoretical implications for indigenous ecology and practical implications for sustainable community development.

Keywords: Sherpa Culture, Human–Nature Symbiosis, Belief–Practice Nexus, Sustainable Tourism

1. Introduction

1.1. Sherpa and evolving symbiosis with nature

The Tibetan people have an ethnic group that is known as the Sherpa people, which is widely spread throughout the mountainous areas of Nepal, India, and the Tibetan Autonomous Region of China. The Himalayas are home to most sherpas. The Sherpas are more adapted to living in high-altitude conditions than the rest of the population because they have lived in a high-elevation area for a long time. Thus, numerous Sherpas are related to mountaineering and employment as climbing guides in the Himalayan area. Such profound, practical interdependence with the extreme mountain

environment has essentially formed the Sherpa worldview, developing a cultural system where human life is inseparably connected with the natural world.

The Sherpa culture comprises a distinct religious system involving gods and demons that inhabit mountains, forests, and lakes. They have a traditional spiritual value of symbiosis with nature. Their conventional relationship in terms of human-nature coexistence is under the threat of collapse due to rapid modernization and globalization. Thus, exploring the traditional ethos of the human-nature symbiosis of the Sherpa is vital not only to the local ecological and cultural sustainability but also to provide useful insights into the models of sustainable development of vulnerable ecosystems in the world.

1.2. Literature review

The academic interpretations of the human-nature interaction within Sherpa culture have been developed in two main, and usually opposing, directions. The available literature has touched on different aspects of human nature associations within the Sherpa culture. In the initial studies on Obadia, it was suggested that nature is holy and that mountains, lakes, and forests are filled with religious importance in the cultural foundation of Sherpa ecology. Obadia is wary, however, of fetishizing indigenous ecological knowledge as necessarily stable or natural. This point of view emphasizes the multidimensional and sometimes conflicting nature of the Sherpa environmental attitudes, which are conditioned by the dynamic interaction of cultural traditions and the external socio-economic factors [1]. The research conducted recently discussed the revolutionary impacts of modernization and tourism on the Sherpa people. Bhattari suggested that the growth of mountaineering and hiking tourism had a tremendous impact on the lives of Sherpas, causing the environment to be under stress, which is why it is essential to balance the economic development and cultural preservation [2]. Additionally, Upadhyay emphasizes the clashes of culture that emerge when commercialization is taken into account in connection with the traditional spiritual values. Although Sherpa spirituality encourages people to respect nature, more involvement in global tourism tends to focus on profits, which puts a clash between the cultural values and real practice [3].

1.3. Research gap

Though the available literature discusses the relationship between humans and nature in Sherpa culture from a variety of viewpoints, most studies have a tendency to look at it in only one aspect and do not have an integrative analysis system. On the one hand, preliminary studies were concerned with the spiritual and cultural roots of the ecological perspective of the Sherpa, and the sacredness of nature and the religious importance of the mountains, forests, and lakes. The studies can be added to the comprehension of the symbolism and ethical values of nature, yet tend to treat these beliefs as comparatively stable and self-consistent systems. Recent studies, however, have paid more attention to the effects of modernization and tourism development, in particular the effect of economic development on the livelihood and environmental behavior of the Sherpas. Through such studies, tension is identified between the traditional spiritual values and commercialization, and this is an indication that increased tourism involvement can undermine the ecological ethics and further strain the environment.

Nevertheless, even with a plethora of research findings, apparent gaps can still be identified. To begin with, not much research has examined the complex of spiritual beliefs and ecological practices as a whole, and those studies that have been done tend to divide the two concepts of belief and

behavior, and there is no description of how the two interact to form the symbiotic relationship between nature and human beings. As a result, the vibrant, reciprocally defining connection between the cultural ideals and everyday actions has been understudied. Second, sustainable development pathways are not well studied, and the literature is mostly concentrated on problem definition without systematic solutions to address the issues of cultural protection and economic development.

To fill these gaps, this paper takes an integrative approach to the relationship between humans and nature in Sherpa culture. It goes beyond the belief-behavior dichotomy to study how they relate to each other as a coherent system. Finally, it aims to pursue practical ways of sustainable development that balance and harmonize cultural continuity and modern socio-economic demands.

1.4. An integrative framework: belief-practice nexus and pathways to sustainability

To fill the above research gaps, this paper constructs a research framework, the core point of which is that the symbiotic relationship between man and nature in Sherpa culture is a composite system of "spiritual belief + ecological practice", and its sustainable development depends on the balance between "cultural consciousness" and "ecological compensation".

First, this paper analyzes the traditional cultural basis of Sherpa human-nature relations, focusing on how religious beliefs and spiritual values shape environmental ethics, and shows that the concept of human-nature symbiosis stems from deep cultural norms rather than practical needs.

Secondly, this paper examines the impact of modernization and tourism development and analyzes how economic incentives and external pressures reshape the relationship between belief and practice. This section highlights the tension between traditional values and market behavior, noting that livelihood needs increasingly influence ecological practices.

Thirdly, this paper emphasizes the interaction between spiritual beliefs and ecological practices, arguing that the two are not separate but interrelated wholes. Spiritual beliefs provide moral guidance, and ecological practices reflect realistic adaptation, and together they form a dynamically evolving system.

Finally, this paper proposes a sustainable development path for the Sherpa society: on the one hand, by strengthening cultural consciousness, internal ecological protection motivation is enhanced; on the other hand, by introducing ecological compensation mechanisms and external systems, economic support is provided to coordinate livelihood development with ecological protection. These two dimensions are not opposites, but complement each other, and together they constitute a balanced path to sustainable development.

2. Sherpa human-nature Symbiosis: a case study of the belief-practice nexus

The Sherpa communities in the Himalayan region represent a case in point for understanding the man-nature symbiosis both under the traditional and modern conditions. A cultural system that was very well interwoven with spiritual beliefs and ecological practices developed among the Sherpas who live at high altitudes. This system not only enables their livelihoods but also represents an adaptation to the fragile mountain environment in the long term.

2.1. Spiritual foundation: sacred geography and environmental ethic

Sherpa culture, at the spiritual level, is well entrenched in the concept of sacred geography. The religious significance of the natural landscape in which mountains, glaciers and lakes are considered to be the home of the gods. In the case of Mount Everest (Sagarmatha), it is considered to be a holy

being or mother goddess and local people believe that if they fail to respect the mountain it might have bad impacts on them or cause imbalance in the environment [4]. Such beliefs are translated into concrete taboos and practices, such as restrictions on activities in sacred spaces, garbage disposal and a code of conduct for climbers, that directly regulate people's interactions with their surroundings. This ideology establishes moral limits that regulate human activity, and so it discourages some human activities such as over-exploiting natural resources and polluting.

This relationship is further enhanced by ritual practices. In the past incense was burned most of the time before the rituals were performed to appease the mountain deities before mountaineering, agriculture and animal husbandry [1]. These practices suggest that the environmental relationships are not only economic but also spiritual and foster an increase in respect and appreciation for the environment. Thus, ritual acts are not symbolic but re-confirmations of the divine covenant between Sherpa community and the natural world, and by means of which the spiritual paradigm, which gives direction to ecological behavior, is constantly affirmed.

2.2. Practical manifestation: adaptive livelihoods and ecological knowledge

Besides Sherpa culture, at the spiritual level, is well entrenched in the concept of sacred geography. The religious significance of the natural landscape in which mountains, glaciers and lakes are considered to be the home of the gods. In the case of Mount Everest (Sagarmatha), it is considered to be a holy being or mother goddess and local people believe that if they fail to respect the mountain it might have bad impacts on them or cause imbalance in the environment [4]. Such beliefs are translated into concrete taboos and practices, such as restrictions on activities in sacred spaces, garbage disposal and a code of conduct for climbers, that directly regulate people's interactions with their surroundings. This ideology establishes moral limits that regulate human activity, and so it discourages some human activities such as over-exploiting natural resources and polluting.

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Besides the spiritual doctrines, Sherpa communities have also come up with practical ecological plans, which are a manifestation of sustainable management of resources. An underlying principle of the strategies is the principle of adapting and maximising resources to reduce the ecological footprint and resilience of the community. One of them is vertical nomadism, that is, the movement of people and animals from one altitude to another at certain periods. This practice reduces the burden on a particular eco region, and allows for natural regeneration of pastures [3].

Agriculture has also a high ecological sensitivity. Sherpas have a rotating agricultural system and wide agricultural system which ensures the soil fertility and biodiversity. Ethnobotany of local plants is also important for them as they utilize the local plants for food, medicine and as construction material, including those adapted to high altitude conditions [5].

This adaptation is also reflected through the traditional architecture. The houses are constructed from locally available stone and wood, which will withstand the extreme climatic conditions, but with minimal environmental impact. It is a reflection of the ideology of the use of local materials towards creating human settlements that are compatible with the land that it influences. While in

essence this is a pragmatic view on architecture, it also resonates with the spiritual concept of harmony, only a minimum of interference, and the way in which ecological rationality can often be seamlessly integrated into cultural norms. Generally speaking, the Sherpa case suggests that human-nature symbiosis is not limited to belief systems or practical strategies, but rather is the outcome of an interaction between the two, justifying a framework as suggested in the present study.

3. Analysis of the problem

3.1. Erosion of the material base: climate change and the undermining of adaptive practices

Global warming is one of the most pressing issues that is rapidly altering the environment of the Himalaya. The accelerated glacier retreat, especially in places such as the Khumbu Glacier, has been caused by global warming. This makes traditional climbing routes less secure and Sherpa guides (including icefall doctors) need to be hired to maintain the climbing route [6]. This professionalisation and increased risk, while adding to the creation of economic sectors, is also a shift in a practice traditionally based on ritual and respect to one based on international demand and technical risk management, which is a subtle change in the cultural value of the guide role.

There are also unpredictable snow avalanches and crevasses that fall in, which pose a threat to human life, and also complicate nature's cultural meanings for people.

From a cultural perspective, environmental instability can be seen to be a consequence of the lack of balance between humans and nature, expressed sometimes as the anger of the mountain gods. This has led to a crisis of faith, where traditional spiritual beliefs cannot explain the scientifically understood climate change, which has led to a clash between traditional and modern knowledge systems [4].

Similarly, climate change has also exacerbated the ecological imbalance. A warming trend has altered the crop-growing environment, increased pest infestation and reduced the productivity of traditional crops such as millet and barley. These changes directly affect the local food security, and also disrupt the traditional agricultural practice adapted to the high-altitude environment [3]. To this extent, climate change is a "double blow" to the belief-practice system. Firstly, it physically undermines the effectiveness of proven ecological practices (how) and secondly, it decreases the explanatory and predictive power of the spiritual worldview (why), which impairs the relationship between the two.

3.2. Double bind of tourism: economic incentives and weakening of cultural-spiritual cohesion

Modern economic forces, particularly the expansion of tourism, have significantly reshaped Sherpa society. Tourism is a double-edged sword. It creates a powerful incentive structure that increasingly mediates the relationship between the Sherpa people and their environment, often reorienting practices from those guided by spiritual-ecological ethics towards those dictated by the market logic of the global adventure industry. On the one hand, it provides significant income opportunities and improves living standards. On the other hand, it brings environmental pressures and cultural change.

The rapid expansion of tourism in the Everest region has led to significant environmental degradation, including waste accumulation, pollution, and pressure on fragile ecosystems [7]. The large number of climbers and hikers puts pressure on fragile ecosystems, often exceeding the local environment's carrying capacity. This directly violates traditional ecological ethics, which emphasize restraint and respect for nature, as shown in Table 1.

Table 1. Rules to format sections

Indicator	Pre-Tourism Boom (ca. 1970s)	Current Estimate (2020s)	Note / Source
Annual Visitors (Sagarmatha NP)	~3,600	~60,000	16-fold increase
Waste Accumulation (tons/yr)	Minimal	1,100+	Estimated, base camps & trails
Forest Cover Loss (% in NP)	Baseline (~1976)	-5% to -15%	For fuel & lodging
Glacier Retreat (Khumbu, m/yr)	~20	~30+	Acceleration linked to local albedo change

(NP: National Park)

Meanwhile, local livelihoods have also transformed because of tourism. Most young Sherpas today have chosen to work as guides or in other positions related to tourism as opposed to the traditional farming or sheep herding. Although this change is economically rational, it has also caused the loss of traditional ecological knowledge, including seasonal migration, crop management, and plant use [8]. The material aspect of the symbiosis of man and nature is weaker and weaker as there is less practical knowledge.

Moreover, cultural transmission across generations is also being broken. Traditional beliefs are not as readily accepted by younger generations who are more affected by modern education and urban living. The process of migration to large cities like Kathmandu or abroad further destroys the intergenerational knowledge sharing, which had been based on oral learning and everyday practice [9]. Thus, the religious basis of symbiosis is slowly being undermined.

3.3. Policy disconnects: external regulations vs. indigenous knowledge systems

Then there is the other major concern of the gap between livelihoods and conservation policies. Sagarmatha National Park is one of the examples of protected areas that have been established to conserve biodiversity and ecosystems. However, these policies typically restrict the use of the traditional resources, like collecting firewood and pasturing sheep [10].

While these measures have a conservation purpose, they may result in economic hardship for the local communities if alternative resources and compensation policies are not adequate. Otherwise, Sherpa households have had to rely more on tourism income, which also has contributed to the shift towards traditional practices.

This is a broader issue: conservation policies are typically developed from the top, and are not fully integrated into indigenous knowledge. As a result, they might have inadvertently undermined cultural practices that could in turn have supported environmental sustainability. The crux of the matter is an epistemological tension: on the one hand, top-down conservation policy is based upon universalized scientific management and spatial segregation (e.g. national parks), on the other, place-based, experiential knowledge and place-sensitive and adaptive resource management practices that, in many cases, cannot be separated, as much as they can be removed, at least in cultural and spiritual terms. The lack of fit between conservation policy and culture demonstrates the need of more flexible governance.

3.4. Systemic fragmentation: the decoupling of beliefs from practices

With all these individual elements, the most critical factor is the demise of the very system of beliefs and practices. In the past, Sherpa sustainability has been grounded on the mutual complementarity of the two dimensions: practices define beliefs, and beliefs define practices.

However, the link is being broken by the impacts of climate change, tourism and regulatory restrictions. For example, people can still value and respect the sacred places and at the same time engage in activities that harm the environment. This creates a disjuncture between people's actions and their belief.

This should not be seen as a hypocrisy but an effect of structural conditions. There are economic, environmental and institutional factors, which shape the actions in a way that might not be congruent with traditional values. It is, therefore, not straightforward to just revive the past, but to re-establish the link between beliefs and practices into the changing context.

4. Pathways to rebuild the belief-practice nexus: an integrated strategy framework

Building on the challenges outlined above, this section offers some recommendations to reconnect the beliefs and practices in Sherpa society. These recommendations focus, not only, on environmental sustainability, but also institutional and cultural sustainability.

4.1. Empowering community-based co-management: reconciling governance with indigenous systems

To address this ever-growing gap between the local customary practices and external governance regimes, it is important to re-engage Sherpa in environmental decision-making.

In the beginning, a co-management model should be developed based on the local communities, but its implementation must take into account the institutional constraints. It would be better to avoid the attitude of thinking that the traditional norms should be taken wholesale into the national laws, but to negotiate the integration of indigenous practices into conservation governance gradually.

For protected areas such as Sagarmatha National Park, the extension of the existing buffer zone programs and participatory approaches could be more of an advisory and stewardship role. Even cultural norms (e.g., prohibitions on the exploitation of sacred mountains, prohibitions on the desecration of sacred sites, etc.) could be seen as complementary informal rules that explain how the national policies are implemented in practice rather than be written into the national laws.

This intermediate approach acknowledges the power difference between the state and local people, while still leaving some room for the local knowledge to influence the environmental governance. More feasible ways to incorporate cultural values into the protection systems are incremental changes such as consultations with local communities, co-management arrangements, and locally relevant law enforcement measures [11].

In addition, training needs to be promoted. This training will be able to build local ecological stewards and cultural protectors who will have traditional and modern knowledge of the environment. The intergenerational gap can be closed by motivating the young Sherpas to return to their villages and practice sustainable entrepreneurship (agroforestry, herbs, ecotourism), which will be able to boost the local economy. An example of institutionalising the capacity-building process is the establishment of a "Sherpa Stewardship Fellowship" which combines apprenticeship in the traditional ecological knowledge with sustainable business management.

4.2. Transforming tourism from extraction to regeneration: aligning economics with ethics

Since tourism plays a key role in the Sherpa economy, it is important to make it more sustainable. The strategies should not only focus on access limitation, but also on minimising the environmental impacts and guaranteeing the economic viability.

One of the strategies is the development of eco-cultural tourism, which is based on the low impact and respectful cultural tourism. The model fosters an environmental consciousness and values through integrating spiritual practices, ecological knowledge and community narratives into tourism.

The second is to implement the adaptive carrying capacity management, which should be handled sensitively with regard to the balance of environmental protection and economic dependence on tourism. A more practical solution is to maximize tourism value and structure rather than setting definite quantitative restrictions which can easily reduce the local revenues.

This can be achieved by the transformation of a large number of low value visitors into a small number of high value visitors, that is, transform the high volume/low value model into a low volume/high value tourism model. For example, by altering the pricing mechanism, seasonal fluctuations and the "premium eco culture experience" can be controlled, but not significantly reduced the community income. More importantly the model can empower tourism operations to be the means of transmitting and validating the traditional belief system and in doing so it directly enhances the belief-practice nexus rather than undermining it.

Furthermore, improving the waste management infrastructure, planning the routes and educating the visitors can minimize the impact without a total prohibition to access. These steps will allow more flexible management of carrying capacity, with an emphasis on minimizing impacts as opposed to digital control.

Further, more benefit sharing mechanisms should be implemented to ensure that the benefits of tourism are redistributed at the community level and used for conservation. These systems can help reduce the tensions between livelihoods and ecological sustainability by highlighting the links between economic and ecological outcomes [12].

4.3. Mainstreaming indigenous knowledge: adaptive policies and compensation mechanisms

Given that the local situation and policies have diverged, more inclusive and flexible governance should be implemented.

In order to integrate indigenous knowledge into the conservation plan, the policymakers should be involved in decision-making. The ecological culture of the Sherpa people, which includes seasonal migration and the rotation of resources, has a long history and should be regarded as a valuable body of knowledge, not merely an informal tradition.

Second, we should build an ecological compensation mechanism. Protection of resources in the protected area is usually an economic cost for the local people. To cover the costs, we can provide financial support and grants, and also organise other non-polluting livelihood projects. In particular, ecological compensation can be introduced in the form of a Payment for Ecosystem Services (PES) to directly support communities that carry out conservation in line with the objectives and cultural requirements of conservation; thus, the living expenses of people under the restrictive policy will be reduced [13].

Finally, the governance system should be flexible in light of circumstances. Policies should not be uniform and should be adjusted according to changes in the environment and culture of different areas, with the help of all parties.

4.4. Fostering cultural adaptability: reinterpreting tradition for contemporary resilience

The practical strategies outlined above—co-management, tourism reform, and policy innovation—must be underpinned by a parallel process of cultural revitalization. The ultimate goal is not to musealize tradition, but to rebuild a dynamic belief-practice nexus. This requires transcending the traditional vs. modern dichotomy and recognizing that cultural systems are inherently adaptable.

One effective approach is to reinterpret traditional beliefs in a contemporary context. For example, the concept of sacred landscapes can be reframed to support modern environmental priorities such as biodiversity conservation and climate resilience.

At the same time, it is necessary to strengthen the institutional guarantee of cultural practice. Rituals, festivals, and traditional ecological knowledge systems should be preserved as living practices that continue to shape everyday behavior.

By aligning cultural significance with practical actions, the Sherpas' belief practice system can evolve into a resilient and adaptable framework. This integrated approach not only addresses current challenges but also provides broader insights into the sustainable development of fragile ecosystems.

5. Conclusion

5.1. Key findings

This paper explores the evolution of the human-nature symbiosis in the Sherpa culture as a mix of culture and belief. Section 3 analysis reveals there are some external factors disturbing this system. Climate change has destabilised the ecological fundamentals of the Sherpa adaptation strategies, particularly by melting the glaciers, affecting the farming and resulting in an uncertain environment. Meanwhile, tourism development has also changed the local livelihoods, providing strong market forces and resulting in the loss of indigenous ecological knowledge and intergenerational cultures. In addition, the policy disconnect between the top-down conservation management and local resource administration also exacerbates the tensions, widening the gap between the spiritual practices and ecological practices.

The response in Section 4 suggests interrelated measures, such as the strengthening of community co-management, capacity building of local ecological roles, and sustainable tourism. The policy integration and ecological compensation schemes also stress the need to harmonise institutional arrangements with indigenous knowledge. Overall, the findings suggest that the loss of Sherpa ecological values is not the main issue, but the weakening of the link between the belief systems and practices in response to structures.

5.2. Theoretical and practical contributions

This study can be considered as both theoretically and practically important to understand the human-environment relationship in the high-altitude regions. It develops and applies theoretically an integrated framework of belief-practice. This transcends the existing polarisation in the literature to either romanticise the static nature of the belief systems or reduce behaviours to economic rationality, and offers instead a view to understand the co-evolution of the two under external pressures.

Pragmatically, it translates this into principles of governance. In terms of tourism management, it suggests that instead of quantity-based tourism management, quality-based tourism management is required because it will complement and not clash with the cultural norms. In the case of

conservation policy, it suggests that co-management is needed that involves the formalisation of indigenous knowledge such as sacred geography into conservation practice.

5.3. Limitations and future research

This research is heavily reliant on secondary sources and therefore it cannot reflect the local and real-time change of behaviour in the Sherpa communities. It is also a conceptual study without the quantitative measurement of the environmental impacts or economic impacts in detail.

In the future, primary data could be added to the research, such as fieldwork, interviews and participatory observation, to better understand the day-to-day interactions between belief and practice. It would also be complemented with studies of other communities in the Himalaya or in other mountain areas or longitudinal research to improve the generalizability and detail of the framework.

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