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Recalling the Past

It was the year 1853, a balmy June afternoon in western Oregon, USA, and John W. Hillman, late of Albany, New York, was lost. Riding a mule, Hillman led his party of seven men up 'a long, sloping mountain' so they could try and figure out where they were. It was a good thing that the mule was not blind, Hillman reflected 50 years later, because otherwise he might have been the first New Yorker to drown in the lake that appeared unexpectedly almost 600m (1,968ft) below him when he reached the mountaintop.¹ The lake was Crater Lake and the Hillman party is generally credited with providing the earliest written account of it. But they did not 'discover' it, for its existence was well known to the indigenous people of the district, principally the Klamath Indian tribes.

As gold seekers and settlers poured into this region over the next few decades, supported by government representatives, so the apparently strange attitude of the Klamath towards Crater Lake was increasingly remarked upon. For example, in 1886 a US Geological Survey reconnaissance group included two Klamath guides who were familiar with the entire area around the lake, 'neither of whom had dared travel to Crater Lake before'.² Around the same time, William Steel, intent on setting up a national park centred on Crater Lake, noted that the Klamath people he engaged refused to look at the lake at any time during his survey, instead 'making all sorts of mysterious signs and staring directly at the ground'.³ Enquiries revealed that to the Klamath, Crater Lake was a sacred place, one greatly respected and to be avoided by all except their shamans, who went there only when needing divine guidance.

What lies behind such behaviour and is it unique? In the case of the Klamath, the avoidance and respect behaviours are reportedly rooted in a memory of a time before Crater Lake existed, when the entire area was covered by a massive

volcano, belatedly named Mt Mazama. One of some 18 active volcanic mountains forming the Cascade Range, from Lassen Peak in northern California to Silverthorne Caldera in western British Columbia, Crater Lake – and its long-dead ancestor Mt Mazama – formed along a line parallel to a giant ‘crack’ in the surface of the Earth’s crust off this part of North America. The crack marks the place where the crust underlying the vast Pacific Ocean is being thrust eastwards beneath the older continental crust of North America – reluctantly, it seems, for the movement of one piece of crust (or ‘plate’) under an adjoining piece progresses through stick-slip motion. Most of the time the two plates are stuck together, locked in place, but all the time they continue to be pushed more and more towards one another ... until at last there is a slip, pressure is abruptly released (causing an earthquake) and the plates slip past one another.

This explains why this part of the western seaboard of North America is wracked by earthquakes compared to other parts of the continent. Sometimes the earthquakes occur on the ocean floor, abruptly displacing huge volumes of water and causing tsunamis. One of these occurred on 26 January 1700 off the central Washington coast,⁴ and sent a large wave across the North American shore – yet the only written records from this time come from Japan, which was also reached by this distantly generated tsunami.⁵

The slippage that causes earthquakes is only one aspect of the convergence of the crustal plates that occurs here. Another is the eruptions that have – over the past 40 million years – built the line of Cascadia volcanoes some 150–250km (93–155 miles) from the continent’s western edge. Actually more than 2,000 in number, these volcanoes trace the line deep below the ground surface where the downthrust Pacific Plate has become so hot that it melts, perhaps some 100km (62 miles) down where temperatures are more than 650°C (1,200°F). The melting produces liquid rock (or magma), which then – finding itself surrounded by cooler solid rocks – tries to force its way upwards through the overlying solid crust. Much of the time, probably even most of the time, it

does not succeed in reaching the ground surface because most of the fissures it encounters do not extend far enough upwards, so the magma pools below the surface, where it gradually cools. But for the enterprising magma that does find a clear path to the ground surface, a more spectacular destiny is guaranteed.

Where magma rushing upwards from below through a constrained fissure finally comes out to the ground surface, the rapid cooling it experiences often results in explosive eruptions and – less spectacularly – the successive deposition of lavas that gradually build a volcano above the mouth of the subterranean fissure. As these volcanoes become larger, and perhaps as the supply of magma from beneath becomes progressively less, so it often becomes more difficult for eruptions to occur at the summit of the volcano. In such cases, flank (or parasitic) cones may develop at lower levels. Occasionally, the magma supply dries up altogether and a volcano is declared extinct, or at least dormant. Thereafter it is doomed to slowly degrade, often becoming worn down so as to appear almost indistinguishable from the surrounding landscape. This certainly seems to be what is happening with the Canadian Cascade volcanoes. Silverthrone has not erupted for an estimated 100,000 years and is probably extinct. But then most volcanoes go through periods of dormancy, often lasting centuries, before springing back into activity. Mt St Helens is one of these volcanoes – its present period of activity, the centrepiece of which was the eruption on 18 May 1980, followed two periods of dormancy lasting more than a century. Enough to lull anyone into a false sense of security, you might suppose.

You see the fateful consequences of this mindset in many places, not just the north-west United States, of course. It occurs where new people arriving to live in a potentially hazardous area may be unaware of the danger, while longer-term residents are more wary. This contrast is amplified when the new arrivals are literate and the long-term occupants are non-literate, since literacy often confers arrogance and an uncritical faith in the superiority of the written over the spoken

word. Around Crater Lake, settlers in the late nineteenth century were generally uninterested in the cautionary stories and behaviours of the Klamath, but more than that, Western science has been slow to consider the possibility that such folk memories may have been based on observations of a geological phenomenon – in this case a massive volcano-destroying eruption – empirical evidence of which has been pieced together only within the last few decades.

The Klamath story holds that within Mt Mazama resided a god – the Chief of the Below World – who desired to wed the beautiful Loha, a human living in a nearby village, but she resisted his blandishments.⁶ Enraged, the Below-World Chief began to rain red-hot rocks and burning ash down on Loha's people, but they were saved through the intervention of the Above-World Chief, who eventually caused the mountain to collapse inwards on his underworld counterpart. The hollow that formed filled with water and thus Crater Lake came into being. In 1865, a Klamath elder explained how these events had shaped his people's attitude towards the area:

*Now you understand why my people never visit the lake. Down through the ages we have heard this story. From father to son has come the warning, 'Look not upon the place. Look not upon the place, for it means death or everlasting sorrow.'*⁷

The Klamath stories are interpreted as recalling a time before Crater Lake existed, when Mt Mazama towered over the landscape of this part of Oregon. They recall its explosive self-destruction, the ensuing collapse and the formation of the lake – a process well known to geologists studying the life cycles of such massive volcanoes. To understand what happens, consider that large volcanoes like Mt Mazama are often fed from a shallow underground chamber that periodically fills with magma. In this case, the voluminous eruption that saw this volcano blow itself to pieces was fed from a magma chamber about 5km (3 miles) deep. So much magma came out that the magma chamber was suddenly emptied – a

massive void under the ground remained and, unable to support the weight of the overlying volcano, collapsed. Today, where Mt Mazama once stood, the eponymous crater lake occupies a landform called a caldera that formed above the collapsed magma chamber.

What is really interesting here is that the radiometric dating of rocks belonging to the former Mt Mazama show that its self-destruction occurred some 7,600 years ago.⁸ We are left to wonder how the story of the formation of Crater Lake could have endured so long among people whose only method of recalling their history, at least until about 150 years ago, was through word of mouth ... parent to child, parent to child across almost countless generations. It was a story of history, of course, but also one with a warning: keep away from this place, it is dangerous; terrible things happened here, involving beings who are more powerful than us mortals, beings whom we suspect still dwell here.

It is likely that the memory of Mt Mazama was kept alive for such an extraordinarily long time precisely because it was considered to contain such practical advice relating to the survival of the Klamath people. But the astonishing thing about the story is its longevity. How could an eyewitness account of events 7,600 years ago filter down to us today, almost entirely through intergenerational oral transmission? And what does this mean for our understanding of humankind? Somewhat against the grain of the last 100 years or so of scientific inference, this book argues that stories of this kind do exist in many of the world's cultures, but that their apparent longevity has led to their dismissal by generations of scientific commentators who have been unable to overcome their knee-jerk scepticism about the implied time depth of oral tradition. Perhaps it is time to look less circumspectly, with a more open mind, at traditions of possible great longevity elsewhere.

History celebrates memorable events and shuns the mundane. It is in our nature to do this – to wish to have our minds stimulated and our imaginations unleashed – rather than to be compelled to focus on predictable everyday

happenings. In each decade of adulthood we are prone to look back at our lives, illuminating and calibrating our personal histories with light-bulb pops of uncommon events. Now imagine the personal stretched to the communal, the journey through time of a particular people living in a particular place and trying to make sense of their history without the aid of literacy.

A fine example comes from the islands of Pukapuka in the Cook Islands group of the South Pacific. A jewel in a turquoise sea, inhabited for a millennium or more by a resilient people following a way of life optimally adapted to a comparatively low, remote and resource-constrained tropical location. Of course, we can paint lives in contrasting ways, and probably most modern Pukapukans would consider themselves blessed, fortunate to be living in a bountiful environment immune from the pressures that many urban dwellers routinely experience. But it has not always been so on Pukapuka, the traditional (largely oral) history of which is in two parts, separated by what the islanders recall as *te mate wolo* – the great death. As near as we can tell, it happened at night sometime in the early decades of the seventeenth century, when a giant wave – almost certainly a tsunami generated by an ocean-floor earthquake off the western margin of the Americas, perhaps Chile – smashed into the island. The oral histories remember that the ‘waters raged on the reefs, the sea was constantly rising, the tree tops were bending low’.⁹ Everything was destroyed; no houses and no food gardens remained in the aftermath. The traditions state that just two women and 17 men ‘with remnants of their families’ survived to re-establish human society on Pukapuka.

Another example comes from Sirente in central Italy, during the late Roman period around 1,650 years ago. This marked a time when Christianity was slowly gaining a foothold in the region, displacing supposedly pagan cults like that which embraced the Dionysian ritual practices of ecstatic dancing and licentious behaviour following the annual grape harvest. The story from Sirente, dating from about the year

AD 412, describes the start of a ritual in a mountainside temple around sunset:

*Dances and songs were practised, along with clever and ribald witticisms. Dishevelled Bacchanalians languished under the effect of wine. Hairy satyrs, human at the top except for their goat's ears and legs, danced with snow-white nymphs and the corpulent and sunburnt Silèni. The nymph Sïcina was by far the most beautiful, shameless and bold. Around her, the orgy would become intense, almost violent.*¹⁰

But then an 'uproar hit the mountain', trees were split apart and a 'sudden and intense heat overwhelmed the people':

All of a sudden ... a new star, never seen before, bigger than all the other ones, came nearer and nearer, appeared and [then] disappeared behind the top of the eastern mountains. People's eyes looked at the strange light growing bigger and bigger ... an irresistible, dazzling light pervaded the sky.

The 'star' was a meteorite, glowing as it passed over the Dionysians to crash to Earth in the neighbouring valley with a massive thump that shook the mountains. While the force of the explosion caused the meteorite to vaporise, the crater its impact made remains clearly visible, and samples from the compacted ground surface have allowed the time of the collision to be estimated. There was no science available at the time to allow the revellers to make sense of what had happened, so they interpreted it as a sign to embrace Christianity, something they did with immediate, uncompromising and enduring fervour.¹¹

For most of the time since the fall of this meteorite, the story of its impact on local beliefs was passed on orally from one generation to the next, and it was not written down until the 1890s. It is easy to believe that to discourage recidivism the people of the Sirente wished to keep alive the lesson their ancestors had been given, but what is more remarkable is the inescapable fact that the story was passed down by word of

mouth across so many generations, perhaps 60–70, without its essence being lost.

This is remarkable by modern standards, of course, for most of us could readily name instances of imperfect recollection in our daily lives. But then most of us have grown up reading, dependent on the written word – and its visual extensions – for knowledge of just about everything we know at the flick of a page or the press of a button. We have become dependent on writing and reading, and in the process have invariably convinced ourselves that the written word is superior – must be superior – to the spoken word. But it was not always so.

Think about why we communicate, why we speak, why we write. In today's modern, globalised world, the reasons are many – to inform, to counsel, to negotiate, to express our feelings. In the past, when human survival required generally less information and involved fewer choices, the same four reasons would also have applied, but would have been far more constrained. Take food choices as an example. In the course of a single day, many of today's urban dwellers routinely have to make food choices – in stores, markets and restaurants – that their ancestors 1,000 years earlier could not have imagined. Food in such times was a mere part of life, inadequate for many, and rarely a subject involving choice. Today in many richer countries, food is not just a matter of choice but is often emblematic, its methods of preparation and serving having almost countless permutations – all of which, of course, need words to explain, words that might be difficult for each of us to remember accurately were it not for writing.

Writing therefore helps us to manage knowledge when its volume threatens to become too great for us to remember otherwise. When faced with a need to undertake complex tasks, the capacity of our memory often proves insufficient. In non-literate societies the amount of information at an individual's disposal is likewise finite, so they are not generally able to undertake complex tasks (like brain surgery, satellite building or establishing zoos), which people inhabiting a

literate world have come to do. Yet writing did not evolve because people yearned to undertake complex tasks – it probably came about incrementally, in the name of pragmatism, because it was needed to help societies of increasing complexity manage themselves. Writing helps when things need to be counted, checked, weighed, then communicated accurately to people beyond earshot. Fortuitously, writing was also found to have the power to allow one individual to become better informed than others from whom particular knowledge could be kept. It became a weapon that was often wielded by a small elite in order to repress a majority. The subsequent invention of printing presses marked the beginning of the end of this, and written knowledge of almost every kind is potentially at everyone's fingertips today.

The focus of this book is not on writing but on its predecessor – speech – and the way this was used to transmit knowledge from one generation to the next. In today's literate societies, speech is generally reserved for relatively simple communication, whereas writing (and its scripted visual counterparts) is the method by which our most complex thinking is commonly shared. This situation underlines the point that speech alone is not generally able to adequately communicate all the complexities of the world as we know them today. Yet speech in non-literate societies may also not have been adequate to capture all of life's complexities, which is why so many such societies evolved behaviours – perhaps like the bacchanalia of Sirente – that may have been difficult even for their contemporary practitioners to adequately explain. This is because speech was the principal means by which non-literate societies communicated between the older and the younger generations – passing on knowledge through the ages – so it had to be optimally configured for this purpose.

Modern humans (*Homo sapiens*) first appeared on Earth about 200,000 years ago in tropical Africa.¹² From there, as some of their hominid ancestors had done, our species dispersed to other parts of the world.¹³ Being smarter than

these ancestral hominids, *Homo sapiens* asked questions their ancestors may not have thought to ask. How might we slaughter these animals many times our size? Can we eat this? How can we fashion tools to enable this? Instead of going around this large body of water to reach the other side, is there a way we can cross it? Groups of cooperating modern humans may have crossed the Red Sea 130,000 years ago, hopping from one island to another through the Farasan group to reach the coast of Asia. Arriving there, in what is probably the earliest example of human impact on natural resources, they gorged themselves on nearshore seafoods, even eating one particular shallow-water clam species almost to extinction.¹⁴

We can envisage situations where rudimentary speech evolved among these groups of humans to enable the crossing of small water gaps and the exploitation of unfamiliar food sources, but it was later, perhaps 60,000–70,000 years ago, that language became requisite. By then, *Homo sapiens* had followed the coast of southern Asia¹⁵ into what are now the island coasts of Indonesia – places like the south coast of Borneo and the north coast of Java – that were at that time, when the sea level was 80m (260ft) lower than it is today, contiguous with the rest of dry-land Asia. People found themselves in a situation where they wished to cross the ocean to reach the land they were convinced existed over the horizon.¹⁶ To achieve this they needed watercraft, and irrespective of whether these were simple bamboo rafts lashed together with vines or something altogether more sophisticated, it was not possible for one person to do everything alone. Cooperation was needed, direction was required, so effective communication using language is regarded as having been essential by this stage in modern human evolution.¹⁷

As discussed in more detail in Chapter 4, the level of the ocean surface (sea level) changed by 100m (328ft) or more every 100,000 years or so within the past few million years. These great swings of sea level repeatedly altered the coastal geographies of most places, but would have been most

noticeable in regions of what are now islands – like South-east Asia – yet were once contiguous continental land masses. Those ancestors of ours, naked with sun-browned skins,¹⁸ who reached the south-east corner of the Asian continent some 70,000 years ago when the sea level was 60m (200ft) lower than it is today, found that there was no more dry land by which they might extend their range southeastwards. They had reached the edge of a deep-water passage marking the Wallace Line, the name given by zoogeographers to the faunal boundary between the Asian and Australian continents, which no land mammals before humans had been able to cross.¹⁹

The cross-ocean journeys that took place 60,000–70,000 years ago in island South-east Asia involved the successful traversing of distances as great as 70km (43 miles), and resulted in the first human arrivals in Australia perhaps 65,000 years ago.²⁰ The successful and sustained colonisation of Australia at this time was almost certainly aided by the ability of the first Australians to communicate through speech. Life in Australia was hard, ultimately proving more challenging than it may have been along the tropical coasts of Asia. Not only was much of Australia uncommonly dry, but it was also inhabited by animals and plants with which the colonists were unfamiliar. It is likely that language became key to adaptation and survival. Knowledge about water sources, and about where to find food, and how to capture and consume it, probably all became part of a lore that was intentionally passed on from one generation to the next to ensure a tribe's survival. This is certainly what ethnographic information from Australian Aboriginal groups collected tens of thousands of years later suggests.²¹

Elsewhere in the world, the evolution of language also became key to the ability of *Homo sapiens* to survive in environments outside those in which it had originated. Clothing provides a good example of this ability. In many tropical climates, clothing to protect our bodies from the weather is not necessary to survival – we can be naked – but the movement of modern humans into cooler, higher-latitude

environments required us to find ways of enduring their colder, even freezing, conditions. Our ancestors therefore began using animal skins, learning how to treat them so that they would last longer. Several human groups experimented with clothing made from tree bark, a process that fortuitously led to the invention of paper – the essential partner of language on the journey to literacy – in several Asian and European cultures. All these comparatively complex processes required cooperation between humans that could only – it is thought – have come about after language of sufficient complexity had evolved.²²

Plant domestication – essential for feeding high-density populations – also required people to communicate through language. Which plants were suited to human consumption, how they might be cultivated, nurtured, harvested and prepared, were all questions that required the use of memory and communal knowledge sharing, underpinned by sufficient language abilities. In this way, language facilitated the rapid evolution of human societies that occurred in several parts of the world within the past few millennia. The transformation was from lifestyles based on hunting and gathering, which often required people to be nomadic, through the cultivation of crops and domestication of animals that allowed sedentary self-sufficient communities to be established, to the development of urban centres that housed hierarchical societies in which most residents were not directly involved in food production. They became the first consumers to be removed from the front line of production: the earliest merchants, food processors like bakers and butchers, and of course the priests and the soldiers responsible for others' welfare.

The earliest urban centres in the world were in those places – often close to fertile, well-watered river floodplains – where large numbers of people could be fed from cultivated crops and domesticated animals. There were some such places in southern China, where rice agriculture began perhaps 7,000 years ago in the lower valleys of the rivers Huanghe and Yangtze.²³ Others developed in Mesopotamia and depended

on a range of agro-pastoral activities, such as dry-farmed wheat, barley and lentils supplemented by sheep and goat husbandry.²⁴ Complex, comparatively densely populated societies of this kind involved organisation and required management to endure, both of which in turn necessitated language of appropriate complexity. It is no coincidence that writing evolved more rapidly in such societies than those elsewhere.

In other parts of the world – in Australia, parts of Africa and the Americas, for example – opportunities for plant and animal domestication were fewer and the pressure for this less exigent, so people continued to feed themselves largely through hunting and gathering. Language in such situations may have developed as the need arose for new words and concepts; it therefore became different in both vocabulary size and descriptive focus from the way that language evolved in cities. What is of considerable interest to this book are the cultural dimensions of language evolution – the development of words and concepts that describe worlds of the mind.²⁵ The links between imagination and myth, especially as they relate to human memories of calamitous events, are of especial interest.

In March 1847, Mt St Helens – one of the volcanoes in the Cascade Range in the north-west USA – erupted spectacularly. A painting of the event is shown in the colour plate section and not much imagination is needed to see the eruption cloud as a giant, long-winged bald eagle, a creature with which local people were familiar. The head and beak of the eagle appear orange-red, the cloud of steam rising from the volcano's crater (perhaps fortuitously backlit by the moon); the body and feathers of the giant bird are darker yet clearly discernible. The eagle's beak appears fastened to the mountain, as though tearing at living flesh, rivulets of blood running from a creature tethered there, its roars of pain heard by all. For non-literate observers accustomed to animistic interpretations of such phenomena, an aggressive eagle analogy was obvious.

In other parts of the world where active volcanoes are found, there are also myths about giant eagles attacking

people confined on mountaintops. A well-known example is that of Prometheus, who stole fire from the gods in Greek mythology. Prometheus introduced fire to the human race, something for which he was punished by Zeus, who had him chained to a mountain in the Caucasus where a large eagle pecked daily at his liver (his immortality caused this organ to regenerate each night) something that was accompanied by loud noises and earth tremors (the screams and thrashing of the hapless Prometheus). It is understandable that the story of Prometheus has been interpreted as that of an eruption. There are similar mythical interpretations of eruptions from active volcanoes in many other parts of the world.²⁶ In some instances these myths have even pointed scientists towards unsuspected activity within human memory of ancient volcanoes, previously assumed to be long dead.²⁷

Another example from the Pacific makes the link between memorable geological events and human mythmaking even more explicit. Compared to the continents, the ocean-floor crust is comparatively young. You can see this when you look at the global distribution of the indicators of geological youthfulness – like repeated earthquakes and volcanic eruptions – which are clustered in and around ocean basins, especially the Pacific. All oceanic islands began life as ocean-floor volcanoes, labouring to survive and grow despite the pressure of often several kilometres of overlying ocean water. Many failed, of course, yet others succeeded not only in building themselves up to the ocean surface, but also in growing above it, thereby forming some of the spectacularly active volcanic islands found today in the world's oceans.²⁸ In some places in the Pacific, the summits of active volcanoes lurk just a few tens of metres beneath the water's surface. When these volcanoes periodically erupt, the forced mixing of cold ocean water and liquid rock (heated to perhaps 1,000°C/1,800°F) makes for memorable (phreatomagmatic) explosive eruptions.

Sometimes the clouds of steam and ash from these volcanoes produce intriguing shapes (see colour plate section). Occasionally such eruptions produce islands that may survive

anything from days to years before succumbing to the unceasing wave attack. This combination of circumstances is thought to underlie the stories that exist in most Pacific Island cultures about the demi-god Maui, who sailed from place to place with a giant fishhook that he used to pull fish-shaped islands up from the sea floor to the surface. Many descriptions of this process emphasise the 'island-as-fish' detail (see colour plate section). The thrashing of the fish as it was being hauled from the water agitated and discoloured the ocean surface, just as happens during such shallow-water volcanic eruptions. Research into the geographical distribution of the Maui legends in the Pacific has allowed insights into such eruptions in the time before written records began.²⁹

The purpose of relating these stories is to illustrate how the evolution of human imagination may have been stimulated by witnessing dramatic natural events (like volcanic eruptions, giant waves and abrupt land displacement), which were felt to demand rationalisation because of their implausible nature and their apparent unprecedentedness. It is the same for us today. Confronted by phenomena with which we may be unfamiliar or for which we feel official explanations are inadequate, there is scope for us to use our imagination. The idea of 'aliens among us' may be considered an extreme example of such phenomena, but it sits on the same imaginative spectrum as some of our explanations for more pedestrian occurrences, such as unexpected traffic hold-ups or commodity shortages. The point here is that every culture on Earth, past and present, uses imagination to supply explanation where none is readily forthcoming from trusted sources.

Literate people – those who can read and write – are often dismissive, even it should be said sometimes contemptuous, of people and societies that are non-literate. In this sense, literacy is tyrannical, for it encourages us to undervalue our pasts – the knowledge amassed by those countless ancestors of ours who could neither read nor write. Literacy spawns

arrogance. We might ask ourselves: if there is just so much information 'out there' on the internet and in libraries, and we have no hope of absorbing it all, what value can there be in investing time in trying to understand knowledge that has never been written down? However, what we typically forget in all this is that most of the world of information in which we find ourselves wallowing today was, until comparatively recently in human history, known only through speech. It was information encoded and processed and communicated orally.³⁰ And, of the tiny proportion that has been written down, most has commonly been dismissed as unimportant – primitive, romantic, at best symbolic or metaphorical, certainly not real history. Many scientists are now starting to feel differently, especially about those types of myth, named euhemeristic, that appear likely to be recollections by preliterate peoples of memorable events, those that future generations should know about.

The place appears dry and barren. We might consider it endlessly so. But to the people squatting in the shade of the trees adjoining the small pool of water, the landscape is neither harsh nor welcoming. Rather it is adequate, sufficiently replete with opportunities for subsistence. For the people and their ancestors have survived in such places for hundreds if not thousands of years, but the knowledge of how to do so was not acquired afresh by each new generation. It built on knowledge passed on from the old to the young, and enabled the people to face every new day more confident than they might otherwise have been that they would be able to sustain themselves and their kin from the land to which they were bound. The stories were related in the evenings, as the people bathed in the glow from the embers of the cooking fires. The first stories were always about their history, revolving around whence the ancestors had come, and whom among that number was particularly esteemed and why. The stories of history ran into those of geography. They were stories about why this place is dry and whether it had always been thus; about the adjoining lands where contrasting conditions prevail; about the animals that inhabit the land

and how they might be captured and their flesh consumed; about where people might find water to drink; about places to avoid.

It could be argued that the purpose of oral communication between generations in such contexts was principally pragmatic – passing on the wisdom of the ancestors to younger people so that they might survive to one day pass on this knowledge to their children. Knowledge was key to survival; survival is the most basic of instincts for living things. With each new generation, new knowledge would be added, resulting – after a thousand years or more – in a formidable body of traditional wisdom. Research suggests that it was grandparents who became key in passing on this wisdom to their grandchildren, removing the obligation from parents who generally had other, more time-demanding roles in such groups.³¹

To engage young people and to encourage them to value and remember this information, it was often embellished – dressed up in arresting clothing. Exaggeration and mythmaking were common, especially in detailing the exploits of distant ancestors – people were giants who strode across the land, shaping it, taming it and making it fit for others to occupy. The reinforcement of group identity was also important for ensuring the cohesiveness of the group. This is something that was often achieved through traditional practices – the group's unique ways of doing things. These ranged from spiritual beliefs and worship protocols to more mundane things like food preparation and even forms of greeting. Finally, the medium of communication of knowledge transfer from old to young was commonly designed to maximise the listeners' attentiveness, ensuring that they would remember the message the next day ... and long thereafter.

From numerous observations of traditional storytelling of this kind in many cultures across the world, we know much about how messaging was enhanced through performance. Traditional storytellers rarely sit still. Often they stand, mimicking the actions of the characters whose

exploits they are relating. Sometimes they dance or clown, making their audience laugh and encouraging its attention to the narrative. Sometimes they masquerade, wearing masks or dressing in ways that caricature those they are describing. Sometimes the power of the narrative alone is enough to captivate the listeners, in the same way as many of us today can be captivated by a gripping film or novel. For as most successful storytellers know, whether they be novelists or screenwriters, as a species we seem to have evolved a weakness for narrative. Yet what we often today label escapism may well have developed in our species from simple pragmatism. Our modern predilection for narrative may derive from our attention to survival stories.

This is not everyone's view, of course. Many people believe that every person has a 'creative streak', implanted eons ago within our genetic make-up, which explains our cumulative achievements in art and music, for example. It may also explain why we are curious and innovative, why we have 'advanced' so much compared with other species less fortuitously endowed. I have a less conjectural view. It seems to me that tens of thousands of years ago, our ancestors were never arbitrarily creative. Everything they did was purposeful because they had to spend so long acquiring the food they and their dependents needed to survive. Thus early art – cave paintings, for instance – was designed to supplement memory in order to render more effective the understanding of history and geography by each successive generation.³² As that purpose inevitably declined in urbanising societies, so such forms of art took on a life of their own, culminating in artworks that even lack obvious meaning, at least to the untutored eye. In a parallel way, storytelling evolved in non-literate cultures to pass on practical information, but in order to convince every new generation of its importance (and ensure that it passed it on to its children), it was made more memorable through exaggeration, identity reinforcement and exciting methods of communication. The pragmatic roots of such storytelling

have been lost in most of today's literate cultures, so it is only the other things that remain: narrative, drama and performance for their own sake.

Ten thousand years ago, all those cultures on Earth that had been established for some millennia had knowledge bases that relied almost entirely on oral communication. It is likely that some of this was formalised – a body of lore that all adolescents needed to know before they could be regarded as adult – and some less so. There are likely to have been many cultural practices governing the teaching of tribal lore, usually gender specific and ranging from the simple requirement that initiates repeat key texts from memory to ones involving practical tests of understanding. The latter may have included requiring initiates to spend extended periods of time alone away from their tribe, surviving on wild foods and communing with the spirits of the ancestors, thereby validating their claim to adulthood.

The San peoples of southern Africa comprise a cultural group likely to have existed for 50,000 years or more.³³ Responsible for much of the region's rock art, the San also have formidable oral bodies of traditional lore and practise various forms of initiation, which for boys represent their future roles as hunters and food providers, and for girls focus on childbearing. Storytellers are lauded among the San people and routinely employ exaggeration and mythologisation to captivate their audiences; in one such tale, aggressors are transformed to 'black ants' swarming through the camps of the Early People, eating all they encounter. Yet many San stories involve imparting practical knowledge – they range from stories articulating the subsistence possibilities of various places, to more routine tales describing 'sightings of water sources, plants ripening, stands of fruit and nut trees, animals, tracks'.³⁴ Performance by storytellers is common and occasionally intensifies to frenzied trances. Much San rock art has been interpreted as images of performed storytelling and may indeed have been created by the performers, perhaps shamanic, who used painting to remind their people about a particular performance and its purpose.

Rock art elsewhere has inevitably been interpreted less circumspectly. Many of California's surviving petroglyphs and pictographs are seen as an astonishing 'record of prehistoric earthquake and volcanic activity',³⁵ intended to inform future generations about the hazards that lie within the apparently benign landscapes of the state. Yet if such stories, including those about Crater Lake described earlier, created the larger framework for Native American youngsters to understand the history of the place in which they dwelt, more practical everyday advice was also provided orally in ritual contexts. In North America, the nature of these varied depending on the way of life followed by particular tribes.

The Tlingit people of south-east Alaska have a set of traditions (*tamánwit*) that explain the nature of appropriate Tlingit behaviour, especially in relation to the sustainable use of the wild foods on which the people were once entirely dependent. The Huna Tlingit had a gull-egg collection practice that is adjudged as having required 'a sophisticated appreciation of ... gull nesting biology and behaviour'.³⁶ Through oral instruction, the Tlingit were taught to remove gull eggs from nests containing just one or two eggs, no more. The science that validates this practice is that a female gull aims to lay three eggs each season, so if one is taken when there are just two laid, she will lay another two to reach that number – a total of four. If two are stolen from a nest with two, she will lay another three – a total of five. But if a nest is found with three eggs in it, the chances are that the mother gull has finished laying and could not lay more eggs even if she so desired. This collection strategy optimises the chances of each female laying three eggs while supplying extra to the Tlingit collectors, something that is designed 'to conserve local gull populations while affording a substantial and predictable harvest'.³⁷ We can infer that similar instances of sustainable harvesting of wild foods underpinned Native American use of other resources in ancient times. For example, it has been shown that at least 700 years of fur-seal hunting on the Washington coast (north-west USA) had no impact on seal populations,

plausibly because of (now-lost) oral traditions governing people's sustainable harvesting.³⁸

These examples are intended to emphasise the point that non-literate cultures utilised oral traditions for a number of practical purposes, ranging from the sustainable use of particular resources to wider instruction in lore for survival. Many oral traditions also focus on history, begging the question as to why societies primarily concerned with surviving needed to know about this, apparently irrelevant, topic. Perhaps it was for the same reasons as we today learn history. It counters the forces of globalisation and cultural homogenisation by giving us a unique identity. It celebrates the unique journeys that we and our ancestors undertook to reach the place we are in now, even though that place is shared by other people whose ancestors reached it along different routes. Ultimately, history can transport each of us to a purer, quieter place where, as Ralph Waldo Emerson wrote, there are voices that 'speaketh clear' to us.³⁹

The oldest known rocks on the planet we inhabit formed almost 4,500 million years ago; life appeared at least 3,500 million years ago; human ancestors (hominids) almost five million years ago and our species, *Homo sapiens*, around 200,000 years ago. We began wearing long trousers about 15,000 years ago.⁴⁰ History is a subjective business – you must choose your range, for nobody can hope to synthesise it in its entirety.

You also need to be clear about your information sources. Most historians define 'history' as observed history, validated by having been written down shortly after the events recounted took place. Then there is a time dominated by oral communication between generations, a process that some will tell you is fraught with dangers around obscuring and omission of accurate detail, which is why it is sometimes tendentiously labelled 'prehistory'. There is then an even earlier history, extending backwards through a time when humans existed but from which no human memories of things that happened have been preserved, a time that can be interrogated only by

science. Tentatively we might call this ‘inferred human history’, because science cannot reconstruct human thoughts, so what we imagine might have happened and why may actually be completely wrong. Then with more *éclat*, we drift into ‘geological history’ – most of our planet’s history – where hard impersonal data acquired through often centuries of deductive enquiry have allowed us to build convincing impersonal models of how things once were and how they became what they are today. Much of this type of history is inescapably vague because the time periods we are dealing with are so long. How do we process what might have happened in a million years? We cannot do so readily and the temptation to conflate time – to treat a million years as a thousand or even a hundred – is something that often proves difficult to resist.

The main focus of this book is a slice of the grey area within prehistory and inferred human history, a time from the coldest part of the last great ice age, about 20,000 years ago, to 1,000 years or so ago, when at least a few societies in almost every part of the world had acquired some degree of literacy. This grey area was dominated by history communicated orally and involved human societies in every part of the inhabited world. So how accurate is oral history compared to the other types?

Most people to have written on this subject, historians and anthropologists in particular, have been quite rude about oral histories, focusing on their manifest limitations rather than on their potential as ways of helping unravel the history of the distant past. To be generous, the reasons for such rudeness are easy to understand. They include the tyranny of literacy (mentioned earlier) – the idea that the written word, by virtue of rendering information essentially static over long time periods, appears naturally superior to the dynamic stories told by non-literate people. Another reason is the belief that human memory simply does not have the capacity to retain sizeable bodies of knowledge without *aides mémoires* like books and computer monitors, or even notepads. What is this belief based on? It is based on the way we are today, not the

way our ancestors were a millennium or more ago. On the face of it, it still seems reasonable – after all, who of us can store more than a few telephone numbers in our heads? But if we had no choice, if we needed the information in order to survive, perhaps we might acquire the ability to carry even a small telephone directory around in our minds.

The point here is that we cannot readily measure the cognitive abilities of non-literate people in a non-literate world by our own – the abilities of literate people inhabiting a literate world. Naturally we would be inclined to undervalue those of our non-literate forebears. We see such bias in hundreds of instances, which have led to an orthodoxy that memories communicated only orally mostly endure only a few hundred years. But what if we could prove that they could last far, far longer? That would stir things up. That might force us to re-evaluate our assumptions about our non-literate ancestors.

The main purpose of this book is to demonstrate that there are oral histories about rising sea levels from Aboriginal Australia, and plausibly cultures in many other parts of the world, which have endured several thousand years – more than 7,000 years in the Australian case – and that they should therefore compel us to shrug off our time-hardened scepticism about how long such traditions might endure, and look with a less critical eye at some of the others that remain extant. The implications of doing so are immense, for not only does it restore some credibility to the reputation of methods of oral communication in non-literate cultures, but it also hints at hitherto unsuspected depths of the memories of our own species.

Chapter 2 explains the societal context of Australian Aboriginal storytelling – how a people's beliefs and history shaped their reality in ways that contrasted sharply (and painfully) with those of the British when they began to settle Australia in 1788. Chapter 3 describes the 21 known groups of stories about coastal drowning along the Australian fringe, and the details of the process they describe and its often memorable life-changing consequences.

The way in which the ocean surface has changed – by a rise of more than 120m (400ft) – since the coldest time of the last ice age is described in the first part of Chapter 4. The use of this knowledge to determine minimum ages for Aboriginal Australian drowning stories is explained towards the end of the chapter.

Shifting the focus away from Australia, Chapter 5 examines the nature of comparable drowning stories from other parts of the world, particularly in north-west Europe and along the fringes of the Indian subcontinent. Ancient stories other than those describing coastal submergence are outlined from different parts of the world in Chapter 6 – stories describing meteorite falls (like that in the Italian Sirente discussed earlier), volcanic eruptions, abrupt land movements and even the nature of animals that became extinct long ago.

The final chapter asks whether we have underestimated ourselves by denying for so long that oral traditions may preserve knowledge across a sweep of human history far grander than we suspected, and suggests where the new frontiers of knowledge in this field might lie.