

# Lessons from Grandma's Tales: Bhutanese Vernacular Understanding of the Natural Environment and Climate Change

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This is how my book, *Dangphu and Dingphu* (2013), begins: Whenever I rolled large stones down the slopes for fun, my scientific grandmother would scold me, saying, “*After your death, the henchmen of the Lord of Death will tie those very stones to your testicle.*” The fear of such pain stopped me from rolling stones that could otherwise harm humans, animals or insects, destroy trees and plants, frighten countless invisible spirits, and disturb the peace of the environment. This simple Bhutanese belief – or superstition, as some might call it – proved more persuasive than scientific explanations in preventing harm to the natural world. At a time when such beliefs are often dismissed as outdated cultural remnants, this could serve as a folklorist’s solution to the 21<sup>st</sup>-century problem.

## Grandma’s “Scientific” Wisdom

Growing up in the village meant learning folk “do’s and don’ts” passed down through generations. Upon closer analysis, many of these beliefs reveal rational, pragmatic, and often scientific reasoning.

For instance, the saying, “*If you urinate in water, the henchmen of the Lord of Death will make you separate the urine from the water*” is a metaphorical way of discouraging water pollution. Similarly, “*If you throw animal carcasses into a lake, the lake spirit will bring disease upon the village*” serves as a warning against contaminating lakes which are vital water sources for both communities and local ecosystems.

While I do not claim that Bhutanese grandmothers hold the answers to climate change, their wisdom reflects a deep understanding of the natural

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environment—one that has sustained their way of life for generations.

## **The Seven Suns**

While thinking about global climate change mainly characterised by rising temperatures, I am reminded of a story that I heard as a boy growing up in a typical Bhutanese extended family. The story is an account of how the present aeon (*kalpa*), the present world, will end with the rise of the seven suns, one after another.

When the first sun shines, vegetation will wither and die. Small water bodies like streams will dry up with the second sun. The third sun will dry up large rivers like the Ganges. The fourth sun will dry up the great lakes (glaciers) from where the rivers originate. The fifth sun will dry up the great oceans such that not a drop will remain. When the seventh sun appears, the earth and the king of mountains will erupt into a burning mass of fire.

Now, I gather that this account is from a Buddhist sutra, *The Seven Suns* (see Sujato, n.d.). Modern parallels to the legend of the seven suns can be seen in large-scale human activities driving climate change: the burning of fossil fuels, industrial processes, deforestation, transportation, energy consumption, urbanisation, and resource extraction to support modern industrial life.

Our ancestors recognised the signs of rising temperatures and the potential for environmental collapse as a part of their worldview long before modern science confirmed it. They did not need scientific instruments to understand and measure the consequences of climate change.

## **Balancing *Jungwa-zhi* (Four Foundational Elements)**

In Buddhism, the environment is understood through four foundational elements; *jungwa-zhi*: earth (*sa*), water (*chu*), fire (*mi*), and air (*lung*). These elements serve as the building blocks of both the human body and the physical world, and maintaining balance among them is essential for their full flourishing and health.

Just as the balance of solidity, fluidity, heat, and pressure is crucial for good health, harmony among these elements in the ecosystem ensures its

proper functioning and the sustenance of life. For instance, a rise in body temperature due to internal factors, such as a viral infection, leads to fever, just as an increase in global temperatures disrupts ecosystems on both local and global scales. An excess of one element can destabilise the others, impairing the health of the entire body or the environment.

The balance between the body and the external environment is interdependent; internal well-being is only possible when the natural world is in harmony, and vice versa. This understanding has long influenced Buddhist practitioners who sought solitude in remote caves and deep forests to attain enlightenment. Their way of life—marked by non-harm and coexistence with nature—not only nurtured their spiritual growth but also contributed to the flourishing of the surrounding ecosystems.

Buddhist practices emphasise the mastery of one's anger and greed. Greed fuels competition over limited resources, often escalating into conflicts that ultimately lead to war. The over-exploitation of natural resources disrupts ecosystems, intensifying resource scarcity and further driving conflicts, creating a destructive cycle in which war, in turn, devastates the environment. Our ancestors understood that to prevent such conflicts and environmental degradation, the root causes—desire and anger—must be managed.

### ***Gyana Langtsi* (The Ox Divination)**

The prediction of whether the climate for the year will be hot, cold, dry or wet is shown in the Bhutanese calendar, which itself is based on the movements and positions of the earth in relation to constellations, planets and stars. Such prediction is recorded in the *datho* (*astrological calendar*).

Growing up in the village, I used to be fascinated by the *datho* hung on the door head for blessings. These dog-eared calendars featured an illustration of *Gyana Langtsi*; a man wearing a full *gho*, indicating cold climate, or with the upper part of his *gho* removed or wearing a hat to indicate hot climate, wearing shoes to indicate rainfall, or without any shoes to indicate dry weather. A man leading an ox that is sticking out its tongue out of thirst suggests a dry climate.

## Cyclical Worldview and Natural Calendar

Modern farming, rapidly expanding across rural Bhutan, often follows the Gregorian calendar to schedule agricultural activities. However, Bhutanese farmers have traditionally—and continue to—use the Bhutanese calendar, which incorporates a unique system, occasionally adding or skipping months. This system is adjusted based on local temperatures and climatic indicators, ensuring agricultural practices align with natural rhythms.

Unlike the linear, predictable and progressive worldview of modern societies, Bhutanese culture is deeply rooted in a cyclical worldview — one that is continuous, recurring and fluid, marked by uncertainty. This mirrors the natural cycle of birth, aging, sickness, death and rebirth, a realisation that famously led Prince Siddhartha to renounce his royal life in search of a solution to break this cycle. A similar cyclical understanding of time and life is evident in Bhutan's rural farming traditions.

For instance, natural phenomena dictate farming schedules in Wamling village in Zhemgang district (see Penjore, 2009). The first flowering of peach trees in the lower village signals the time to sow summer buckwheat. The blooming of *domleng* trees indicates the sowing season for summer sweet buckwheat, while the emergence of top foliage on *domleng* trees marks the time to sow early maize. Walnut trees in bloom signal the main maize planting period.

Likewise, when orange trees and *phagpaidung* along the riverbanks begin to flower, fish migrate upstream in the Chamkharchu River, indicating the right time to sow rice seedlings. Conversely, the falling of *phagpaidung* and orange blossoms marks the end of rice seedling transplantation and the sowing of late maize crops. Autumn crop sowing must be timed precisely to avoid early caterpillar damage or late frost. This is determined by observing the position of the sunrise or sunset on the horizon.

Birds and animals also play a crucial role in the seasonal calendar. The appearance of *horhorma* birds in the first month signals the start of the sowing season while *prengpa ureng* birds indicate the time for maize planting in the second month. The arrival of woodpeckers aligns with the sowing of maize and rice seedlings. During rice transplantation, the presence of various birds is observed, with the cuckoo's call marking the

end of the transplantation season.

This seamless integration of nature, culture and farming practices reflects Bhutanese farmers' deep connection to their environment and their reliance on cyclical rhythms rather than rigid, linear systems.

## Social Restriction

Traditional Bhutanese systems and institutions played a key role in managing natural resources. The *menyer* (village forest guard) oversaw forest conservation, ensuring equitable access to fuelwood. Water management was entrusted to the *chunyer* (water caretaker), who upheld traditional water rights and regulated irrigation distribution.

Similarly, the *zhingnyer* (crop damage arbitrator) resolved disputes related to crop destruction, declared the farming season, enforced agricultural regulations, and assessed crop damage.

A system of social restrictions (*dam*) regulated access to natural resources or prohibited entry into spiritually significant areas during certain times of the year. The objective is to avoid angering the deities believed to inhabit these sacred spaces. For example, a restriction on harvesting bamboo during specific months, fearing the wrath of local spirits, allowed bamboo shoots to mature into fully grown plants, which were vital for the village's livelihood.

These restrictions prohibit the harvesting of bamboo, cane, ferns, mushrooms, orchids and wild tubers during closed seasons, allowing bamboo plants to complete their life cycles before being harvested. Practicing selective harvesting ensures only high-quality and necessary amounts of cane are taken. Only young edible fern shoots were collected and only dead, injured, or deformed trees were used for firewood. Each household could only harvest a maximum of ten *pacha* (cane shoots) because they regenerate slowly. Fodder could only be collected during certain months, to allow tree regeneration.

Certain tree species were cultivated and protected for their religious, cultural, and economic significance. Sacred sites, including large trees, rocks, water bodies, and groves believed to be the abodes of deities, remained

untouched. Many sacred groves coincidentally served as village watersheds, reinforcing their ecological importance.

While collecting bamboo for roofing or herding cattle on mountain slopes, making loud noises—such as shouting or calling out to one another—is strictly discouraged. This restriction stems from the belief that disturbing local deities could trigger rain or hailstorms, which might lead to crop destruction and property damage.

Interestingly, scientists in China have explored the use of powerful low-frequency sound waves to trigger rainfall and mitigate droughts (Morrison, 2021). These sound waves stimulate water vapour particles, causing them to vibrate and merge into larger droplets, which then fall as rain. A test conducted in 2020 successfully increased rainfall by up to 17 percent.

Pest control in farming is also approached differently. Rather than using pesticides, spiritual methods are employed. When I visited a village in 2013, I witnessed people performing *chokor* (ritual procession) going around the village, carrying over 100 volumes of Buddhist scriptures on their backs to stop the army worms from devouring the maize shoots. Miraculously, the army worms disappeared, just as they had in the past.

## A Tripartite World

Bhutan is often described as the most mountainous country in the world, and the relationship between mountains and people is one of mutual influence. The Bon practice, in particular, has had a profound impact on how Bhutanese, especially in rural areas, understand, relate to, and protect the physical world around them.

According to the Bon belief system, the mountainous geography is divided into three distinct yet interconnected realms, reflecting a holistic view of existence - the upper realm, inhabited by gods (*lha*), the middle realm, where mountain beings (*tsen*) reside, and the lower realm, home to serpent beings (*lu*) (Tashi, 2023). The human realm overlaps with these three zones, and it is this interconnection that compels humans to be cautious in their interaction with the external world. If not, the gods will withdraw their protection, resulting in epidemics, famine, drought, sickness and death.

The *wangthang*—a blend of psychic and material strength and security rooted in past karma—will diminish, leading to a loss of auspiciousness in the relationship between people and their environment, and an increase in inauspiciousness.

The slopes of the mountains also influence human settlement patterns and farming practices. The middle zone, where most settlements are located, is primarily agricultural. In the upper regions, people rely on hunting, while those in the lower regions depend on fishing. These three zones, each exploiting different natural resources, once depended on each other, until Buddhism discouraged hunting and fishing as non-virtuous acts. These distinct livelihoods among people are vividly illustrated in a Bhutanese folktale.

### Greenhouse Deities

The country is home to numerous ecologically sensitive and significant sites, which Karma Ura (2011) refers to as the abodes of “greenhouse deities”. These sites are believed to be the dwelling places of various spirits and deities, both benevolent and malevolent, for specific reasons.

For instance, river confluences, where fish lay eggs, are inhabited by evil spirits (*dud*). Water bodies such as lakes, streams, and springs, which provide vital water sources for villages, are the domain of *tshomen* (lake spirits). High cliffs and rocks, ideal for birds to roost and bees to build hives, are considered the homes of *tsan* spirits.

Similarly, trees or groves near homes are often preserved to avoid angering malevolent spirits believed to reside there. Preserving groves or patches of forests near water bodies, rocks, cliffs, or large trees—often cypress—is a common practice, as these locations are thought to be inhabited by both benevolent and malevolent spirits.

Water bodies are the domain of *lu* and *tshomen*, rocks shelter *tsan* spirits, and trees are believed to be the abodes of gods. In one Bhutanese folktale, a poor traveller spends the night beneath a tree and overhears the spirits of trees, rocks, and water discussing their plans to visit a village. They intend to decide the fate of a newborn child and partake in the offerings made to spirits. By morning, the traveller hears their complaints about the woman’s

unmarried status and the poor quality of the offerings. Enraged, the spirits decree that the child will die at the age of 12. The story ends tragically, with the boy being killed by a tiger.

The confluence of three rivers is considered an unsuitable location for farming or settlement, as it is believed to be a meeting place for various evil forces. The area is prone to flooding, so lives are saved during such disasters by restricting human settlement for the fear of evil forces. It is also a breeding ground for fish during certain months of the year.

The respect and reverence for wild animals are deeply ingrained in the totemic culture of Bhutan, where kinship terms are extended to animals. For instance, people often refer to wild animals that prey on crops, livestock, and sometimes even humans, with familial terms such as *meme* (grandpa) for bears, *ajang* (uncle) for wild boars, and similar affectionate terms for other creatures. The culture of calling wild animals by these terms reflects a deep-rooted respect for the natural world.

### **A Rocky Aesthetics**

In many Bhutanese villages, large rocks are commonly found near homes or scattered across agricultural fields. These rocks are believed to be the dwelling places of water spirits (*lu*) residing beneath the earth. Disturbing or polluting the area around these rocks is thought to provoke the wrath of these spirits, resulting in diseases among humans.

Beyond these spiritual beliefs, rocks offer several practical benefits. They help prevent soil erosion and landslides, provide essential minerals for plants, serve as natural barriers for constructing sheds, break the monotony of fields filled with crops, and provide platforms for drying crops and wood. Additionally, they enhance the aesthetic appeal of the landscape: Imagine how barren the area would seem without these natural features. Without the belief in *lu*, many of these rocks might have been broken down for use in building houses, walls, and boundaries.

### **A Convenient Excuse?**

Climate change is not a new phenomenon; it has been ongoing for generations. By living in a cold and mountainous country, our parents



welcomed the rising temperatures, especially those in higher altitudes like Bumthang, Haa, and Gasa, because they could grow different crops which were unthinkable before. Rice, chillies and a variety of vegetables can be now cultivated in Bumthang. While cold-resistant varieties of seeds may also be the reason, farmers attribute it to rising temperatures.

Our ancestors experienced climate change and adapted accordingly. Our present lifestyle is a continuation of their adaptation. While the local responses to normal climatic variations and ecosystems may have allowed people to thrive in diverse environmental contexts - and this adaptability has served them well for millennia - it also places them on the frontlines of climate change and its impacts at various scales (UNESCO, n.d.).

Before climate change - more specifically, global warming and ozone layer depletion - became prominent in the international public debate and political agenda beginning from the 1990s, Bhutanese villagers have always known a host of environmental-related problems.

Today, it has become a trend to blame a host of problems on climate change, some of which are government-made, or man-made, and most of the time preventable. Climate change is blamed for a retreating tree line (Poudel, 2023), drying up of spring water sources (Lhamo, 2023), declining yields of horticulture (Lhaden, 2024) and rice (Dema, 2024), frequent extreme weather events (Dema, 2024), human migration (Lhaden, 2024), and rising temperature (Ura, Pema, & Phuntsho, 2023).

Mosquitoes have been spotted in Lunana at an elevation of over 4000 metres due to the warming of colder areas (Chezom, 2020). The National Centre for Hydrology and Meteorology data collected in 15 weather stations from 1996 to 2017 indicate an increasing temperature trend in the country. In 2020, Punakha recorded the highest daily maximum temperature (37.5°C) while Haa recorded the lowest daily minimum temperature (-12.0°C) (Wangmo, 2021).

Around 80 households from the highland communities of Thangza and Toenchoe chiwogs in Lunana, situated just below the volatile Thorthomi Lake, have permanently relocated to a new settlement. Their decision was driven by lingering fears of another glacial lake outburst flood, similar to a devastating 1994 flood (Lhaden, 2024, July 15).

This paper began with a recollection of the testicle pain my grandmother once described, a fear that prevented me from rolling rocks along the slopes. Despite the abundance of scientific evidence supporting the reality of climate change, along with numerous solutions, adaptation plans and strategies, Bhutanese folk wisdom—like the wisdom my grandmother shared—may seem insignificant in comparison. However, it could be wise to listen to and preserve such folk knowledge, as it offers valuable insights and solutions that may help address the planetary challenges of the 21st century on a local scale. We should not lose the local focus while looking at the global situation.

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