Mountains as Climate-Makers, Cosmology as Climate Change, and Bhutan's Ancient Anthropocene

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Introduction

Drawing on ethnography and conceptual scholarship in the environmental humanities, this article proffers two perspectives and a suggestion for attaining a historically and culturally situated engagement with climate change in Bhutan.

I adopt (1) a Deep Time perspective to present Bhutan's mountains as geological makers of climate and as earth-regulators of indigenous environmental flows (of water, sediment, soil) that enables and nourishes life in both higher and lower altitudes and alluvial plains.

I then draw on an ethnographic narrative to posit that (2) anthropogenic climate change, as it encounters Bhutanese cosmologies and wisdom traditions, is not morally neutral – as the climate sciences may apprehend it – but is experienced, interpreted and responded to by Bhutanese communities as the (un)doings of a living, listening and agential landscape.

This then leads me to call for (3) a more situated, more capacious, and more inclusive study of climate change in Bhutan that complements the globally dominant technical-secular-scientific sense of climate change.

Bhutan's Mountains as Climate-Makers

From the vantage of Deep Time, which summons the indigenous, pre-human earth and the extensive timescales of geological formation, the Bhutan mountains, including Jomolhari, Gangkhar Puensum, Jitchu Drake, emerge as weather and climate makers, as contributors to overall such Himalayan effects.

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Bhutan's mountains, integral to the epic of earth architecture and agency, rose as the result of the Great Himalayan Uplift, which began some 50 million years ago due to the collision of the Indian and Eurasian tectonic plates. This tectonic collision is often painted as a violent and destructive event, characterised by the shattering of a subduction zone. However, this so-termed destruction also released creative, generative, and life-sustaining conditions and energies.

Crucially, this earth epic of mountain-making was concurrently a process of climate-making, inducing both regional and planetary cooling effects. This transformation involved the reconstitution of hydrological cycles, leading to the emergence of new meteorological and ecological conditions, with the Himalayas also acting as co-creators of glaciers, snowscapes, permafrost, lakes, rivers and subterranean reservoirs.

Affirming the emergence of the Himalayas as a regional and planetary change-maker, Maharaj Pandit writes: "The world before and after the birth of the Himalaya was remarkably differently", not just physically but climatically "in terms of its ushering in climate and global change towards the middle of the Cenozoic era" (Pandit, 2017, p.49)

In their geological formation, Jomolhari and other Bhutan and Himalayan peaks both co-created and became central to the Cenozoic era, with Cenozoic meaning "recent life" or "new life", enabled by changing earth and climatic conditions (Wouters, 2024).

From the vantage of Deep Time, it was the Indian-Eurasian tectonic "conversation" (a term arguably more apt than collision) that laid the geo-eco-climatic foundation of Bhutan and its diverse forms of life, both human and not, biotic and abiotic.

Jomolhari and its high altitude counterparts not only created mountain climates, characterised by a unique interplay of radiation, temperature, wind, and rainfall, but also co-created broader climatic conditions.

The hydrological patterns, ecosystems, and natural habitats found in the lowlands and alluvial plains of West-Bengal, Assam, and Bangladesh have been profoundly influenced by the presence of the Bhutan mountains. These connections between Bhutan's mountains and low altitudes beyond

Bhutan in earth terms are so closely intertwined and linear that, from geological, ecological and climatic perspectives, the Bhutan mountains and the surrounding river basins and alluvial plains are integral to the same climate-making processes.

Water lies at the heart of Bhutan's geological past (and present). As the ancient Tethys Sea, the ocean out of which the Himalayas rose, was parted and drained by the crumpling, buckling, faulting, uplifting, and folding of the earth crust, water shifted in altitude, influencing climate patterns and driving changes across various ecosystems. Through this process, Bhutan evolved into a "terrestrial ocean", a term coined by Dan Smyer Yü (2021, p. 9) to encapsulate the vast presence of water in its solid, vaporous and liquid states across the Himalayas.

Bhutan's rivers – the largest of which are, from west to east, Amo Chhu, Wang Chhu, Punatsang Chhu, Manas River, and Nyera Ama Chhu – originate from the mountains and glaciers of Bhutan. They nourish land and lifeways also far beyond Bhutan. From a climatological standpoint, water traverses both land and air simultaneously, interlinking the Bhutan mountains, the alluvial plains nourished by the Brahmaputra, into which Bhutan's rivers discharge, and the Bay of Bengal.

As a case in point, Bhutan's mountains are also monsoon-makers, with their geological elevation interacting with moisture-rich air transported by winds from the Bay of Bengal, and Indian Ocean beyond. As this air meets the mountains it rises, condenses, and releases their moisture as precipitation. Consequently, the Bhutan mountains co-create (a part of) the Indian monsoon, which enabled and sustained varied Indian civilisations (Amrith and Smyer Yü, 2023).

Through rivers and erosion, Bhutan's mountains also became movers of sand, sediment, and silt that co-created and continue to nourish floodplain ecologies, including the Bengal Delta, which is ultimately a Himalayan creation. Willem van Schendel (2009, 3) writes: "Bangladesh *is* the Himalayas, flattened out", highlighting that the delta was built by particles of soil transported and deposited there by Bhutan and other Himalayan rivers.

Politically, Bhutan was the first country to recognise the newly independent

Bangladesh on 6 December, 1971, when His Majesty the Third King sent a message of recognition by telegram. From a Deep Time perspective, Bhutan's mountains, glaciers, and rivers also co-created the very conditions of human existence and state formation in what in 1971 became Bangladesh.

Although Bhutan is often characterised as "small" in relation to its population and geographical size, a deeper examination of its contributions over geological time reveals a different narrative. Bhutan's mountains are vital to shaping climates, influencing hydrological cycles such as the Indian monsoon, and contributing to land formation through erosion and the downstream transport of sand and silt. Thus in geological and climatic terms, Bhutan is anything but small.

Cosmology as Climate Change

"This generation is causing too much *drib*. This is why the mountains are no longer blessing us," says Sonam Dorji, a yak herder of many autumns. Our discussion pivots around climate change in the highlands which Sonam Dorji relates to the agency and will of the mountains.[2]

Drib, alleged by Sonam Dorji for causing climate change, refers to human pollution, profanation, contamination, obstruction or negative energy, which can take on physical, social and spiritual forms (Huber, 1999, p. 16). It is a foundational and relational principle that locally structures ethics, values and moral reasoning, as well as textually in Buddhism. *Drib* (and its cognate *dikpa*) is part of an ethical-spiritual idiom yak-herders readily adopt in discussing the changes in the environment and climate they observe around them.

"See?" Sonam Dorji adds, pointing towards the Jomolhari mountain. "See the black spots everywhere? It looks like a disease. The mountain is sick. Ama Jomo [terrestrial and territorial deity] is furious." He is referring to the mountain's changing colour – from snow-white to the black of rocks stripped of their cover.

2 This ethnographic vignette is part of the various research projects carried out at the Himalayan Centre for Environmental Humanities (HCEH), Royal Thimphu College (RTC). I thank my colleagues, past and present, including Pema Choden, Thinley Dema, and Sonam Tenzin, for contributing to the data-pool on which this article also draws. Snapshots of Sonam Dorji's (a pseudonym) experience narratives have earlier been discussed in Yangzom and Wouters (2024).

For Sonam Dorji and other highlanders, Jomolhari is more than just a mountain; it is also the abode/embodiment of Ama Jomo, the *yul lha* (territorial deity), the "immortal owner" of the land.[3] Engaging with Ama Jomo, and other "immortal owners" of the landscape, is indispensable to the highlanders' livelihood and well-being, as they are affirmed as critical for humans' (and other-than-humans, especially yaks') health, protection and prosperity.

Standing over 7,000 metres and straddling the Bhutan-China border, Jomolhari – or Jomo's divine mountain (Pommaret 1994, p. 44) — is a space of ongoing material, cultural and spiritual exchange. The mountain presides over the extensive grasslands, which are irrigated by streams that source from Jomolhari's glaciers and snow, nourishing yaks and thereby herders' livelihoods and lifeways (Wouters, 2021).

In turn, herders affirm the mountain's and, therefore also, Ama Jomo's life-nourishing affordances through rituals, community festivals and propitiations, as well as by avoiding *drib* - with shrinking success, they admit.

We are in Soe, a smattering of houses nestled in the highlands of western Bhutan. There is an unsettling heat in the air, which Sonam Dorji refers to as *dhu* (poison). When I inquire about the source of this *dhu*, I expect him to lament the impact of global emissions, particularly from the affluent West, and the pollution that permeates Bhutan from neighbouring India and China.

However, Sonam Dorji directs the blame inward: "This generation is spreading too much *drib*. Moreover, we don't follow our rituals and culture properly anymore. How can we expect Ama Jomo to protect and provide for us?" His question is rhetorical. Everyone knows that if a territorial deity is incensed, human well-being is affected.

While Ama Jomo looked after the herders and their yaks for generations past, bestowing blessings and protection, and herders performed rituals and offerings in reverence, their once mutually nourishing relationship, Sonam

3 I borrow the term 'immortal owner' to capture the character of terrestrial deities from Karma Ura (2001, 5). Across Bhutan, he writes, deities are 'the lords of the territory (zhi dag), lords of earth (sa dag) and deities of the settlement (yulha). See also: Kelzang Tashi's (2023) recent and rich monograph titled *World of Worldly Gods: The Persistence and Transformation of Shamanic Bon in Buddhist Bhutan*

Dorji laments, is beginning to unravel. "If we cause too much *drib*, Ama Jomo reacts by making the weather unfavourable for us."

For highlanders, new climatic and ecological precarities, as well as natural disasters, are experienced and explained in an idiom of *drib* and apprehension over deities enraged by human conduct. And the current era, to paraphrase Sonam Dorji's opening remark, is the age of *drib*.

Sonam Dorji knows that the mountains, cliffs and lakes around him are not made up of inert materiality, but are sensate and sentient, and therefore conscious of human affairs. He knows that the landscape listens, creates, responds, and disturbs in ways that are in many other places considered exclusively human capabilities.

He therefore conceives of the *dhu* present in the air, along with various alterations in weather and climate, including a retreating snowline, as evidencing a breakdown in the more-than-human "norm-worlds" that allow a fruitful mutuality between humans and the land's "immortal owners", namely deities.

Sonam Dorji's worldview posits that humans exercise agency over the earth and climate through their (in)actions and (im)moralities. This agency is mobilised by their relationships with terrestrial deities, who are affirmed as weather-climate changers. Such beliefs are replicated, in different forms, across Bhutanese communities. It is this framework in which they experience, conceptualise and respond to unfolding climate change.

It also offers a Bhutanese critique of the scientific coinage of "The Anthropocene" as a novel epoch in which humans are said to have become, for the first time, a geological and climatic force. Like other scholars of the Himalayas[4], I invoke "Anthropocene" here beyond the narrow confines of geological stratigraphy, but as a broader signature of our contemporary times in which human agency acts on earth and climate, as the 'age of humankind.'

4 'For a thorough Himalayan critique of the idea of 'The Anthropocene' see Alice Millington, Himalayan Buddhism as Human Geological Agency: Rethinking the Novelty of 'the Anthropocene', Journal of Global Buddhism 25, 1 (2024),75-92. See also: Mabel Denzin Gergan, 'Living with Earthquakes and Angry Deities at the Himalayan Borderlands', Annals of the American Association of Geographers 107,2 (2017): 490–498, and Dan Smyer Yü, Dan. 2020. 'The Critical Zone as a Planetary Animist Sphere: Ethographing an Affective Consciousness of the Earth." Journal for the Study of Religion, Nature and Culture 14, 2 (2020): 271–2.'

If, from the vantage of Deep Time, Bhutanese mountains are best understood as climate makers, in the present era, these mountains are disproportionally *receivers* of anthropogenic – in the sense of human-induced, through escalating global emissions and capitalist-driven practices of exploiting and extracting the earth – climate change.

It is this contemporary condition that is globally captured as the "Anthropocene." However, the coinage "Anthropocene" is not intellectually-culturally neutral, but presents a distinctly Euro-American view of the earth, its history and agency (Millington, 2024). In ontologies of Himalayan Buddhism, Millington (2024) continues, the Anthropocene is not newfound as terrestrial deities always acted as climate-changers in response to human (in)actions. Bhutan's Bon-Buddhist heritage, too, complicates scientific convictions that human agency on earth geology and climate is recent.

This worldview – or ethical, epistemological and ontological framework – is undergirded and nourished by the historical arrival of Buddhism. This narrative captures a shift from an initially antagonistic and intransigent landscape, characterised by deities that were frequently indifferent, if not hostile, to humanity, to one that fosters human habitation, cultivation and flourishing.

The politico-religious epic of Bhutan highlights the role of King Songtsen Gampo (circa 605-650) in establishing the foundations of the modern Bhutanese polity. He achieved this through a combination of geomancy (earth-divination), followed by the subjugation of a supine demoness residing in, or manifesting as, Tibet and the broader Himalayas, Bhutan included. This demoness was breeding savagery and diabolism across the landscape in ways that encumbered human flourishing.

With the assistance of his Chinese queen, Wencheng, King Songtsen Gampo commissioned the construction of several temples aimed at restraining and overcoming this earth demoness. Among these, two were erected in Bhutan: Jampa Lhakhang, situated on the demoness's left knee, and Kyerchu Lhakhang, built upon her left foot (Phuntsho, 2013, p. 80)

Thus, securing the land for peaceful human habitation, King Songtsen Gampo also introduced behavioural codes, both for humans and territorial

gods (Phuntsho, 2013, p. 83), to create shared "norm-worlds", and thereby communion, between humans and deities.

The foundational work of King Songtsen Gampo in creating a political community that integrated terrestrial deities - and thereby the material landscape - with human society, was further developed by the Buddhist saint Padmasambhava (and subsequent saints, including Pema Lingpa) who engaged with a pantheon of more, and less, powerful deities (Phuntsho, 2013).

Padmasambhava transformed these spiritual entities into guardians of the dharma, binding them through a sacred oath.[5] This oath can be interpreted as a social contract that transcends human boundaries, and is daily enacted in the landscape through shared norm-worlds, including ritual, ethical, cultural and spiritual obligations on the part of human dwellers.

Most Bhutanese today understand these terrestrial deities as the owners and governors of the mountains, lakes, rocks, and rivers, and as mediators of weather-climate. More powerful than (most) humans, these beings include *lha* (enlightened beings), *lu* (serpents), *dhe* (malign spirits), and *tshomen* (mermaids/lake-owners). These beings are not merely to be respected or avoided, but on their taboos, rules, and demands humans need to keep tabs. This is to the extent that the welfare and well-being of the human community depend on understanding what is required of them by deities (Ura, 2001).

This sacred commitment is acknowledged, revisualised, and renewed during the full calendar year of ritual performances, as well as through repeated prayers, propitiations, and offerings when humans move through the landscape.

The taboos and demands, likes and dislikes, of deities – Ama Jomo being one out of many – may change from one place to the next, as deities, like humans, are staunchly territorial, but they are well-known by everyone residing within a particular deity's territory.

5 For a detailed discussion on the histories, narratives, and activities of Songtsen Gampo, Padmasambhava, and Pema Lingpa see: Karma Phuntsho (2013)

In the context of Ama Jomo, and returning to Sonam Dorji, these include ritual homage, propitiations, and cultural performances, as well as prohibitions on the burning of meat and chilis (the smell of which Ama Jomo dislikes), discarding waste, making loud noises near sacred abodes, indiscriminately cutting down trees and digging the soil, and generating *drib*.

Straightforward as these rules may seem, Sonam Dorji and other elders witness increasing transgressions. They broadly associate these with a seeming obsession among the younger generations with "the material", in terms of generating wealth and accumulating everyday comforts, and a related neglect of their roles and obligations in extensive and complex traditional rituals.

Sonam Dorji continues: "There is an old saying that gods, demons and humans have the same behaviour. When we are hurt by people, we change our behaviour towards them. The same applies to Ama Jomo. She doesn't approve of our actions. They make her angry."

Pawos (shamans), through methods of earth divination, affirm Ama Jomo's displeasure and recommend ritualistic interventions that the herders undertake, although these have yet to yield any positive results. Sonam Dorji and his fellow highlanders express concern over the declining effectiveness of these rituals, interpreting this as a further indication of the unprecedented severity of Ama Jomo's discontent. To them, recurrent failures of ritual to produce desired weather outcomes are central to their encounter with climate change.

Bhutan's Ancient "Anthropocene" and Democratising Climate Change Knowledge

From their Deep Time role as climate-makers, Bhutan's mountains have increasingly become the disproportionate recipients of climate change. This transformation is readily apprehended by the scientific hypothesis of the Anthropocene - of an era of human geology and anthropogenic climate change. In Bhutan, however, the understanding that humans possess the agency to affect geology and climate is not newfound; rather, it is rooted in ancient knowledge and practices that emphasise the relationship between humans and deities.

As Sonam Dorji and his ancestors have always known, these deities can induce changes in weather-climate as retribution for human violations of shared ethical-spiritual frameworks; norm-worlds that were brokered by Buddhist kings and saints and that are contentiously imagined and enacted by Bhutanese communities through daily practices in/with/through the landscape.

I end with two brief reflections. First, Bhutanese communities, along with the Gross National Happiness (GNH) economy and its related policies that have maintained Bhutan's carbon neutrality, have not objectively contributed to anthropogenic climate change. Instead, Bhutanese communities are in need of climate justice, which is only beginning to be addressed through international discussions and funding related to loss and damages.

However, Bhutanese communities, while reasoning through ethical-spiritual frames that are uniquely their own, often perceive themselves, rather than others, as being responsible for climate change, for defaulting on the norm-worlds they share with deities. This can be understood through a classic Marxian lens as a manifestation of false consciousness, which hinders individuals like Sonam Dorji and others in climate-affected regions of the country, from perceiving the globally oppressive structures that have caused their presently dire climate-ecological situation.

Whereas Bhutanese communities incorporating climate change within their cosmologies by assuming responsibility for it may ultimately impede an urgently needed awareness and processes of climate justice, I also contend – and this is the second concluding reflection – that these Bhutanese cosmologies, revolving around the relational sentience of the earth, offer pathways for an equally urgent rethinking of planetary ethics in the context of anthropogenic climate change. Such a rethinking must start with a broadening and democratisation of what counts as climate change knowledge.

What is palpably evident is that the globally dominant scientific-secular-technical framework in which climate change in Bhutan is represented and reported, is insufficient to attend to the multiple dimensions, experiences and responses to climate change by Bhutanese communities.

Here, it is an integral mutuality of reciprocity, nourished by more-than-human norm-worlds, that embeds human society in nature. This understanding is envisioned and enacted in the spiritual imagination, in ritual action, in cultural performativity, as well as in historical narratives and legends (Songtsen Gampo, Padmasambhava, and others). While climate change is an ecological problem, it is also a cosmological, cultural-spiritual, and ritual predicament Sonam Dorji and other highlanders are grappling with.

For one thing, Mountain Jomolhari, and thereby Ama Jomo's, changing outlook and lack of response to appeasement has prompted highlanders to seek ritual solutions in the hope that this will restore cosmic equanimity and reverse the unfolding eco-climatic changes in the landscape. They know that climate change, ultimately, results from a breakdown of human-earth relations, enlivened as human-deity relations. However, in dominant climate change knowledge there is generally no place for such spiritual-cosmological indeterminacy.

Taking local knowledge and experiences, such as those of Sonam Dorji, seriously requires a multiplying of extant climate scientific knowledge by complementing it with other ways of knowing, being and relating in the world (Dorji 2024). It is to take seriously the relational, experiential, and more-than-human sentience of the earth, the consequential agency of beyond-human actants in shaping local worlds, and the affective powers of emplaced cosmologies as frameworks in which climate change is experienced, explained and responded to locally.

In this way, Bhutanese understandings and experiences of climate change carry within themselves the potential and power to promote conversations about climate change that are more capacious, caring, curious, critical, and inclusive than those dominated – in Bhutan, as elsewhere – by scientists, engineers, hydrologists, policy-makers and economists.

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