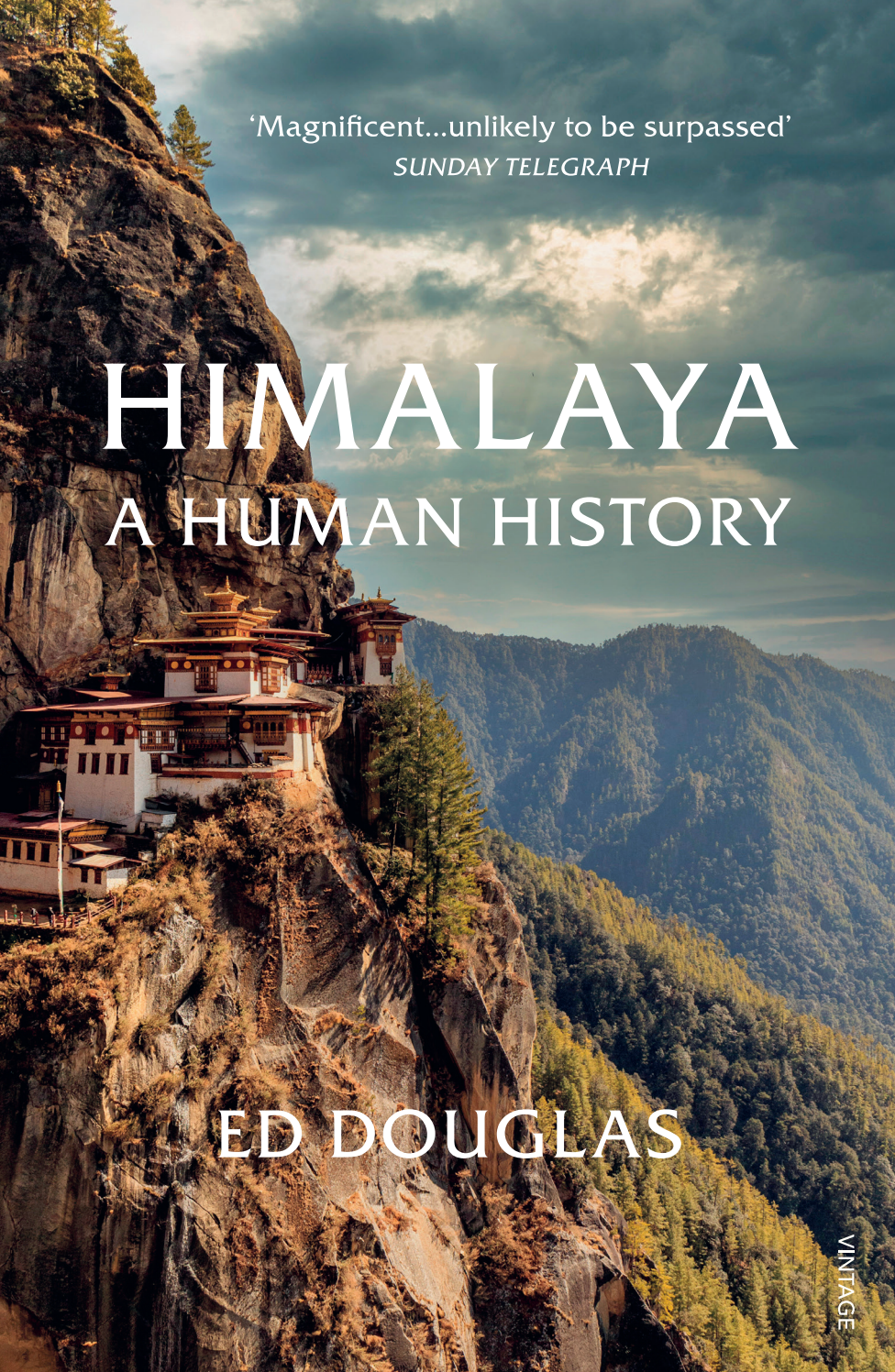
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HIMALAYA
A HUMAN HISTORY
ED DOUGLAS
VINTAGE

ED DOUGLAS

Ed Douglas has travelled, climbed and reported across the Himalaya for over twenty-five years, covering the Maoist insurgency in Nepal and the occupation of Tibet. The author of a dozen books, including a biography of Tenzing Norgay, he has won several awards, including for *Himalaya*, which was also shortlisted for the Duff Cooper prize 2020. He lives in Sheffield.

ED DOUGLAS

Himalaya

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Birth, sickness, ageing and death flow ever onward, a river without ford or bridge … Have you prepared yourself a boat?

Dampa Sangye (died 1117)

This is a land of hearsay and rumour:
If you dig down and look, you'll find nothing
But hearsay and rumour
Heaped up beneath every home,
So this is a land of hearsay and rumour,
A country standing on hearsay and rumour,
A country that has risen up on hearsay and rumour …

Bhupi Sherchan (1935–1989)

For Himalayan people, wherever

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I

Pilgrims

The Earth asked Vishnu, 'Why do you come in the form of mountains and not in your own form?' Vishnu replied: 'The pleasure that exists in mountains is greater than that of animate beings, for they feel no heat, nor cold, nor pain, nor anger, nor fear, nor pleasure. We three gods as mountains will reside in the earth for the benefit of mankind.'

In the late summer of 1995 I flew to India for my first experience of climbing in the Himalaya. The monsoon was still strong and in those days, a quarter of a century ago, parts of Delhi flooded more readily; many lower-lying streets were submerged in brown water. It was still raining as we drove north in a bus, stopping for a night in Rishikesh on the banks of the swollen Ganges. The Beatles studied transcendental meditation here in 1968 with the Maharishi Mahesh Yogi, turning on millions of young Westerners to eastern spiritual practices. 'After I had taken LSD,' George Harrison recalled, 'a lingering thought stayed with me, and the thought was "the yogis of the Himalayas". . . . That was part of the reason I went to India. Ravi [Shankar] and the sitar were excuses; although they were a very important part of it, it was a search for a spiritual connection.' It occurred to me only much later that I had been lifted into the mountains on the last gasp of the same cultural tide, upstairs in my suburban bedroom in the early 1980s, listening to old Bob Dylan records and reading stories of my climbing heroes high in the faraway, mythical Himalaya.

Next day we reached the mountains, half-submerged in a torrential downpour. The roads ran with water; mist clung to rock faces that overhung the roof of the bus. Heavy cloud shrouded the peaks. A mile or so from the village of Gangotri, in what was then part of Uttar Pradesh, the bus stopped abruptly. Huge granite boulders had

tumbled down from a cliff above, loosened by the rain. It would take explosives and bulldozers to clear the way. For now, this was the end of the road. We peered up at the unstable slope wondering about the next rock fall, anxious to get going and out of the way. A number of lean and eager men surrounded the bus, grinning wildly, dressed in thin cotton shorts and shirts and holding plastic sheeting around their shoulders, their only protection against the rain. A price was agreed and our gear continued into the village on their backs. We followed, sheltering under umbrellas. It was as though I'd found a door marked 'adventure' and stepped through it.

The scale of the Himalaya is disorienting: not simply muscular but steroidal. On that first expedition, the intensity of the mountains felt overwhelming, even oppressive. Everything was bigger than I had experienced before: the peaks themselves, the rivers, the rock falls, the avalanches, the glaciers, the legends and myths. From the plains of India, the range was like a white wall, a castle of impossible dreams, a rampart separating South and Central Asia, China from India. The clash of their competing interests in the mountains on their respective borders has usually been at the expense of the people who live there, with China now occupying Tibet. In 1962, the world's two most populous nations had even gone to war in the Himalaya.

There are few places in the world where geography inspires the human imagination to such a degree. There are longer mountain ranges: the Andes are the longest at seven thousand kilometres. But there are none higher. The Himalaya are themselves part of a vast highland region that runs in a crescent for four thousand kilometres from Kyrgyzstan in the west to Myanmar in the east and includes the Pamir, Hindu Kush and Karakoram ranges. Around four hundred mountains on earth exceed 7,000 metres and they're all located here, including the magical fourteen that top 8,000.

The Himalaya range itself makes up the eastern two-thirds of this region, an area of 600,000 square kilometres between the Indus in the west and the Brahmaputra in the east, at the same latitudes as the Middle East, North Africa, Texas and northern Mexico. The range is anchored at either end by two great mountains, Nanga Parbat in Pakistan and Namche Barwa where Tibet's great river the Yarlung Tsangpo bends sharply south to become India's Brahmaputra. The region includes part of the high plateau of Tibet, the highest and

largest plateau on earth, five times the size of France and with an average altitude of 4,500 metres: the roof of the world.

The Himalaya's diversity is astonishing and multifaceted. The western portion, including the Indian regions of Ladakh and Zanskar, are semi-desert, dry and cold for much of the year. The eastern end, the watershed of the Brahmaputra, includes some of the wettest places on earth, with precipitation in excess of ten metres a year. Nowhere is this heterogeneity more marked that in the Himalaya's vertical relief. For every kilometre you climb, average temperatures drop by more than six degrees Celsius. Altitude in this regard mimics latitude, meaning that with a few kilometres of altitude gain, you can travel the equivalent of thousands of kilometres in latitude, from the tropics to the polar ice caps. The amount of ice locked away in the glaciers of the Himalaya and Karakoram, now melting rapidly as the climate heats up, has prompted geographers to call the region the Third Pole.

Altitude, climate and scale are only the start. Like light scattering through a crystal, the complex, three-dimensional shapes made by the mountains have immense implications for their natural diversity and the human populations that inhabit them. Many with no knowledge of the Himalaya assume the mountains are a natural wilderness, but they support a population of around fifty million, no less diverse than the landscapes they live in, a place where three of the world's great religions – Hinduism, Islam and Buddhism – converge. Each Himalayan valley's human history is intimately connected to its geography. Slopes that catch the sun or else are sheltered from the wind are more hospitable to life than neighbouring aspects that don't. At a glance, you can see the difference between, for example, a shadowy gorge and a flat, sunlit piece of ground tucked in the lee of a ridgeline. The sheer scale of this landscape has an unusually intense impact on human activity, and ultimately physiology. Until very recently, the only way to get around was on foot or on the back of an animal. It's quite something to greet the day in a village on a ridgeline in the middle hills of the Himalaya and look across a valley to the neighbouring village and know it will take most of the day to reach it, plunging thousands of feet down to the river below in the shadow of morning and then labouring up the opposite slope in the hot afternoon sun. Like everywhere else, water is of greatest concern, a life-giver and life-taker, but

in the Himalaya it is architect as well, carving through the mountains, first as glaciers of ice then raging torrents of meltwater and rain, ripping them up, washing them away. Climbing is hard and unnecessary, a strange luxury. Mountains are places for gods, not people. Rivers are for both and of far more consequence and interest to those living in mountains than to those who merely visit them.

We had come to the Garhwal region of the Indian Himalaya to climb Shivling, a chipped tooth of white and gold that pierces the deepening blue of high altitude above the Gangotri glacier: ravishing and austere. For many climbers, not just me, it's the sort of peak that provokes a yearning that's actually physical. Since it was first climbed in the 1970s, some of the world's best mountaineers have climbed new routes on Shivling's steepest faces and ridges. When seen marked altogether on a photograph these lines look like spider's silk anchored to the mountain's fabric. Each thin strand contains stories of suffering and endurance, imagination and courage, the stuff of legend. Many of the mountains near it on the Gangotri glacier also have these lines of ascent and contain similar stories, passed on in books and films that in turn bring more climbers to this valley: pilgrims of a sort.

Yet whatever Gangotri means to climbers, it is sacred to hundreds of millions of Indians for something else. The glacier's hollow snout, now receding quickly, is known as Gaumukh, meaning 'the cow's mouth', from which flows a milky stream: the source of the Ganges. The towering shape of Shivling is located at the centre of a sacred geography first mapped out in the epic Sanskrit poem the *Mahabharata*, which lies near the heart of Hindu culture and whose origins stretch back almost three thousand years. As it starts its 2,500 km journey to the Bay of Bengal, the river is called Bhagirathi. According to the *Mahabharata*, the mythical figure Bhagiratha, after whom the river is named, prayed for a thousand years for its waters to flow in order to expiate the sins of sixty thousand relatives who had perished under the curse of a great sage they had wrongly accused. Yet the goddess of the river, Ganga, remained in the heavens, at the centre of the universe, 'the still point of the turning world', unwilling to leave. Only the great god Shiva had the power to make her go, so Bhagiratha followed the command of Shiva's counterpart, Brahma, to pray for one more year, this time living only on air. Only then was Ganga

forced from heaven, rushing to earth on the *jata*, the matted dreadlocks of Shiva's head, bringing life-giving water to the plains of India.

This story in the *Mahabharata* is told to five brothers, the Pandavas, who really are on a pilgrimage. Like us, they were outsiders, spiritual explorers in an otherworldly part of India known as Devbhumi, land of the gods, far from the political frenzy of court life. Hinduism's founding texts, the *Veda*, are actually centuries older still, and their geographical references, to the Himalaya or anywhere else, are thin on the ground. (In fact, their cultural focus is further west, between the Indus and Sutlej rivers.) But by the time of the *Mahabharata*, a poem that looks back to a lost age of heroic kings, Hinduism and the Indo-Aryan culture that produced it had firmly rooted itself around the Ganges. In the *Mahabharata*, the extreme landscape of the Himalaya, where the Ganges finds its source, is being drawn inside the narrative of Hinduism's established and expanding culture.

The word 'Himalaya', Sanskrit for 'abode of snow', features regularly in the poem, although there are other names for the mountains too: Shivalaya, the 'abode of Shiva', Himachal, or 'mountains of snow', and Himavant, the 'mountain king' who was father of Ganga. In India the word is used for the entire chain of mountains but in Nepal, where it is simply Himal, the name refers to a discrete group of mountains within that chain. The pronunciation of Himalaya has proved slippery, though. In Europe and North America stress now goes on the third syllable, but in Sanskrit it goes on the second. And languages that developed from Sanskrit – Hindi, Urdu, Nepali – all deal with the word slightly differently.

During the mid 1920s this vexed question troubled a senior Indian civil servant called Geoffrey Corbett. From his office window in the hill-town of Simla, looking up from government papers on India's commerce and industry, Corbett could see the Himalaya. Corbett had been a climber since he was a boy and would spend his leave exploring the mountains. Already a member of the famous Alpine Club, the first mountaineering club founded in 1857, he thought of founding a Himalayan Club; it wasn't a new idea, but Corbett had the contacts and became the first honorary secretary. Yet how to say their name? Given that Corbett chaired meetings with officials from all over India, he paused in the middle of a discussion and asked them. He got a different answer from each linguistic background: Hindi, Urdu and

Bengali. He put the matter to the languages adviser at army headquarters. The adviser concluded that Tibetans as well as Hindi and Urdu-speaking Indians stressed the first 'a' as long, especially Urdu speakers. The other syllables were up for grabs. In Nepal, it was simply Himal. In Hindi, it was more like Himalay. For India's Muslim population it was Himaliya, a pronunciation declared defective since 'Muhammadans' were not the original inhabitants. The adviser suggested a stress mark on the first 'a' to guide English speakers: Himàlaya. Corbett also asked a friend, Brijlal Nehru, cousin of India's first prime minister after independence. Their final conclusion was: 'Hi' as in 'him', 'ma' as in 'father', and 'la' and 'ya' as in the French word 'le'. He summarised his findings in a paper published in the *Himalayan Journal* for 1929. 'The common Anglicised pronunciation is Himalaya. But in recent years there has been a tendency among superior folk to say Himaiiya or Himaliya.' The modern usage of 'Himalayas' is jarring to my ear, despite the instinctive English habit to pluralise Hindi words that are already plural: think 'pyjamas' and 'chapatis'. Call it snobbery, but this book sticks with Himalaya.

The *Mahabharata* and the other great Sanskrit epic the *Ramayana* are collectively known as the *Itihasa*, a Sanskrit word meaning 'history'. Many scholars have peered through the mythological fog and tried to snatch at concrete details. For though the *Mahabharata* is not really history, it's also not *not* history. For the five Pandava brothers, kings from the plains, as for the Indian civil servant Sir Geoffrey Corbett, the Himalaya performed two contrasting roles: as a place of spiritual retreat and separation from the world, but also a meeting ground, where radically different cultures met and traded on a long-established network of high mountain trails. The compilers of the *Mahabharata* – unified into the mythological figure of Vyasa, the Homer of ancient India – not only had a considerable geographical knowledge of this part of the Himalaya but also had knowledge of its different ethnic groups. Yet even two thousand years ago, the Himalaya represented nature untamed by humans: dark forests and raging rivers, a place for wild animals, tigers and bears. They were a place for 'wild men' too, who didn't plough like the people of civilised nations.

In his monumental *Himalayan Gazetteer*, the Victorian-era Irish civil servant Edwin Atkinson described how Hindu migrants settling in these mountains 'leavened the manners and observances of the rough

indigenous population'. That process of civilising mountain people fitted Atkinson's narrative in which the British Empire was doing something similar, even as its wildness drew imperial adventurers to the forests and snowy wastes of the frontier. Rudyard Kipling chased that idea in his 1898 poem 'The Explorer':

> Something hidden. Go and find it. Go and look behind the Ranges—
> Something lost behind the Ranges. Lost and waiting for you. Go!

Mountains have always been places for lowlanders to exercise their imaginations: full of demons or else sublime and adventurous. The abode of snow has offered a vast white screen on which to project the fantasies of all comers: exiled kings, foreign imperialists, spiritual seekers, self-important explorers, archaeologists, missionaries, spies, mapmakers, artists, hippies – and climbers. The Himalaya are shrouded in their stories, like monsoon clouds: stories of secret knowledge and new horizons, about somewhere at the end of things, somewhere beyond. These myths hardly ever recognised the complexity and richness of the cultures that developed there over millennia, as varied as the mountains that shaped them. Those cultures were either ignored or appropriated by outsiders looking to profit. That tension, between myth and reality, still tears at the Himalaya today. How these stories were made and then remade is one of the themes of this book.

⋆

By morning the rain had stopped. Cloud was lifting from the earth like smoke. Ganga was thundering through her narrow valley, a broiling mass of water, thick with sediment, her roar underpinned with the more solid – and ominous – rumble of huge boulders being swept downstream with the force of water. The sound was a powerful reminder that the Himalaya are being washed away only marginally more slowly than they are being raised into the sky. We instinctively think of mountains as eternal, but they're not. They are falling to bits and being remade like the rest of nature – like us.

A few of us decided to take our umbrellas and visit the small temple in the centre of the village, to receive a blessing from the priest. Leaning out from the incense-rich shrine, he smeared a mark on our

foreheads, right between our eyes, known as a *tilaka*. The temple was quiet, the crowds put off by the risks of the monsoon season. Normally, the village of Gangotri is thronged with pilgrims, especially in the two months before the rains start in July. Gangotri is one of a series of four pilgrimage sites in the region known as the Chhota Char Dham, that are visited as a circuit, Gangotri most usually being visited second. The other three are Yamunotri, source of the Yamuna river; Kedarnath, whose temple is dedicated to Shiva; and Badrinath, the holiest of all, its temple to the god Vishnu situated on the banks of the Alaknanda river, which later joins the Bhagirathi to become the Ganges. According to the *Mahabharata*, it was here at Badrinath that the god Krishna stood, on one foot, arms raised, for a hundred years, 'living on the wind'.

If you want to imagine the spot where a demigod like Bhagiratha might seek the assistance of Shiva, then our base camp below Shivling – Shiva's Lingam, 'phallic symbol' of his divine creative force – would come close. The place was called Tapovan, literally 'forest of austerity', although there were only scrubby trees in the thin air at 4,400 metres. Tapovan is a term from the *Mahabharata*, denoting a place of spiritual practice. Every summer, a few yogis make the trek to meditate below the mountain. While there are many Tapovans, this one is famous, thanks to one of the world's most beautiful mountains soaring overhead and the source of the Ganges a short distance below. When we put up our tents, planning to stay for a few weeks, three yogis were still in residence, living, like Bhagiratha, on fresh air, plus a handful of rice, sleeping in a rough stone shelter.

At night, the skin of our tents froze, the mountain spectral in the moonlight. By day, we narrowed our eyes against the fierce sun of altitude, rubbing cream into our faces. A sadhu, an ascetic, would sit in its warm brightness, cross-legged on a flat piece of granite with the mountain above him, naked except for a small pouch of cloth at his waist, hollow-chested, head piled with his own version of Shiva's dreadlocks, eyes closed in contemplation. He and I were both devotees. We were both enduring physical discomfort, both searching for something, although I could see the sadhu knew his metaphysical road better than I knew mine. I had no idea as I sharpened my crampons and packed my rucksack that I was starting a long climb towards a better understanding of these mountains.

Where did mythology end and reality begin? How and where did the mountaineering stories of my youth fit into the broader history of the Himalaya? Climbers spend more time around government bureaucrats in the Himalaya than anywhere else in the world. But how did those governments come into being? How did the curious patchwork of nations that make up the Himalaya fall into place? Why was the Himalaya not all in either India or China? From the outside looking in, it occurred to me that while there were many Western books published on Himalayan geography, historians tended to break the region down into polities. That approach ignored the Himalayan region's sense of itself: its shared culture and experience, a coherence ordinarily overlooked in Western accounts. Why was it that stories about climbing Everest were far more common than stories about the people who lived in its shadow? As though Scotland was being judged on its golf courses. What of Himalayan art and philosophy, politics and intrigue? My own narrow perspective shattered into a million ways of seeing. I wanted to reconcile what had brought me to the Himalaya with what I found there. I returned again and again, not just as a climber, but as a journalist and writer, always with questions. Yet every time I felt I was getting close to the top, the prize I thought I was reaching for receded again into the distance. Every time I changed my viewpoint, new horizons opened out, new summits beckoned. It was often an uncomfortable experience, and not just physically. The scars of colonialism reach high into the mountains, even in those regions that remained nominally independent. And I became acutely aware that climbing mountains was self-indulgence compared to the physical and psychological hardships many faced as a fact of life.

The yogis and seekers we met on the way to the mountain seemed part of an eternal India, mystical and otherworldly, beyond the usual constraints of history. But just as I had been drawn there by stories of adventure, my own sacred texts, and by the example of my heroes, the ascetics and renunciates also had their inspiration; the minds of others had compelled them to come too. Tapovan is famous for its association with the Hindu saint Sri Swami Tapovanam ('Sri' being an honorific, and 'Swami' meaning guru, or teacher, literally 'he who is with himself'). Born Chippukutty Nair in 1889 to an aristocratic family in Kerala in southern India, Tapovanam went against his father's dream that he become an important figure in the government and

quit school, where he felt constrained by its limited spiritual outlook and the prospect of a dry, predictable career. After his father's death, when Swami Tapovanam was still in his early twenties, he remained in Kerala, a poet and part of the local literary scene, until his brother had finished school. Then he left home for ever, following his dream of living the simplest life possible in that part of the Himalaya consecrated in the books he studied.

The winters he spent in Rishikesh, the summers in the high mountains, anxious about bears in the forest but entranced with the landscape. Tapovan, above the treeline, where snow leopards roamed at night, was one of his favourite places to meditate. 'My heart was filled with wonder and pleasure as I sat watching the golden-hued, rocky peaks called Sivalinga and Bhageerathi Parvat, rising on either bank, the long ranges of snow-clad mountains on both sides, dazzling in their silver radiance.' The intense pleasure he took from his experience of the natural world shines through his writings. People flocked to hear him speak and several wealthy patrons offered to build him ashrams, but he preferred the forest and left the world as simply as he had lived in it, unlike the Beatles' guru Maharishi Mahesh Yogi, who died a reclusive billionaire in the Netherlands, giving interviews by video link, too frightened of infection to meet journalists in person.

Swami Tapovanam felt another strong link to this sacred part of the Himalaya. East of Gangotri and his favourite meditation spots, on the other side of Shivling, are the Alaknanda valley and the the temple of Badrinath, greatest of the four pilgrimage sites on the Chhota Char Dham. According to the *Mahabharata*, it was from Badrinath that the Pandavas began their final, fatal expedition: the *Swargarohini*, the ascent to heaven. For Swami Tapovanam, sitting in this Hindu temple was like coming home. The head priest there is by tradition a Keralan, and the two could converse together in their mother tongue, Malayalam, in which Tapovanam had written his poetry as a young man. The tradition of a Keralan priest lies in the temple's founding legend. Badrinath had once been the site of a Buddhist temple but legend tells how the Keralan spiritual philosopher Adi Sankara, living some time in the eighth century, found a black stone known as a *shaligram* – a fossilised shell representing Vishnu – in the Alaknanda river and used it to claim this auspicious place for Hinduism.

This was at a time when Hinduism was resurgent and Buddhism in retreat. The details of Adi Sankara's life are disputed. There are more than a dozen hagiographies. We're not even sure when he lived. Like Swami Tapovanam, who took immense pride in sharing the same language and culture as his spiritual inspiration, Sankara was a sannyasi, an ascetic, living simply among the power places of India, and from the same tradition of Hinduism known as Advaita Vedanta. His philosophical difference with Buddhism centred on the fundamental conception of the soul. In Buddhism, such a thing is illusion. For Sankara it was real. For ordinary mortals, contemplating the cosmos from the roof of the world, the idea that your core self might survive physical death seems more comforting than the cessation of a mirage.

The story of Adi Sankara shows how the Himalaya was a contested space in the first millennium, just as it was a thousand years later as the British Empire spread. Sankara lived after 543 CE and the fall of the Gupta dynasty, India's golden age, an era of immense cultural and intellectual achievement, and religious tolerance too. Thereafter northern India had fractured into smaller kingdoms; competing narratives laid claim to places, like Badrinath, that were spiritually significant. The arrival of Islam in the subcontinent during the twelfth century only added to the pressure. Many of Sankara's hagiographies were written during the fourteenth century as Muslim influence expanded. New political and religious interests pushed aside existing powers like tectonic plates, driving populations to seek refuge, often in the mountains, their backs against the highest wall on earth. Some of those refugees built new dynasties; others fossilised, preserving fragments of near-forgotten cultures that had elsewhere disappeared. The mountains could be a refuge or a trap, and sometimes both.

Until India's border war with China in 1962, there were few motorable roads high in the mountains, meaning that pilgrims were required to make an arduous trek at altitudes up to four thousand metres above sea level. The need to hire porters made it expensive, prohibiting many from making the journey. A woman who could afford it might hire a porter to carry her in a basket on his back, or else hire four to carry her on their shoulders in a more dignified sedan chair. Pilgrims were required to pay in advance, and there were dark stories of women being tipped out into the river, out of sight of the village, so porters could maximise profits in the short season. Poor sanitation and huge

numbers meant dozens of deaths each year from dysentery. Lower down, in the forest, malaria took its toll. The country above these pilgrim towns, fresher and cleaner, remained largely the preserve of sannyasi and yogis prepared to endure the hardship of cold nights and thin air, living on milk from the goatherds that graze their flocks there in the summer months. After the war, India invested heavily in its Himalayan road network, changing the region for ever and opening the Chhota Char Dham to mass tourism. Hundreds of thousands of Hindus now visit each year and the government is planning to upgrade its infrastructure to bring even more. Gangotri and the other sites have become part of the restatement of India's Hindu culture and a reinforcement of its nationalist origins.

The concept of mountains as places of perfection in an imperfect world is a powerful trope in India, just as it was for a Western climber like me with a head full of Romantic ideas of the wild. In the age of Kali, the modern age of strife and noise, middle-class Indians increasingly view mountains as places to escape the petty compromises of day-to-day life and live more simply. The *Puranas*, a sprawling multivolume cosmic encyclopaedia written largely, but not exclusively, in the first centuries of the first millennium, has a great deal to say about the sacred geography of this spiritual wellspring. According to the *Puranas*, in these valleys are spirits, *gandharvas*, both good and ill, half animal or bird, enchanting the gods with their singing, as well as nature spirits, *yaksha*, mercurial, sometimes lecherous protectors of the trees and the wealth of the earth, and their cousins, the *rakshasa*, eating raw human flesh, born from the breath of Brahma. These mountains are the region of Swarga, or paradise, the home of the righteous. 'Here there is no sorrow, nor weariness, nor anxiety, nor hunger, nor apprehension; the inhabitants are exempt from all infirmity and pain, and live in uninterrupted enjoyment for ten or twelve thousand years.' At the centre of this cosmic landscape, we are told, is the mountain Meru, in the shape of a lotus seed, like an inverted, rounded cone, on its summit the city of Brahma, among its petals the abode of the gods, and projecting from its base, like the filaments of a lotus, many mountains. Meru is often taken to be Mount Kailas, high on the Tibetan plateau, poised between the Himalaya to the south and the Kun Lun mountain range to the north. The myth of Shangri-La

– a hidden, paradisal realm located in the Himalaya – was the concoction of an English novelist, but it has its origins in texts like these.

In my long trek to understand the Himalaya, however imperfectly, such mythology was a frequent stumbling block. How did it relate to the Himalayan world as it appeared to me, one of economic disadvantage, self-reliance and cultural complexity? Most ordinary people were focussed on survival and a better future for their kids, not sublime landscapes or perspectives on the infinite. And yet it was the latter that sold the place to tourists like me. There was no shortage of Himalayan voices, but these voices were often drowned out, displaced by those outsiders who thought their ideas about the Himalaya were more urgent or important. Himalayan people had even adopted these interpretations about their home in the mountains and then sold them back to the people who held them. There is an elegant illustration of this, one that mixes religion, commerce and colonialism, bridging the gap between the cosmic and the quotidian.

Among the *Puranas* is another work called the *Manasakhanda*, one that is often cited when describing the Kailas region, partly because it has more useful information about the pilgrimage sites in this part of the Himalaya than any other text, but also because it's so charming. Its chief focus is the segment stretching south from Mount Kailas and the sacred waters of Lake Manasarovar nearby. One story tells how Dattatreya, an ascetic who has renounced the world and now lives among the mountains, goes to Kashi, the city of light, more familiar in Europe as Varanasi. Here he talks with Dhanvantari, prince of Kashi. The pair are also both gods: the ascetic being an incarnation of Vishnu while the prince is god of *ayurveda* or health. The two discuss *tirtha*, or sites of pilgrimage, and the ascetic tells the prince at length about the wonders he has seen in Himachal. 'He who thinks of Himachal, though he may not behold them, is greater than he who performs all worship in Kashi,' he says. 'In a hundred ages of the gods, I could not tell thee of the glories of Himachal … As the dew is dried up by the first rays of the sun, so are the sins of man by the sight of holy Himachal.'

It's a beautiful text and much quoted not only in modern travel books but more scholarly works too. Yet its origins are surprising. Those familiar with the King James Version of the Bible may hear its echo in these words, which are not a translation of the *Manasakhanda*

but a précis, made in the middle of the nineteenth century by a British colonial official called John Strachey, who spent part of his early career as a district officer in the far north of India, bordering Tibet. While investigating the finances of pilgrimage centres in his local area, Kumaon, John Strachey came to know a pandit, or scholar, called Rudrapatta Pant, who showed him the text of the *Manasakhanda*, which was used by pilgrims as a kind of spiritual travel guide. Strachey translated passages from it into English. Many British colonial officials leavened their bureaucratic duties with more congenial subjects; Strachey's was literature. Thus, when he submitted his notes on the economic value of pilgrimages for publication in Edwin Atkinson's *Himalayan Gazetteer*, he included his own version of the *Manasakhanda*, based on Pant's translation but revised from within his own literary and religious tradition, that of the Church of England.

So much for the translation. What of the original text? Beneath its soaring imagery, there are interesting clues as to its origins. It contains, for example, no mention of Gangotri and Gaumukh, among the most sacred sites in the region, but ones that are strongly associated with Shiva. Then there is its linking of the goddess Ganga not with Shiva, as in the *Mahabharata*, but with Vishnu. These changes and omissions characterise the *Manasakhanda* as a Vaishnavite text, belonging to that strand of Hinduism that has Vishnu as supreme lord: an unusual perspective in the Himalaya, which is more often Shaivite. It is also notable that the recommended pilgrimage sites featured in the *Manasakhanda* were all in Kumaon, with none at all in neighbouring Garhwal. What might explain these biases?

For centuries through the medieval period, the Chand dynasty ruled Kumaon, fighting a series of intense wars in the seventeenth century against the neighbouring kingdom of Garhwal. Some of the finest temples in the capital of Almora were built to celebrate Kumaon victories. By the mid eighteenth century, around the time Strachey and Atkinson believed the *Manasakhanda* was most likely written, both Kumaon and Garhwal had been taken over by the Rohilla, a group of Muslim Pashtun who had migrated from Afghanistan in the service of the Mughal emperors to settle in northern India. This region was in turn absorbed by the punchy new state of Gorkha, now Nepal, and then, twenty years later, when the British went to war with Nepal, by the East India Company. While the British restored the western

part of Garhwal to Sudarshan Khan, son of the last king, the eastern part was merged with Kumaon and kept under direct rule of the British, where it would remain until 1947. Among the chief differences between Kumaon and the princely state of Garhwal was taxation. Revenues in Garhwal went to Sudarshan Khan. In Kumaon they went to the British. So it was at the least a fortunate coincidence that the *Manasakhanda*, a text which pilgrims would look to for travel guidance, effectively directed its readers to sites exclusively in Kumaon, where their taxes would end up in British coffers, while reinforcing the area's Vaishnavite tradition. In other words, pandits in Almora, wishing to re-establish religious control after Muslim occupation and the tyranny of the Gorkhas, could not have had a more useful document, one that both suited the interests of the new occupying force but also let them go about their sacred business. And so a text that seems, at first glance, to be a simple expression of the eternal, unchanging appeal of the high Himalaya turns out to be a highly political document in a constantly shifting world of briefly held allegiances. That doesn't make the words any less beautiful or, for the millions who have seen a Himalayan dawn, less true, but it does show how the Himalayan world has been simplified and glossed for the benefit of outsiders.

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The near-paradox of the eternal mountains as political fault-line is no less relevant now. Himalayan communities still struggle to maintain their identity in the face of competing strategic interests from Delhi or Beijing. Not long after our expedition to Shivling, this corner of India became its twenty-seventh state, a combination of the old Himalayan kingdoms of Garhwal and Kumaon breaking off from the larger state of Uttar Pradesh. Locals favoured the name Uttarakhand for their new home, a term used for the region in the *Puranas*; the Hindu nationalist BJP government in Delhi insisted on Uttaranchal, a 'saffronised' Hindu nationalist alternative that seemed less separatist. It was finally changed to Uttarakhand in 2007, three years after the BJP lost power.

Tensions like those in Garhwal and Kumaon have existed across the Himalaya throughout history and no more so than today. On the far side of Nepal, a longstanding campaign to create another new

state, called Gorkhaland, based on the hill station of Darjeeling in West Bengal, sees regular outbreaks of violence, most recently in 2017. From Kashmir in the west to Arunachal Pradesh in the east and Tibet to the north, the needs of locals are often at odds with the strategic interests of wealthier regions far away, and centres of power that in the past wanted Himalayan gold or musk now want hydroelectricity or border security. These days, rather than powerful armies, cultural identity, often in the form of religion and language, and protest are the favoured tools with which to defend those interests.

The Himalaya's complex and uncertain political future lies in its heterogeneous past: so many voices, so many traditions trying to be heard. And that rich and fragmented history is a consequence of the region's astounding geography. It is impossible to understand one without the other. Extreme environments prompt unusual strategies for survival, and almost nowhere else is that relationship between geography and culture so starkly obvious than in the world's highest mountains. As a mountaineer, the resourcefulness I've seen among local people in meeting the hardships of their day-to-day lives makes what most of us do there seem laughable. It is only by holding in the imagination an impression of the scale and challenges of the world's highest mountains that their incredible human stories can be fully grasped. But how? And where to start?

2

Origins

From Tapovan, where sannyasi reach out to touch the mind of Brahma, you can turn your back on Shivling and look north across the Gangotri glacier to a towering line of peaks – the Bhagirathi range – framed against the indigo sky. Most impressive of all is the vast south wall of Bhagirathi III, around two kilometres high, a sumptuous vertical granite cliff capped with crumbling black shale. During our expedition in 1995, Bhagirathi III looked to me like the fragment of a colossal chessboard, black on white. I was intrigued at this contrast between the granite, which was much lighter in colour than granites I knew elsewhere, and the black shale above. Granites in the Himalaya are unusually pale, known as leucogranites, *leuko* being Greek for white. Their geochemistry is unusual: tourmaline, red garnet, much white mica and less black. I didn't know it then, but there in front of me was a snapshot from a continuing process millions of years in the making – and unmaking – of the greatest mountains on earth.

A few years before I climbed Shivling, a geologist called Mike Searle, now a world expert on the formation of the Himalaya, arrived at Tapovan with the ambition of climbing a new route on the mountain, not just for fun, but because it seemed the most effective way of collecting granite samples from different altitudes. Searle was trying to answer an obvious question that proved surprisingly difficult: when did the mountains of the Himalaya reach their current elevations of up to seven and eight thousand metres? By collecting samples and studying elements locked inside minerals within the granite, Searle and his colleagues could produce a plausible timescale of when and at what depth in the earth's crust the granite first melted and then cooled as it was exhumed by uplift and erosion on the surface.

The route he and his climbing partner Tony Rex chose was great for collecting samples but unnervingly dangerous, exposed as it was to avalanches rushing down the mountain's north-west face. On their second day the weather turned and they found themselves trapped in a bitter storm. That night there was nowhere even to sit down and so they just stood there, jacket hoods cinched tight, buffeted by wind and spindrift, waiting for dawn. In the middle of the night they heard a loud crack above them, like an explosion, followed almost immediately by an immense rock fall. There was no longer any question of going to the summit. They now had to abseil a near-vertical kilometre and a half down to the flat glacier below, collecting samples of granite as they went. (For obvious reasons, this was always going to be done on descent.) Slowly their rucksacks filled with heavy rocks and when they stopped to brew some tea, they agreed it would be much easier to put all the rock samples in one rucksack and then drop it down the mountain. What could possibly go wrong? They watched the rucksack gather speed, before it hit a rock sticking out of the snow slope and burst, showering the mountain with rock samples, each in its own annotated plastic bag. They spent the next three hours climbing down and collecting as many as they could find.

To date the rocks back in the laboratory, Searle and his colleagues measured the radioactive decay of two different isotopes of uranium, a technique only developed in the 1980s. This showed the granite he had collected from near the summit crystallised from molten magma twenty-three million years ago. Tests also showed that Searle's samples had been exhumed rapidly from the time when they solidified to around fourteen million years ago, when their 'exhumation' slowed markedly. Erosion then accelerated at the start of the Quaternary glaciations about two and a half million years ago, which resulted in the landscape I was looking at across the Gangotri glacier. The black shale this molten granite had intruded was sedimentary and much older: from the Palaeozoic Era, around five hundred million years ago. Where the granite and shales had met, chunks of the original rock, called 'country' rock, had been ripped out by the liquid granite and then frozen in place as it cooled. Searle and his team used their results to suggest a model of orogeny – mountain-building – in the Himalaya that reached its peak between twenty and twenty-three million years ago. Their next task was to collect granite samples from

other locations to see if their model worked across the entire Himalaya range.

I had read about Searle's adventures and we had friends in common. One told me how Mike had filled a barrel with rock samples at the end of a remote valley in the Karakoram, north of the western end of the Himalaya, and hired a porter to carry them back to the roadhead, several days' hard trekking down a glacier heaped with rubble. The porter, not unreasonably, wondered why anyone would want rocks from the far end of the glacier, when there were lots of perfectly good ones much closer to home. So he emptied the barrel Mike had given him, refilling it when they arrived. Mike, my friend told me, took the news philosophically.

I heard this story camped in the Gangdise mountains, a hundred kilometres or so north of the main Himalayan chain, high on the Tibetan plateau. Later in that same trip, sitting in the garden of a hotel in Nepal's capital, Kathmandu, my friend spotted Mike who was just back from another research trip. We asked him about the landscape of the Gangdise, which is such a contrast to the crammed chaos of the Himalaya: huge peaks at a distance from each other, like galleons afloat the vast brown plateau of Tibet. For the next half hour, Mike spoke clearly and simply about the origins of the Himalaya, how they had formed and the impact on what had been the south coast of Asia, when the high country we had stood on overlooked the shrinking Tethys Sea that in the Mesozoic Era separated the continents of Gondwana and Laurasia. The scale of time and space was inconceivable to me, unimaginable, and yet Mike seemed to watch the surface of the earth crease and buckle over millions of years under the gaze of his mind's eye. It seemed a story as fantastical as Hindu myths of earth's creation.

Our understanding of how mountains form is surprisingly recent. Long after the mountains had been mapped, we knew more about the geology of the moon than how the Himalaya formed. When Mike Searle was a student in the 1970s, the idea of plate tectonics, of land masses moving across the earth, had only recently become mainstream. Its parent theory, the idea of continental drift, had been posited in 1912 by the German meteorologist and geophysicist Alfred Wegener. Until then, geologists believed the earth's major geological features had been fixed when the molten surface of the planet cooled. Early

attempts on Everest offered some clues. Alexander Heron produced the mountain's first geological map after the reconnaissance of 1921. Geologists Noel Odell in 1924 and Lawrence Wager in 1933 both collected sedimentary limestone from near the summit. It was clear the top of Everest had once been at the bottom of an ocean. How this ocean floor came to be nine kilometres above the surface of the earth was, before plate tectonics, less obvious. Seeing the conformity of Everest's summit rocks, all three assumed they had been pushed upwards but how that happened remained unproven.

When Wegener died of exposure on the Greenland ice cap in 1930, his theory had supporters, like the British geologist Arthur Holmes, who theorised that convection deep in the earth might drive the continents across its surface. But the majority opinion was against Wegener, sometimes bitterly so: it became a battle between the 'drifters' and the 'fixists'. After the Second World War, the scientific case for Wegener's idea of whole continents splitting apart and colliding began to build. Mountain ranges were discovered in the deep ocean, where magma had welled up through cracks in the ocean floor and then crystallised. Magnetometers designed to detect submarines were used to survey the seabed, where basalt rocks recorded the earth's polarity at the moment of their formation. The surveys showed this variation in black and white stripes, like a zebra's, as the earth's polarity flipped periodically from north to south and back again. This was clinching evidence that the ocean's floor was spreading apart. The continents really were on the move. Wegener's idea was proved correct, if not in every detail. You can trace on a map India's northward drift in the sequence of volcanoes that stretch from Réunion, east of Madagascar in the Indian Ocean, via the Chagos and the Maldives to the Western Ghats, east of Mumbai. A 'hot spot' anomaly deep in the earth's mantle where Réunion is currently located created all these volcanoes, each in turn cooling as it drifted away to the north.

There aren't any fossils of sea creatures younger than fifty million years in the Himalaya. This suggests that the collision of India with Asia that produced the mountains occurred around this time. That makes the Himalaya a youthful range in comparison to its near neighbours. Metamorphic rocks in the Hindu Kush, for example, are three times older, suggesting a much earlier process of mountain building. As the youngest and highest mountain range in the world, the

Himalaya was the obvious place to study how continental plates collide. By calibrating magnetic anomaly stripes recorded in the Indian Ocean, geologists reconstructed how in the last one hundred and twenty million years India rifted from Antarctica and drifted north, following the breakup of the huge supercontinent Gondwana in the Southern Hemisphere.

Over tens of millions of years the Tethys Sea narrowed and then almost entirely disappeared. The Persian Gulf remains as a tiny vestige of this ancient ocean, an elderly neighbour to the much younger Red Sea, which is widening by a centimetre every year. As India and Asia closed together, at latitudes around the equator, the Tethys seabed was lifted up into the sky. Most of it has long since eroded away; only smashed up fragments remain in the Himalaya. But in Oman in eastern Arabia, where the Tethys has yet to close, these formations, known as ophiolites, remain intact. It was here that Mike Searle began his research career, as though marching back in time to the dawn of the mountains he spent his life studying.

Following the initial collision, India ploughed on northwards, folding the surface like the crushed bonnet of a geological car wreck. The Indian plate plunged underneath Asia. Volcanic activity along the former coastline of Asia fizzled out as the cold Indian plate slid beneath it. And it's still going, converging at around fifty-five millimetres per year, rotating very slightly anticlockwise. Eight hundred kilometres of the Indian plate has already disappeared under Asia. The earth's crust under Tibet doubled in thickness to seventy or eighty kilometres as it was jacked up into the air, creating a desert plateau with an average altitude of five thousand metres. India's lithosphere, that is the crust and upper mantle, extends under the Tibetan plateau north of Everest by more than three hundred kilometres.

The plateau itself is far drier than the southern side of the mountains. The Himalaya may be the abode of snow, but there's remarkably little of it north of the mountains. There's good reason most of the Himalayan population lives south of the range in the wetter middle hills. Ngari Prefecture in western Tibet receives less than seven centimetres of precipitation a year; Arunachal Pradesh, on the southern slopes of the eastern Himalaya, is the second wettest state in India, getting on average three metres of rain a year. As a consequence, erosion rates are low in Tibet and the uppermost layer of rock remains

intact, so studying formations beneath it is difficult. In the Karakoram to the north-west, by contrast, far greater rates of erosion have exposed their structure in the most dramatic mountain landscapes in the world. The Tibetan plateau itself is being extruded east, towards south-east China, creating rift valleys between the mountains.

Where tectonic plates meet is termed the suture line. Around the thousand-year-old Lamayuru monastery in Ladakh, the sparsely populated region to the west between Kashmir and Tibet, you can see the suture of Asia and India clearly in the surface rocks. To those armed with a little knowledge, formations like these are among the greatest wonders of the Himalaya. The degree of folding you see exposed in the Himalaya is testament to the planetary scale of the forces at work. Most mountains flatten out when viewed from the International Space Station at an altitude of around four hundred kilometres. The Himalaya do not: the mountains form a vast crescent, the biggest of big bananas, between the near-sea-level plains of India and the gigantic high plateau of Tibet, corrugated with the ceaseless impact of numberless glaciers and rivers, grinding and washing the mountains away.

The Himalayan suture line extends east for some 2,400 kilometres from near where the Indus turns south around Nanga Parbat, ninth highest peak in the world and four hundred kilometres north-east of Islamabad, to where the Brahmaputra, called the Yarlung Tsangpo in Tibet, turns south around Namcha Barwa, due east of Tibet's capital Lhasa. These points, like brackets or quotation marks, are termed syntaxes. While the length of the Himalaya records a head-on collision between India and Asia, south to north, at these corners, the squeeze comes from every angle. As a consequence, the massif of Nanga Parbat is currently rising faster than anywhere else on earth; the presence of so many warm springs in the region shows how rapidly the hot lower crust is being lifted. Rocks here are the youngest in the Himalaya, formed deep in the earth and then elevated with astonishing speed to the surface and on up to the highest altitudes. Geologists working on Nanga Parbat have found migmatites, a kind of partially melted gneiss that formed only a million years ago at depths of between ten and twenty kilometres. These migmatites are now found at altitudes up to eight kilometres. That means they have been exhumed at around eleven to thirteen millimetres each year, the fastest

rate ever recorded on the planet. The story at Namcha Barwa, the eastern anchor of the Himalaya, is similar, although geological mapping here is more challenging. The topography is extreme: deep gorges thick with jungle. Data collected along the fabled Yarlung Tsangpo gorge, so remote it was only fully explored in the twentieth century, suggests the mountain-building process is only a little slower than at Nanga Parbat.

The granite I could see from Tapovan told another part of the story that is equally staggering. As the India plate dived under Asia and melted, some of its molten core was squeezed back southwards into the weakness between the two plates, what's called a mid-crustal channel, under the immense weight of the crust above, like an elephant sitting on a tube of toothpaste. In places, this ductile granite was able to balloon into colossal formations, like the one I could see on Bhagirathi. The south-west face of Everest is the upper boundary of this mid-crustal channel. The lower part is gneiss and granite rocks that were molten as recently as fourteen million years ago, squeezed under sedimentary rock twenty times its age, much of which has now eroded away. Where the ductile granite met the limestone, the country rock metamorphosed into marble, a feature on Everest known as the Yellow Band.

The sedimentary rocks at the summit of Everest are layers of lime mudstones. The famous features of the mountain that so obsessed the British expeditions of the 1920s and 1930s, particularly the Second Step, are limestone crags standing proud of the shale beneath. In 1964 the Swiss geologist Augusto Gansser published *Geology of the Himalaya*, which included an image of the stem of a fossilised crinoid or sea lily collected by the first Swiss climbers to reach the top in 1956. (Gansser had travelled the length of the Indian Himalaya two decades previously as part of Arnold Heim's Swiss scientific expedition; the pair coined the phrase Main Central Thrust for the core of metamorphic rock extruding south across the length of the Himalayan arc. Gansser also crossed the Nepali border without permission into Tibet and made a circumambulation of Kailas, dressed as a pilgrim, noting its geology as he travelled. Before setting out, a monk gave him a bag of small pills that would cure any illness he might encounter. It was these pills, Gansser liked to joke, that were the source of his longevity. He died in 2012 aged a hundred and one.)

Gansser's image of the fossilised sea lily proved the top of Everest to be the remains of an ancient ocean floor, which makes the human experience of standing on it all the more extraordinary. Lawrence Wager, who also collected rocks in 1933 during a brave attempt at the top, was in the 1950s head of the geology department at Oxford. He judged his samples were formed at the end of the Carboniferous, around three hundred million years ago. Their age is now more firmly fixed in the Ordovician, making them more than four hundred and forty million years old.

Deep time is hard for the human mind to conceive but the radically different ages of rocks on Everest, and the processes that put them there, tear at our instinct to regard mountains as unchanging. The truth is the Himalaya are being made and unmade constantly. Mike Searle and his team discovered that rocks high on the Karakoram peak of Masherbrum had been formed at depths of about thirty-five kilometres, meaning everything above those rocks had been eroded away: fractured, split, gouged, scraped, crushed and washed downstream towards the sea. A quarter of the rock sediment washed into the world's oceans comes from the Himalaya. It arrives in the Bay of Bengal at a rate of a billion tonnes a year, settling on the seabed to form what is known as a submarine fan. The Bengal Fan, the largest such feature in the world, extends three thousand kilometres south into the Indian Ocean and spreads to a width of fourteen hundred. Off the coast of Calcutta it reaches a thickness of eighteen kilometres. With that sort of pressure, the rocks at the bottom are themselves metamorphosing, and so gravity and time spin the wheel of the planet's making.

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For humans encountering the Himalaya, the very greatest of its impacts is climatic. Stand on the summit of a high mountain along the chain and, if it's clear, you can look north towards the arid brown of the Tibetan plateau. Then, having turned ninety degrees in either direction, you take in an apparently endless sequence of ridgelines, each of them marking the limit of another river that has carved it out. On one side a desert, on the other some of the wettest places on earth. The contrast is startling, the explanation even more so. As

the Tibetan plateau was lifted into the atmosphere, there was less air to interrupt the heat of the sun. As a consequence, the plateau gets hotter than land at sea level; it acts like a vast hot plate that through convection pumps the air above it into the upper troposphere. This in turn draws in a warm, moist wind from the Indian Ocean: the South Asian monsoon. As this air reaches the Himalaya, it rises and cools and its moisture precipitates. It is the action of all that water falling as rain and snow on the south side of the mountains, unable to cross the barrier of the mountains to the north, that has created landscapes so vastly different.

At times the monsoon falters: there is evidence that the population centre around the fortress of Tsaparang in western Tibet failed in the early seventeenth century as the monsoon weakened, drying up fields that were once fertile. The reasons for this are as yet poorly understood but monsoons also weakened in the 1980s and scientists were able to correlate this to a cooling of the Tibetan plateau. The impact of all that hot air rising from the plateau on the jet stream and the global climate is not yet fully understood. There has until recently been a vacuum of data from the region but in recent years Chinese researchers have placed sensors even the plateau's remoter corners to measure heat rising from all types of land surface. It's hoped that more and better data will improve monsoon climate models, and with better forecasting comes the possibility of saving lives.

Not only does the monsoon intimately affect the hundreds of millions of people who live in its shadow, the rise of Tibet may have impacted the earth's climate as a whole. When the monsoon began isn't certain, but it strengthened markedly seven million years ago, again connected to the rise in altitude of the Tibetan plateau. The palaeoclimatologists Maureen Raymo and William Ruddiman and oceanographer Philip Froelich have linked this increase in rainfall to an increase in chemical weathering, which occurs when carbon dioxide dissolved in rainwater reacts with minerals in the rock, locking it out of the atmosphere. Their theory suggests this process increases during periods of mountain building, because more material is being eroded into rivers. The higher the Tibetan plateau rose, the more rain fell, increasing erosion rates and speeding up the process of chemical weathering. As more carbon dioxide was locked away, the planet cooled, leading to the Pleistocene ice ages that so markedly shaped

human history. It is a controversial theory, but there is tantalising evidence supporting it. Climate scientists use the ratio between two oxygen isotopes captured in marine limestone as a proxy for temperature: the greater the ratio the cooler the planet. There is a marked correlation between the timing of this global cooling and the rise of the Himalaya. The Tibetan plateau continues to impact global weather systems; Xiangde Xu from the Chinese Academy of Meteorological Sciences has reported that not only does the Tibetan plateau affect rainfall in China but there is a correlation between greater snowfall on the plateau and warmer Canadian winters.

The combination of rainfall and elevation in the Himalaya is reflected in the immense river systems that drain the mountains. It is not the mountains that frame human activity in the Himalaya: it is the rivers. The three great rivers of East Asia – the Salween, the Mekong and Asia's longest, the Yangtze – all rise close together on the eastern end of the Tibetan plateau. No wonder bridge-builders have been so admired here. Some of the greatest rivers predate the Himalaya's rise, including the Indus and the Yarlung Tsangpo–Brahmaputra. Others began with the mountains, including the Ganges and the great river systems of Nepal. These have eroded deep into the mountains, in places right across their axis. The head of the Arun river in Nepal has cut through east of Makalu, the world's fifth highest mountain, to within just ten kilometres of the Yarlung Tsangpo. As the process continues, the Arun will 'capture' the Yarlung Tsangpo and the headwaters of this great river will subsequently flow through Nepal.

It is the combination of altitude and climate that makes the Himalaya so formidable and so formidably diverse. At its narrowest the distance between the plains, or terai, to the south of the mountains and the Tibetan plateau is around a hundred and fifty kilometres. Within that distance the gain in altitude is as much as eight kilometres. Remember that with every kilometre gained in altitude there is a drop in temperature of more than six degrees Celsius. Altitude acts in a similar way to latitude, meaning that in the briefest distance you can move through a wide range of ecosystems: subtropical broadleaf forests in the Siwalik foothills, mixed temperate forests of oak and rhododendron in the middle hills, firs and pines at higher altitudes. Juniper has been found growing in Bhutan at over 4,700 metres, but

for the most part the trees thin much lower. Pastureland above the tree line can extend well over five thousand metres. Above that, you are in an ecosystem more akin to the Arctic.

Thanks to altitude, the biodiversity of the Himalaya is astonishing, especially in the eastern part of the range where the monsoon is so strong: eastern Nepal, Sikkim, Bhutan and the Indian state of Arunachal Pradesh. Sikkim, only a little bigger than Delaware, or the English county of Cumbria, has six hundred and fifty different species of orchid. Nepal has a similar number of butterfly species, roughly the same as the whole of the United States, a country more than sixty times its size. At high altitude across the Himalaya are blue sheep, musk deer, red pandas, wolves and snow leopards. In the middle hills I've seen leopards, Himalayan bears and langurs, black faces fringed with white fur. In the southern subtropical foothills are tigers, Asian rhinos and wild elephants. In the rivers are dolphins and gharial, a species of crocodile. There are poisonous snakes too, vipers and cobras, another significant risk to life and a major cultural trope on either side and at either end of the mountains in the form of *nagas*, serpent spirits. Hunting and foraging have been a fact of life for many Himalayan ethnic groups for millennia and even now there is still one group, the Raute, who remain hunter-gatherers. The forests and mountainsides are not just a larder or a place to find building materials: they are a treasure trove of medicinal plants. One of the best-known trades in the Himalaya is in *yartsa gunbu*, meaning 'winter worm, summer grass' in Tibetan, a caterpillar infected with a fungus that grows like a plant and is worth its weight in silver on the Chinese market.

The natural hazards of such a rapid rise in elevation are complex and unpredictable: floods, earthquakes and landslides, but also less obvious dangers, such as glacial lakes draining almost instantly and catastrophically. The most famous example of this was a lake of ten square kilometres near Mount Machhapuchhre in the Annapurna region, which collapsed in the mid sixteenth century, sending a wall of water and five cubic kilometres of debris into the Pokhara valley. These events, called Glacial Lake Outburst Floods, are of great concern today as climate change prompts glacial retreat. Landslides also cause flooding, as they did most notably in early 1841, when a mountain spur on the west side of Nanga Parbat detached and fell into the Indus,

creating a dam. A lake quickly formed, and the king of Gilgit, Karim Khan, sent notes written on birch bark and floated downstream, warning that a flood was imminent. When the dam broke in June, a huge wall of water swept down the Indus destroying hundreds of villages and killing thousands of people and their animals. A Sikh army camped near the river outside Attock in northern Punjab was engulfed and five hundred men died in an instant. A survivor, a *zamindar* or commander, described it thus: 'As a woman with a wet towel sweeps away a legion of ants, so the river blotted out the army of the Raja.' The waters at Attock rose fourteen metres above the normal summer flood level. And while exceptional in its scale, the 1841 disaster was far from unique: Henry Strachey, older brother of John, heard of a similar event in 1835. Floods caused in this way continue to kill along the length of the range.

Earthquakes have been a regular disruptive force throughout Himalayan history. They are mentioned in the *Mahabharata* and later Buddhist texts. We know a major earthquake in 1255 rocked Nepal's Kathmandu valley. Even so, despite an extensive literature of historical annals, there is a dearth of accounts. We know there was a series of earthquakes in the sixteenth century, including one in Kumaon in 1505, but it was only in the colonial period that systematic records began to be kept. One of the most important accounts, for its detail and insights, is from 1897, when Richard Dixon Oldham of the Geological Survey of India witnessed an earthquake of magnitude 8.7 in Assam. A fault on the northern side of the Shillong plateau was displaced by as much as sixteen metres and the northern part of the plateau was lifted instantly into the air by eleven metres. Loss of life was surprisingly low, but houses were destroyed across an area three times the size of England.

Geologists call mountains high-energy environments and the immense physical and natural diversity in the Himalaya is reflected in a high-energy human population. Because differences in climate and environment come thick and fast as you move across terrain, the cultural habits that have arisen in response to those differences are intensely focussed. While the monsoon is the region's major weather system, local climate, even from one side of a valley to the other, can be astonishingly different; a south-facing slope can have a growing season of a month longer. Himalayan people understand very well

the French concept of *terroir*. This diversity is reflected in language: there are more than seventy distinct languages and dialects in Nepal alone. Yet despite this localism, people have always been on the move in the Himalaya. Across the mountains, traders have exchanged Tibetan salt for Indian grain for millennia, a trade only recently disrupted by the arrival of roads. The seasonal migration of herders taking animals to high pasture is another practice that has endured. Population growth and urbanisation is changing the region's human face faster than ever, and politics with it. Climate change is having a greater impact here than almost anywhere else. Yet, as we shall now see, the adaptations people have made to thrive in this extreme environment not only reach the roots of their culture, they also extend to their genetic code, creating a human suture line unlike almost anything else in human history.

3

The First Explorers

On the outskirts of the Chinese city of Shenzhen, just north of Hong Kong, is a former shoe factory eight storeys high that now hosts one of the defining industries of the twenty-first century: genetics. BGI, formerly known as the Beijing Genomics Institute, moved here from the capital in 2007 after it fell out with its masters at the Chinese Academy of Sciences. With one foot in academia and the other in business, it was too strange for the conservative capital: a mixture of state-owned and private enterprise. Yet the company is now the biggest player in the world of genetic sequencing, gobbling up American competitors and employing four thousand people. Those eight storeys are full of DNA sequencing machines and the data farm required to harvest the colossal amounts of information produced. Apart from human beings, including the first full sequencing of an Asian, BGI has sequenced all kinds of things: strains of rice, the cucumber, the chickpea, the giant panda, the Arabian camel, the yak and forty types of silkworm, the latter to protect China's all-important silk industry. It has also sequenced the DNA of Tibetans.

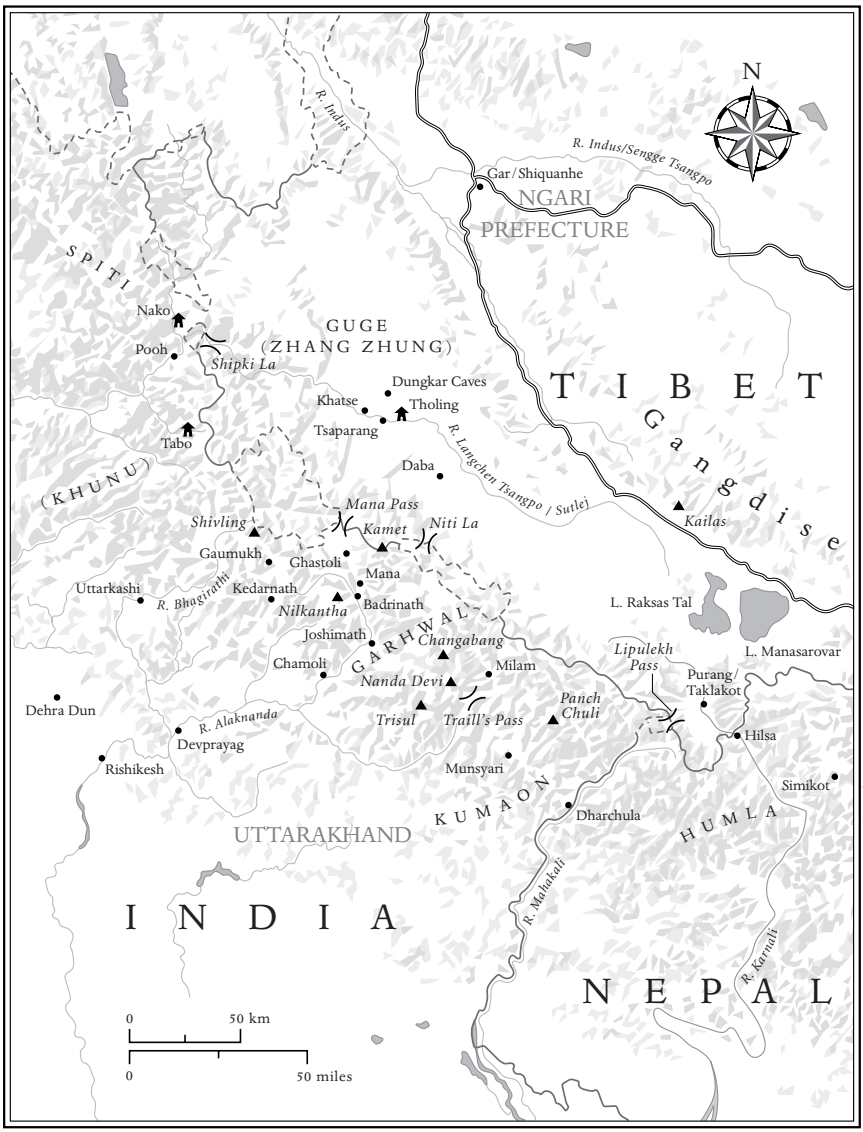
The indigenous people of the Tibetan plateau are of immense interest to geneticists and evolutionary biologists because of their unique adaptation to the physiological challenges of living permanently at altitudes of over four thousand metres with only half the oxygen of sea level. A few other populations around the world have adapted genetically to this challenge: there are two in the uplands of Ethiopia. But no population has done it quite like Tibetans and other ethnic groups with Tibetan heritage, such as the Sherpa of Nepal. Those of us born at normal altitudes, when confronted with the task of surviving on half the air, produce a cascade of physiological responses, starting with increased breathing and a faster heart rate.

Over time, the blood thickens with extra haemoglobin in red blood cells. Whether this is what we mean by acclimatisation, or is actually a problematic by-product, is a matter of debate for some researchers. Haemoglobin makes your blood sticky, causing stroke; long-term elevation can lead to chronic illness and heart attack. Tibetans manage to function perfectly well at altitude with haemoglobin levels that are sometimes lower than lowland populations. Their respiration and heart rates are also similar.

Modern genetics and the mapping of the human genome have allowed us to at least start to unpick the complex interactions and adaptations that make Tibetans so successful at altitude, from how blood vessels function in their muscles to changes in the upper respiratory tract that lets Tibetan noses breathe more easily in the thin, dry air of high altitude. Researchers from the University of Queensland in Australia and Wenzhou Medical University found nine separate genetic differences between Tibetans and lowland populations, including genes connected with haemoglobin levels and the immune system.

The most critical issue is reproduction. You can only pass on your genes if your children survive. I once met a newly born infant in the arms of his mother in a yak-hair tent at over four and a half thousand metres in the middle of the Tibetan plateau. It was a humbling experience. There was no hospital within eighty kilometres and no midwife either. The little boy's mother had relied on her mother to help her with childbirth, but his rude health was also a product of natural selection. Tibetan women have evolved larger uterine arteries to maintain a healthy flow of oxygen to the growing foetus. Tibetan babies are born at the same weight as lowland babies but are able to extract more oxygen from the air. The birth weight of lowland babies born at altitude reduces by a hundred grams for every thousand metres of height gained. Tibetan mothers also have genetic differences that allow them to produce more folates, an essential B-vitamin, when they're pregnant.

These discoveries deepen our understanding of history too. The ability of one group of people rather than another to thrive at high altitude is one of the organising principles in the story of the Himalaya. Trekking up valleys on the south side of the range into the high mountains, you come across an obvious ethnic switch between people



from the southern lowlands of the subcontinent and South East Asia and people of the Tibetan high plateau, an invisible threshold that hovers at around 3,500 metres. North of this genetic suture line are people most often and loosely termed Bhotias, people of Bod or Bhot, the Tibetan name for Tibet. (The etymology of 'Tibet' is uncertain; one theory has it as a Turkic corruption of *tu phod*, a term from north-eastern Tibet for upper Tibet.) South of this line, and east on the lowlands of China, are populations that lack the genetic adaptations to live and thrive comfortably at altitude. Yet this differentiation doesn't quite match any modern border between states; those run most usually along the crest of the mountains. This ethnic misalignment has been a source of political tension in recent centuries. After the Second World War, newly communist China briefly laid claim to those parts of the Himalaya with Tibetan populations that were governed by India and Nepal.

Not surprisingly, given the current political context in which Tibet is such contested territory, research into the origins of the Tibetan people is dangerous ground; it's hard to imagine a more controversial context in which to pursue research. In 2010, the highly regarded journal *Science* published research that claimed to have found the fastest known example of human evolution in the shape of the Tibetan people. The research was then reported in newspapers around the world. The lead authors, Xin Yi and Jian Wang, both worked for the Beijing Genomics Institute. The paper claimed that the specific genetic differences between Tibetans and Han Chinese occurred only three thousand years ago. The previous fastest known genetic change had been tolerance for lactose among northern Europeans some 7,500 years ago. For those pushing a nationalist narrative making Tibet part of the Chinese motherland the implication of this research seemed obvious: the Tibetan people were an offshoot of the Han population that split within the timeframe of recorded history. To archaeologists, the claim made little or no sense. Mark Aldenderfer, an expert in the prehistory of Tibet at the University of California, Merced told the *New York Times* that the time frame proposed was 'simply not tenable by anything we know from the historical, archaeological or linguistic record'. While the archaeological picture on the Tibetan plateau is far less complete than on the south side of the Himalaya, there was certainly sufficient evidence to challenge directly the notion that

continuous human habitation was as young as the scientists at the Beijing Genomics Institute claimed.

Apart from altitude, a key factor in the peopling of Tibet was climate. Around fifty thousand years ago, the Tibetan plateau was dry and cold: vegetation would have been sparse and the mountains heavily glaciated. Then the climate improved with a rise in rainfall and an increase in temperature. Flourishing grasslands encouraged an expansion in the range and numbers of ungulates native to the plateau: wild yaks; *chiru*, the Tibetan antelope; *khyang*, the wild ass; and species of wild sheep. This warmer and wetter period extended north of the plateau to the Taklamakan and Gobi deserts, making migration from the north more likely. Evidence for this includes stone tools found at around 3,100 metres in the Tsaidam basin, an extensive shelf on the north-eastern corner of the plateau, dated at over thirty thousand years old. Closer to the Himalayan chain, eighty kilometres north of Lhasa, is Chusang, a late Palaeolithic site discovered in 1995. At an altitude of 4,200 metres, a series of nineteen human hand and footprints have been preserved in travertine, a sedimentary rock that forms from mineral deposits around hot springs. All the prints were made at the same time when the travertine was still a soft, calcite mud: a snapshot of a family group perhaps, since some of the prints are small enough to be made by children. All sorts of people declare themselves to be explorers; this band, you feel, really were. They faced all the problems of the early European and Asian explorers – the cold, the thin air and brutal wind – but without their technologies or scientific knowledge.

Quartz in these travertine deposits can be dated with some accuracy, and these prints are believed to be around twenty thousand years old. At other sites across the Tibetan plateau, stone tools have been found which, while they cannot be dated, are believed to be even older than the Chusang prints. It was clear that what was known about early Tibet from an archaeological record dating back at least twenty thousand years didn't match claims from geneticists about a much more recent divergence from China's population. Could they be different groups of people? Perhaps the warmer and wetter climate these early settlers enjoyed grew colder and more arid as the last 'ice age', more accurately the Last Glacial Maximum, approached twenty thousand years ago. Perhaps whoever it was living on the plateau had migrated

or died, to be replaced by new migrants from China as the plateau warmed again some ten thousand years ago.

In the last few years, this fragmentary picture has filled out considerably, with new and more robust genetic research filling in many gaps, supported by new archaeological discoveries, particularly at the oldest site found so far, on the banks of the Salween river in southeast Tibet. Here stone tools and animal remains have been dated to between thirty-one and thirty-eight thousand years ago. Not only does this new work support the idea that Tibetans have been settled on the plateau for tens of thousands of years, it also fits new genetic evidence that their presence was continuous, despite the worsening climate of the last glacial period. This evidence has some startling implications for our species as a whole.

In 2014, BGI published new research on genetic sequences of Tibetans they had looked at previously, this time comparing them with the same sequences from a wide range of modern and archaic humans. The results were startling. A sequence they had previously identified as significantly different from those of lowlander populations was found in only one other sample: that of the archaic human species dubbed Denisovan. Until recently, we had only the little finger bone of one individual of this hominin, found in a cave in the Altai mountains of Siberia. The bone belonged to a girl who lived 41,000 years ago, when different human subspecies lived side by side. Sequencing her genome has shown that Denisovans had interbred with Neanderthals. Now it appeared modern humans had as well. In 2019, anthropologist Jean-Jacques Hublin from the Max Planck Institute at Leipzig published a paper on a second Denisovan find: a jawbone found in a cave in Gansu province, placing Denisovans on the Tibetan plateau itself.

In September 2016, a team from the Shanghai Institutes for Biological Sciences published research that made a broader and deeper analysis of Tibetan DNA. They were the first researchers to sequence the entire genome of a Tibetan, in fact thirty-eight of them, including Sherpas. They then compared the results with the entire genomes of Han Chinese and with available genetic data from other modern and archaic humans. Their results showed that around six per cent of the Tibetan gene pool was composed of archaic sequences, including the Denisovan DNA found previously. That's substantially more than the

percentage of Neanderthal DNA in modern Europeans. They also found a segment that connected Tibetans to a modern human population living in Siberia 45,000 years ago, the so-called Ust'-Ishim man, whose fossilised thighbone gave up sufficient genetic material for the genome to be sequenced. As it turns out, Tibetans have more genetic material in common with Ust'-Ishim than any other modern population, including modern Siberians. They concluded that the earliest Tibetan settlers carried the genes of all three hominins, that Tibetans had arrived on the plateau between sixty-two and thirty-eight thousand years ago, but that the bulk of their genes was far more modern, around twelve to ten thousand years old, as the last glacial period ended.

The complexity of these discoveries has allowed a fuller, though far from complete, story of the settlement of the Tibetan plateau to emerge. Having migrated from North Asia and settled on the plateau during the Palaeolithic, Tibet's human population, surviving at high altitude for hundreds of generations, faced twenty thousand years ago the brutal prospect of a cooling climate. It was once thought the plateau was covered in ice during the Last Glacial Maximum but this is now discounted. While the plateau has an average altitude of over four and a half kilometres, there are many places less exposed and somewhat lower in altitude where populations could survive, such as the big river valleys. No doubt many groups migrated or died out, but some remained in these sheltered sanctuaries. When the climate became warmer and less arid again, plant and animal species extended their range once more across the plateau. Neolithic populations, speaking proto-Tibeto-Burmese languages, migrated from the upper Yangtze river in modern Sichuan and from the more northerly province of Gansu onto the Tibetan plateau where they encountered small indigenous bands with a very particular genetic inheritance. Far greater in number, these new arrivals interbred with the existing population and acquired those genes that conferred the biggest advantage: the ability to live and successfully reproduce in a hypoxic environment.

Western writers are sometimes guilty of romanticising the links between Tibetan culture and the physical environment, but it's true to say that Tibet's high altitude has had a profound impact not just on Tibetan physiology but on its history too. Until the twentieth century, when China used modern warfare, technology and infrastructure to

extend its reach permanently to the northern edge of the Himalaya, the genetic adaptation to altitude Tibetans enjoyed was their greatest defence. Tibet experienced invasions from lowlanders over the centuries, but maintaining a permanent presence required more resources from the invaders than the rewards justified; the hardships of life at high altitude were too unpalatable. In the course of Tibetan history, several foreign armies would struggle to feed themselves.

What Tibet had to offer could be acquired more easily through trade, which was vibrant and transformative. Culture and ideas, Buddhism for example, could and did flow uphill to high altitude. The notion of a mythical, isolated Tibet is just that: a myth. As historian Sam van Schaik wrote, Tibet has been 'deeply involved with other cultures throughout its history'. For actual living people, though, such involvement was harder. Permanent occupation by a lowland population, specifically Han Chinese, has required modern obstetrics and a determined, often ruthless political will. Even now, the infant mortality rate for Han Chinese here is three times the rate for Tibetans.

If the Tibetan genome tells an eloquent story, the archaeological record of how Tibet emerged from the last 'ice age' ten thousand years ago is sparse. Almost all the earliest sites whose age have been measured date from around five thousand years ago, mostly along the eastern margins of the plateau but some in what would become the first crucible of historic Tibetan identity, the Yarlung Tsangpo valley, very much in the Himalayan region. Before that, there are little more than hints, assemblages of stone tools that suggest cultural differences, particularly between south Tibet and the arid, rolling hills of the Chang Tang in the north, where people have historically and through necessity been more nomadic. The idea of different cultures on the plateau is important. In the popular imagination, Tibet and Buddhism are synonymous. The Dalai Lama's high profile in exile and his place at the centre of Tibetan identity make that assumption inevitable. But Buddhism wasn't first established in Tibet until the seventh and eighth centuries, long after Christianity arrived in Europe and more than a thousand years after the Buddha lived. It was draped, like sheer fabric, over the complex and varied cultures that had developed and endured for centuries. With Buddhism came literacy; before Buddhism there was no Tibetan script. This watershed moment has dominated not just Western understanding of Tibet but

Tibet's sense of itself: creating a narrative from a voiceless world requires considerable ingenuity.

The earliest known Neolithic culture on the Tibetan plateau is found at its easternmost edge near Chamdo, third largest city in the Tibet Autonomous Region and close to the border with China's Sichuan province. Kharub, often Sinicised to Karou, is a collection of domestic residences representing several periods of occupation between six and four thousand years ago. The later structures excavated at Kharub look, at least from the interpretation of Chinese archaeologists, remarkably similar to a vernacular still common throughout rural Tibet. The site is on a bench above the Dza Chu river, which becomes the Mekong, at around 3,100 metres. As well as remains of wild goats and deer and evidence of foraging, there's evidence that millet was cultivated at Kharub and that people there experimented to achieve the best yields in the thin air of high altitude, where it's possible to grow only a narrow selection of cereal crops. There's evidence too of domesticated pigs.

Another site further west, Chugong, on the north side of Lhasa's Kyi Chu valley, is up to four thousand years old and also shows evidence of animal husbandry, including yak, which evolved, like Tibetans themselves, to prosper at high altitude. Yaks are a totemic creature in Tibetan culture, but until Chugong the first evidence of them in this area came from much later, in a document from the Western Zhou dynasty dating from 850 BCE. Tibetans learned to use every part of the yak productively, as Inuit do the seal, its bones carved into buttons or combs, the characteristic yak belly fringe providing the best hair for tent ropes. Yak tails were of particular value and were traded cross the Himalaya and far beyond. Roman women were using yak-hair flywhisks at the time of the Emperor Domitian in the first century. In south-western Tibet, the *Mahabharata* describes trade from Tibet in gold and precious stones; it's inconceivable that goods and technologies didn't travel the other way, into Tibet from neighbouring regions on the other side of the Himalaya: Kinnaur and Garhwal, and across Ladakh to the plateau. This region of Tibet acquired domesticated crops in this way, especially wheat, barley and peas, but the archaeology here is even scarcer than in the east. In north-western Tibet, archaeological finds suggest the influence of pre-Scythian tribes, the culture of the steppe extending to the plateau, of which more later.

A huge number and variety of objects were recovered from Kharub, ceramic bowls and jars with geometric patterns, polished stone and exquisite bone tools: awls and needles, weaving tools and combs. There were plenty of decorative objects too, including jade pins, shells and perforated stone jewellery. These and artefacts from Chugong are on display at the Tibet Museum in Lhasa. One of the exhibits from Kharub stopped me in my tracks when I saw it for myself: a series of nine semi-precious stones strung together and featuring a malachite pendant. There was also a polished cylindrical bead of turquoise, and another of what looked like jade, perhaps from ancient mines in the Tarim basin. There was no interpretation on the exhibit but what it illustrated was obvious: cultural continuity between the ancient past and the present. In the seventh century, for example, according to Chinese chronicles, the rank of Tibetan ministers could be judged from their insignia: different-sized beads hanging from string at their shoulders. The most precious, more than gold or silver, was turquoise. Nothing has changed. The fragments in the museum echo a motif and style that fills the shop windows of jewellery stores in modern Lhasa. Plenty of cultures revisit prehistoric art for inspiration; in Tibet it never went away.

As with writing, Buddhism marked a watershed in Tibet's artistic traditions. When we think of Tibetan art, it's most probably the complex and beautiful murals and elegant statuary of Tibetan Buddhism, which date back as far as the eighth century. This tradition drew its aesthetic from India, particularly from the Buddhist centres of the Pala dynasty in Bengal and Kashmir. Its arrival in Tibet reflected a sea change in religious practice and political power. What preceded it was radically different: the art of the people, not religious specialists, reflecting a kind of everyday spiritual awareness that mediated the worlds of hunting and pastoralism. Its inspirations were local gods and the rituals of the passing seasons.

Tibet's rock art offers the most immediate insights into this preliterate culture. The museum has plenty of examples on display. The most popular figurative subjects, commonly painted in red ochre, or *tsak*, were wild animals, particularly ungulates: yaks, complete with belly fringe, and deer, the two most commonly featured species and both widely present as keystones in the shamanistic spirit world that predated Buddhism. Predators also featured: tigers and lions. The

natural world is a central theme, as you would expect when survival depends on it. There are pictographs of hunters on horseback drawing bows, sitting on saddles that are similar in style to ones still used on the Tibetan plateau, although stirrups arrived only with the Turkic tribes in the fifth century.

Cosmological symbols are also common: the sun and moon, but also the swastika in both its clockwise and counterclockwise form, which appeared in the Indus valley fifteen hundred years before the Buddha was born. Many of these symbols were absorbed into Tibetan Buddhism, just as animistic totems were into the early Christian church. They feature in *thangkas*, Buddhist religious paintings, alongside *srungma*, protective spirits that are distinctive to Tibetan Buddhism. The meaning of this iconography evolved as Tibet itself changed but the process of recruiting to Buddhism the symbols and rituals of a pre-existing system of belief is clear. Some aspects were undoubtedly lost, though: pre-Buddhist imagery sometimes shows arrows jutting from the flanks of wild yaks, not a scene repeated in Buddhist iconography, with hunting frowned upon. Others may be rooted in this preliterate art, for example gods riding on yaks. The discovery of the earliest *thangkas* painted with red ochre in the Mogao Caves on the Silk Road hints at the continuity from Tibet's preliterate view of the universe to a wholly new one based on Buddhist philosophy. The old world was full of demons and visions; the new was austere and thoughtful. Tension between them has remained a constant and often creative dynamic in Tibetan culture and religious practice ever since.

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Documents found in the Mogao Caves, the Caves of the Thousand Buddhas, dominate our understanding of early Tibetan history, like a welcome landmark emerging from the mist. The caves are near Dunhuang, far to the north of the Himalaya, on the edge of the Gobi desert in what is now Gansu province. Dunhuang was a Han dynasty garrison that became a supply point for camel trains on the Silk Road, a junction between its northern and southern routes, and a crossroads for travellers between Mongolia and India. It was a Buddhist city by the fourth century, with a population of tens of thousands, when the first caves were dug at Mogao, elaborately painted with visual aids to

meditation and paid for by wealthy patrons. The site was a major Chinese Buddhist centre during the Tang dynasty, at its height in the eighth and ninth centuries, by which time hundreds of caves had been dug and decorated; its Buddhist priests escaped persecution after the Tang turned against foreign religions in the 840s only because the city was by then a possession of the Tibetan Empire. As Islam conquered much of Central Asia, the caves were abandoned. When the Yuan dynasty, patrons of Tibetan Buddhism, collapsed in the fourteenth century, the city itself went into decline. Growth in sea trade had fatally weakened the Silk Roads, until President Xi Jinping revived the idea in the twenty-first century.

Even after much of the complex was abandoned, though, Mogao remained a site of worship. In the late nineteenth century, Wang Yuanlu, an itinerant Taoist monk from Shanxi province, settled there and became the site's unofficial guardian, raising money for restoration. In 1900, as workmen he'd hired were clearing sand from the entrance to one cave they discovered a hidden door to another. This cave was filled with thousands of ancient documents, the youngest of which dated from the early eleventh century. Excavated as a memorial chapel for a monk called Hongbian who died in the ninth century, it is now better known as the Library Cave. The reason it was walled off with documents hidden inside has intrigued scholars. One explanation is that this was an attempt to hide them from invaders at the time of the defeat of the nearby Buddhist Khotan kingdom in 1006 at the hands of the Muslim Karakhanids. ('We came down on them like a flood,' wrote the Turkic scholar Mahmud al-Kashgari. 'We went out among their cities, / We tore down the idol-temples, / We shat on the Buddha's head!') Khotan had been a Buddhist kingdom for more than a thousand years, dating back to the time of the Indian Buddhist emperor Ashok and the Greeks in Central Asia. By the end of the eleventh century, Khotanese had been almost entirely replaced by the Turkic language of their conquerors. When Marco Polo visited in the late thirteenth century, he reported that all Khotan's inhabitants were Muslim.

Wang Yuanlu made repeated attempts to interest local Chinese authorities in his discovery but various officials who saw documents from the Library Cave failed to understand their significance. In 1907, the Hungarian-born British archaeologist and explorer Aurel Stein

visited Dunhuang with his capable interpreter and secretary Jiang Xiaowan. Stein's description of the cave hints at the riches inside: he estimated 230 bundles of Chinese scrolls and 80 Tibetan bundles, each containing around a dozen scrolls. He counted eleven large volumes of Tibetan *pothi*-style books, narrowly rectangular in shape and loosely bound, between traditional wooden covers. The pile of manuscripts and scrolls was ten feet high and occupied a space of five hundred square feet. The papers had no catalogue and were often scrambled together.

Stein paid Wang Yuanglu to let him take away 'over thirty compact bundles of scrolls' and various other miscellaneous bundles. The books he left, guessing they were reiterations of just one or two *sutras*, or scriptures. The following year the French scholar Paul Pelliot arrived at Dunhuang to pick over what Stein had left. Pelliot could read classical Chinese and other Central Asian languages and was thus able to make a fast and detailed assessment of what remained. (He was also a student of the Sanskrit scholar Sylvain Lévi, a crucial figure in Himalayan antiquity.) Even then the treasures of the Library Cave weren't exhausted. Japanese travellers bought more in 1911 and Aurel Stein returned in 1914 to buy what Wang Yuanglu promised was the last of the treasures. Stein suspected the monk was lying and he was right: a few months later the Russian archaeologist Sergei Oldenburg bought a large number of Chinese and Tibetan scrolls, now in St Petersburg. Oldenburg, whose friendship with Lenin's brother protected him after the Russian Revolution, founded an authoritative index of Buddhist texts that continues today. There was still a mass of documents left behind, many in Tibetan, and the great majority of these are now in Dunhuang Museum, rivalling the British and French collections in terms of size; these and other collections are now coordinated through the International Dunhuang Project.

Buddhist texts of comparable importance were discovered at other sites, but Dunhuang was among the most important discoveries of ancient texts anywhere in the world. They transformed our understanding of Asian religions. Most of the fifty thousand manuscripts are in Chinese, but other languages are present, including Tibetan, Uighur, Sanskrit and Khotanese, the latter hardly known until the Library Cave's discovery. Most of the material is Buddhist, and includes canonical works, like the famous Diamond Sutra from 868, the earliest

printed book for which we have a date, now in the British Library. The Diamond Sutra is part of the *Prajnaparamita*, a Sanskrit term meaning 'perfection of wisdom'. Its Sanskrit title is *Vajracchedika*, which literally means 'diamond cutter' or 'thunderbolt cutter', a metaphor for its value as a tool in reaching central truths within Buddhist philosophy: the self as illusion and liberation from attachment. The Dunhuang texts aren't confined to Buddhism, however. There is a manual for the ancient game of Go, musical scores, works on mathematics and astronomy, texts from other religions, including Christianity (the so-called Jesus Sutras), and Manichaeanism, treatises on medicine and Chinese pharmacology, as well as texts on Tibet's history.

The Dunhuang documents also include material on the esoteric tantric Buddhism so popular in Tibet towards the end of the first millennium, material until recently overlooked in comparison to other treasures from the Library Cave. Tantric Buddhism, Vajrayana in Sanskrit, emerged in northern India in the early medieval period, practised by *mahasiddha*, 'great adepts', spiritual practitioners who pioneered a faster route to enlightenment by quitting their monasteries and sacred vows to live in caves and forests, like Hindu sannyasi, or renunciates, but also behaving in ways anathema to the philosophical elites they left behind, having sex, drinking alcohol and eating meat. Only by experiencing the actuality of ordinary life could its emptiness be properly understood. The Tibetan Buddhist scholar Robert Thurman has described these adepts as 'psychonauts', explorers of the furthest reaches not of the world but of the mind.

The Western imagination is transfixed with the sexual aspects of tantric practice, but while it's there, it is only a fragment from a much wider system of teaching. The eleventh century Bengali *mahasiddha* Tilopa, having been thrown out of his monastery, made his money grinding sesame seeds for their oil – *til* is Sanskrit for oil – and worked as a bouncer and procurer for a prostitute. Later, however, Tilopa became an itinerant and highly admired teacher, whose students included Naropa, among the founders of the Kagyu school of Tibetan Buddhism, an umbrella term covering a range of tantric teachings. As characters, *mahasiddha* were wildly romantic, growing their hair long and abandoning the distant austerity of more conventional practitioners. They rose to prominence during the Pala dynasty, the last Buddhist empire to rule a large part of India, but they also shared

with Hindu Shaivites (followers of Shiva) some of their spiritual profile and practices. This confluence of the faster-running tributaries of Buddhism and Hinduism remains a major cultural feature of the Newari community in Kathmandu, that city's human core: intense, mystical, sometimes dark. Centuries after Buddhism had faded in India, Tibetan scholars would still be trying to figure out what tantric practice really implied.

Piecing together the emergence of the Tibetan state, a process that began in the seventh century, is far from simple. When the British diplomat Charles Bell published one of the first Western accounts of early Tibetan history in 1924, he drew in particular on the *Blue Annals*, completed in 1476, centuries after the events they described. And as Bell himself observed, Tibetan historiography was usually more concerned with the progress of religion and its institutions, not the rise and fall of rival political factions or economic development. Following the *dharma* or spiritual path of Buddhism has been a largely cohesive force on the plateau of Tibet for a thousand years but it wasn't inevitable, even if those Tibetan histories make it seem so. What we do know is that a dynasty emerged from Tibet's Yarlung valley in the seventh century that dominates the historical landscape, and it was largely in the wake of its emergence that, over the next two centuries, Buddhism took root. Remarkably, what began as illiterate animist clans making fragmentary appearances in Chinese chronicles, feuding in a remote backwater, became, within a few generations, an empire that stretched from the Pamir mountains in the far west to northern Myanmar in the east, and from the Gobi in the north to Nepal in the south, with a brief occupation of China's Tang dynasty capital at Chang'an. This stratospheric rise of the Yarlung dynasty transformed Tibetan culture and gave Tibet its own alphabet; only then was the way opened to its future as a holy land, where Buddhism prospered even as it dwindled in India, in the face of expansionist Islam and resurgent Hinduism.

Two key sources found at Dunhuang transformed our understanding of this critical period, as Tibet emerged on the world stage. The *Tibetan Annals*, originally one scroll, now held in two portions in London and Paris, covers the early reign of Songtsen Gampo, 'Songtsen the Wise', the first Tibetan emperor, recording important events and genealogies, including clan affiliations, from the middle of the seventh

century to the year 764, when the fragments Stein and Pelliot brought back to Europe end. The second document is known as the *Old Tibetan Chronicle*, a potent blend of narrative, songs and various lists that tells the story of the Tibetan emperors from their mythical beginnings, through the reign of Songtsen Gampo, and on into the ninth century. The list of emperors named ends with U Dumtsen, also known as Langdarma, an equivocal figure in the Tibetan imagination, as someone who attempted to suppress Buddhism. The chronicle was most likely composed in the ninth century, although the Hungarian scholar Géza Uray believed the manuscript, written on chopped-up segments of a Chinese scroll, had been rearranged later for political reasons. The discovery of these sources gave scholars a powerful new vantage point from which to view Tibet's emergence as a major power in Central Asia, one not so cluttered with Tibet's later religious sense of itself. Charles Bell, for example, followed Tibet's later medieval histories in regarding Songtsen Gampo as an ardent supporter of Buddhism, a young king converted by his foreign wives who ordered monasteries built across the land. He is known as the first of the three 'dharma kings', and regarded as an emanation of Tibet's protective deity Avalokitesvara, Chenrezig in Tibetan, the Buddha of compassion. But there is no mention in either the *Old Tibetan Chronicle* or the *Tibetan Annals* of Songtsen Gampo having been a Buddhist at all.

Songtsen was born a tsenpo – a king – and a *lhase*, or divine son, thirty-third in a line of kings whose origins are lost in time and whose gods are largely forgotten. The first of them was Nyatri Tsenpo, dropped to earth on Yarlha Shampo, a sacred mountain in the Yarlung valley, on the end of a sky-cord that drew him back to heaven when his time came. The Tibetan calendar and Losar, the New Year, are said to have begun with his reign. An ancient fortress called Yumbu Lhakang that stands on a cliff above the Yarlung valley is traditionally associated with Nyatri. It is certainly old, a narrow white tower, windowless at the bottom, overlooking the fields that sustained its inhabitants. The chronicles tell how this sequence of kings lost its divinity through the foolish behaviour of the tsenpo Drigum who turned clan chiefs first against each other and then against himself. The sky-cord was severed forever and Drigum was buried in the ground. No one, including the great Dalai Lamas, ruled all Tibet without managing the concerns of the clans.

Songtsen himself died in 649 and the account of his funeral offers clues to the nomadic origins of the Yarlung kings, hinting at influences from neither India nor China but the steppe. Herodotus had heard how the Scythians lacerated their bodies as part of their mourning; Tibetan nobles did the same, painting their faces with ochre and cutting off their hair. Echoes of the steppe accompanied Songtsen to his burial place, shaped like a nomad's tent. Like the nearby Turkic peoples, the Tibetans believed their king lived on inside his tomb, surrounded with his things from life, seated in his copper coffin, his old servants close at hand, those who had sworn allegiance raising a stone pillar and swearing an oath.

If his death was rooted in the past, Songtsen's life transformed that of the plateau. His father Namri Lontsen had extended their clan's power, forging links with other clans, expanding their control into central Tibet. During his reign, Namri had sent ambassadors to the Chinese court and made alliances with the powers that surrounded him: Zhang Zhung to the west and to the north-east a confederacy of tribes known as the Azha in Tibetan, and Tuyuhun to the Chinese, expert horse-breeders inhabiting what would become part of the Tibetan province of Amdo. This region was of much more concern to China, then emerging from chaos under the new Tang dynasty. To the south, across the mountains in the fertile valley of Kathmandu, was the Licchavi king, Amshuverma, controlling an important trans-Himalayan trade route and building a fabulous palace with the proceeds. The people he ruled were already famous for their metal-work. Beyond Amshuverma was the Indian king Harsha, who, aged just sixteen, had inherited the throne from his murdered brother, avenging his death and creating an empire.

Songtsen would do something similar. After his father was poisoned, he inherited the title of tsenpo aged just thirteen. Reacting to the loss of a strong leader, the affiliated clans rose up. Songtsen responded quickly, capturing and executing the man who had killed his father and putting down the insurrection against his family. Where his father had been content to secure treaties, Songtsen wanted absolute control. He subjugated the west and in 634 sent envoys to the Chinese court. Songtsen's reputation as a capable and bellicose military leader had gone before him, so the Chinese reciprocated quickly, being preoccupied with better known rivals, the Turks and the Azha to the north.