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Becoming elands' people: Neoglacial subsistence and spiritual transformations in the Maloti-Drakensberg Mountains, southern Africa

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With new direct dates from rock paintings comes an unprecedented opportunity to relate excavated archaeological data to the parietal record in southern Africa's Maloti-Drakensberg Mountains. Anchoring dated art to recovered palaeoenvironmental, faunal and technological data enables the incorporation into socioecological models of ideational inferences, affording insights into how hunter-gatherers perceived their mountain habitats. Of particular interest is the late Holocene Neoglacial (~3.5–2 kcal BP), during which skilled paintings were being made just as the region experienced dynamic changes owing in part to climate change. Responses of local foragers are evident across a range of cultural spheres, including dramatic subsistence transformations. With the Maloti-Drakensberg's well-known "traditional corpus" of fine-line art now known to extend back to at least 3 kcal BP, here we explore how such changes may have precipitated – and in turn been influenced by – ontological shifts in relation to the food quest. As desirable game declined and hunting windows narrowed, we suggest that Neoglacial foragers sought to manage scheduling and social conflicts through enhanced spiritual negotiation with non-human entities in the landscape. Facilitated by the supernaturally charged nature of their elevated cosmos, this intensified spiritual labour may have found material expression in an elaborate new style of painting.

Keywords: **Maloti-Drakensberg; shaded polychromes; Neoglacial; intensification; environmental ontology**

1. INTRODUCTION

Scholars of past hunter-gatherers have long sought to make the excavated and rock art records mutually intelligible. Difficulties dating rock art, however, together with incongruencies in the timescales to which each record speaks, bedevil most attempts to do so. In southern Africa's Maloti-Drakensberg Mountains (Figure 1), the potential power of articulating these records was understood from the outset of systematic research there. The pioneering rock art researcher, Patricia Vinnicombe (1972:195), argued compellingly that the discordance between the frequency of animal taxa painted versus those recovered in excavation shows Maloti-Drakensberg societies did "not necessarily relate life to the rumblings of their stomach". Her then husband, the "dirt" archaeologist Patrick Carter (1978), listed the frequency of painted sites as among the main reasons for choosing southeastern Lesotho for his seminal doctoral study. Nonetheless, Vinnicombe and Carter's efforts were hamstrung by an overall dearth of available data, competing interests, and, most intractably, the inability to chronologically anchor the rock art. There was a will, in other words, but not a way.

Though much data has been generated in the intervening half century, the situation remains largely unchanged (Mitchell, 2009:99). Yet, success in this old endeavour is taking on a new urgency. Novel theoretical insights, rendered under the umbrella of the "New Animisms", are making it increasingly clear that members of small-scale societies, and hunter-gatherers in particular, lived lives steeped in belief and religion. No aspect of their cultural system – not subsistence, mobility, technology, exchange, social relations, nor anything else – can be divorced from the ideational (Hallowell, 1960; Tanner, 1979; Bird-David, 1999; Viveiros de Castro, 2004; Willerslev, 2004; Hornborg, 2006; Wallis, 2009; Harvey, 2010; Descola, 2012; Halbmayer, 2012). These insights are born of both re-readings of traditional ethnographies and newly undertaken ethnographic studies across the globe. Southern Africa itself is one such region of active contribution, in which it can be shown that forager "spirituality" and "everyday life" are indivisible, especially since animals, spirits, people, ancestors and elements all have agency and personhood (e.g. McGranaghan and Challis, 2016; Guenther, 2020a,2020b; Challis and Skinner, 2021; Skinner and Challis, 2022; Stewart, In press). It follows that archives of hunter-gatherer pasts in southern Africa are

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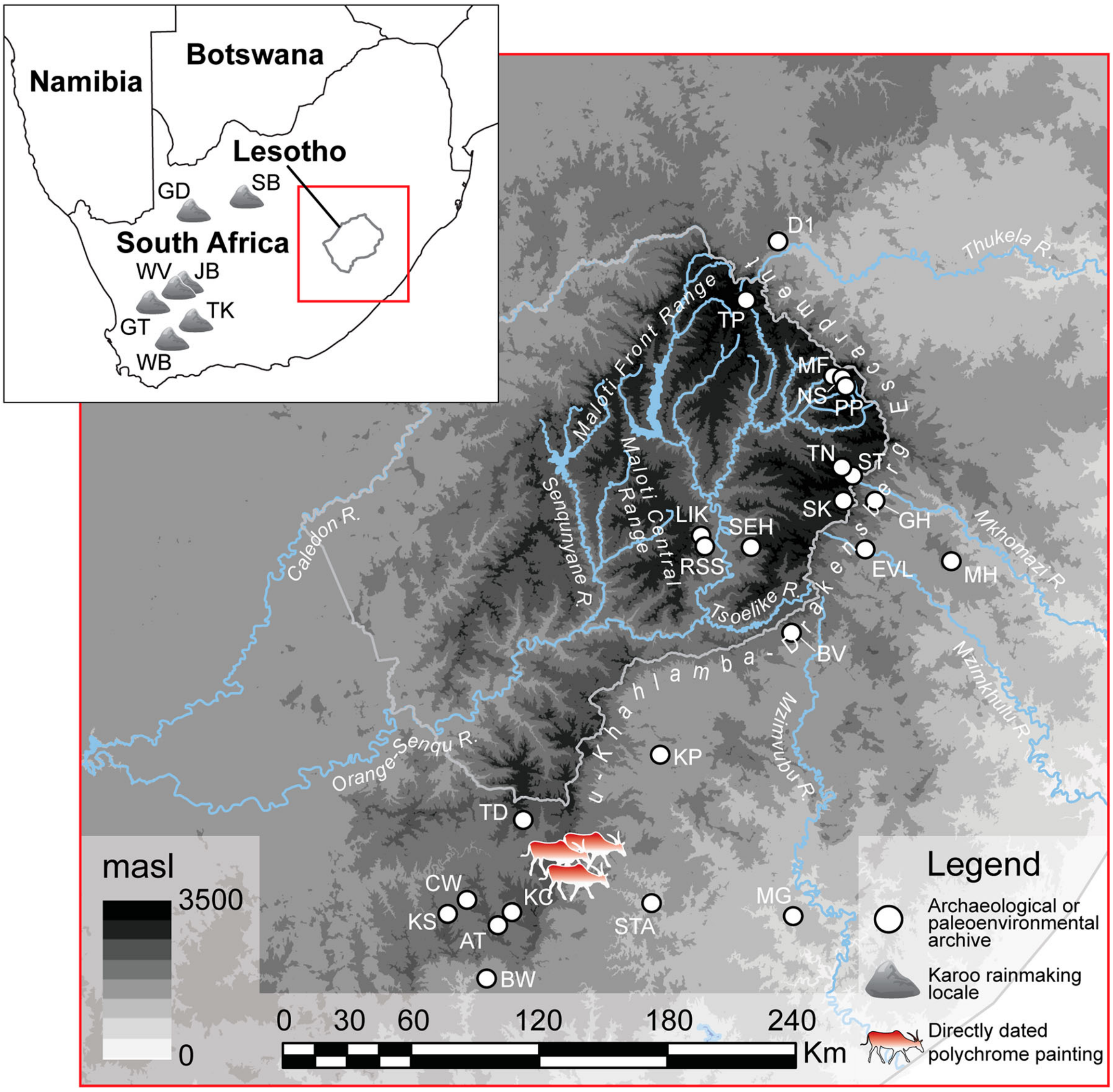

Figure 1. Map of southern Africa and Maloti-Drakensberg region with key sites/locales discussed in text or with Neoglacial-aged deposits. AT: Athol; BV: Belleview; BW: Bonawe; CW: Colwinton; D1: Diamond 1; EVL: eMvuleni; GD: Grootdrink; GH: Good Hope; GT: Groot Toren; JB: Jagersberg; KC: Kilchurn; KP: Kenegha Poort; KS: Kopshoring; LIK: Likoaeng; MF: MG: Mpongweni; Mafadi Summit; MH: Mahwaqa; PP: Popple Peak; NS: Njesuthi Summit; RSS: Rain Snake Shelter; SB: Strandberg; ST: Sani Top; SEH: Sehonghong; SK: Sekhokong; STA: Strathalan A; STB: Strathalan B; TK: Tierkloof; TN: Thabana Ntlenyana; TD: Tiffindell; TP: Tlaeeng Pass; WB: Wittberg; WV: Waterval.

as much a product of spiritual life as they are of "making a living".

For the San and their ancestors, these archives are threefold: (1) ethnography, (2) rock art, and (3) excavated archaeology. In a seminal study, Ouzman and Wadley (1997) advocated for the integration, where possible, of these archives if we are to gain a fulsome picture of Holocene foragers in southern Africa. Taken together, their cumulative strength forms a cable of inference (cf. Wylie, 1989) that is greater, they argued, than the sum of its parts. Importantly, the second archive – rock art – can be deciphered with a relatively high degree of resolution when analysed in conjunction with the first – ethnography – and especially that pertaining to San beliefs. Most famously, David Lewis-Williams triangulated (e.g. 1998) between the ethnographic record of the twentieth century Northern (Kalahari) San, the historical nineteenth century record of the Southern (Karoo and Mountain) San, and the Maloti-Drakensberg rock art record in order to interpret the latter. The cohesiveness of the visual metaphors exposed and developed since has firmly established rock art as an independent pillar of ontological inference, especially when applied to the hyper-local. What is still lacking, with some notable exceptions (e.g. Ouzman and Wadley, 1997; Challis *et al.*, 2008; Mazel, 2009; Kinahan, 2017), is a correspondence between archives 2 (rock art) and 3 (excavated evidence) (Mitchell, 2002; cf. Witelson, 2022). Both are exceptionally well preserved in the Maloti-Drakensberg, owing to the mountains' inaccessibility and distance from the built environment.

Moving forward, and drawing inspiration from the New Animisms, we advocate in this paper for a new approach to integrating these three dimensions of San archive: using the lens of what we term *environmental ontology* to generate hypotheses of holistic cultural transformations in the past. Environmental ontology refers to the way in which the landscape would have been seen by indigenous people – the San, their ancestors and descendants – an ethnographically-informed indigenous perspective on the environment and its resources, especially relating to peoples' relationships with the entities that embody and influence those resources (e.g. Challis, 2019; Guenther, 2020b; Challis and Skinner, 2021; Skinner and Challis, 2022; Stewart, In press). Because environments and their resource availabilities change, so foragers must continually broker relations with the non-human beings in their dynamic world. Working from the known to the unknown, we utilise ethnographic understandings allied with the hyper-local parietal (painted) archaeological record as an interpretive mesh to "sieve" spiritual insights from its sedimentary counterpart.

Specifically, we explore the spiritual ramifications of the Neoglacial (~3.5–2 kcal BP), a late Holocene cold phase that corresponds with evidence for environmental and cultural dynamism in the Maloti-Drakensberg (Stewart and Mitchell, 2018a, 2018b). We show how fairly dramatic subsistence transformations, rooted in ecological change, may have precipitated – and in turn been facilitated by – shifts in San-specific environmental ontology. Mountains played a central role in San belief systems (Orpen, 1874; D. Bleek, 1933:310). Local and regional historical testimonies bring the mountains to life by suggesting that broken topography animated the cosmology of the San idiom. Such convictions are likely to have considerable time depth, as indicated by local rock art imagery (Challis, 2019). Yet belief systems, while perhaps not changing radically year to year, would likely have accommodated shifting socioecological conditions (McGranaghan, 2012, 2014a,2014b; Guenther, 2015). Harnessing contextual data afforded by the excavated archaeological record, here we explore possible ontological impacts of environmentally-driven shifts in the abundance and structure of key foraging resources that lie at the core of such beliefs.

Central to our argument are polychrome (many-coloured) paintings of common eland (*Taurotragus oryx*), especially those rendered with the exquisite shading technique (Figure 2), termed "shaded polychrome". These are images that have brought world-renown to southern African rock art (e.g. Vinnicombe 1976). This technique seems to have begun contemporaneously across the Maloti-Drakensberg, appearing at the same point in the relative sequences (Mazel, 2009:92–3) of three research areas (Pager, 1971; Vinnicombe 1976; Russell, 2000). New direct chronometric dates for shaded polychrome eland place their origins firmly within the Neoglacial (Bonneau *et al.*, 2017a), allowing us to articulate them with dated archaeological and paleoenvironmental records. We find that eland paintings become richly embellished just as this species goes from being the sole large prey to effectively disappearing from the highland archaeological record. Approaching these results with emic insights derived from San ontology and the knowledge that rock paintings are a negotiation with supernatural entities in the landscape (animals, the rain, the spirits), we contend that shaded polychromes' inception during the Neoglacial is an outcome of intensified brokering of spiritual relations. More care and attention came to be afforded to the relationship with these entities, especially eland (Challis and Skinner, 2021), including its painted form. Indeed, we take our title, following Vinnicombe, from the Phuthi man, Mapote, who said he would paint an eland because the Mountain San were people "*of the eland*" (How, 1962:38).

Before detailing these shifts, we first outline today's mountain environment and vegetation belts, as well as its historically known fauna. Next, we set the indigenous idiom of San belief in these mountains – the emic, or insider's, view of the topography – before moving on to the Neoglacial environmental changes that would have prompted ideational responses.

2. ECOLOGICAL STRUCTURE: CLIMATE, VEGETATION AND FAUNA

The Maloti-Drakensberg Mountains cover nearly 40 000 km^2 and constitute southern Africa's most extensive highland zone (Figure 1; Carbutt, 2019). They centre on the deeply dissected plateau of Lesotho and encompass adjacent parts of South Africa's KwaZulu-Natal, Eastern Cape and Free State Provinces. The tallest peaks rise above 3000 m, with Thabana Ntlenyana (3482 m asl) in eastern Lesotho Africa's highest south of Kilimanjaro. The mountains' intricate network of drainage feeds southernmost Africa's largest river, the Orange, known in Lesotho as the Senqu. Rising in that nation's high northeast, the Orange-Senqu first flows south, partitioning the Drakensberg range and Central range of the Maloti (Figure 1), before heading west to cross over 2000 km of increasingly arid interior plateau to the Atlantic Ocean. East-flowing drainages along the uKhahlamba-Drakensberg Escarpment, which constitutes Lesotho's eastern border with South Africa, form some of the largest rivers on the Indian Ocean coastline: the Thukela, Mkhomazi, Mzimkhulu, Mzimvubu and Kei.

2.1. Present-day climate

The current climate of the Maloti-Drakensberg region is continental. Summers are warm and humid, and winters dry and cool to cold. Situated in southern Africa's summer rainfall zone, the region obtains roughly 80% of its annual rainfall between October and March in the form of high-intensity thunderstorms. Rainfall is highest along the uKhahlamba-Drakensberg Escarpment, where mean annual precipitation (MAP) can exceed 1500 mm and is augmented by orographic mists (Killick, 1963; Mucina and Rutherford, 2006; Schulze, 1979; Sene *et al.*, 1998). The highland valleys in the rain shadow immediately west of the Escarpment see a sharp drop in precipitation (MAP: 500–600 mm), which increases again as one moves still further west towards lowland Lesotho (MAP: 700–800 mm) (Sene *et al.*, 1998; Hydén, 2002).

Temperatures vary strongly by altitude, season and time of day. Mean annual temperatures (MAT) range from ~15°C in lowland Lesotho to ~6°C in the high Maloti-Drakensberg (Grab, 1994, 1997). Frost is widespread and ranges from ~31 days per year in the lowlands to ~150 days per year in the highlands (Schwabe, 1995). Frosts in the eastern highlands often exceed 200 days per year (Killick, 1978; Grab, 1997). While westerly cold fronts can bring snow to the highlands year-round, snowfalls usually occur from April to October with the heaviest incidences from June to August (Mulder and Grab, 2009). Due to their latitudinal position, the southern Maloti-Drakensberg are colder than the north and springtime (September) snowfalls there are both more frequent and can occur at lower altitudes (>2800 m asl) (Mulder and Grab, 2009:231). Dense fog can occur year-round and high mountains regularly experience thick orographic mists (Killick, 1963:196). Lightning activity in summer is exceptional even by global standards, with strikes on basalt summits violent enough to shatter bedrock and so contribute to landscape formation (Knight and Grab, 2014; Mayet *et al.*, 2016).

Figure 2. Examples of shaded polychrome eland paintings from various Maloti-Drakensberg locales, including: (a) Sehlabathebe, highland Lesotho; (b) Mount Fletcher, Eastern Cape, where a shaded polychrome eland is clearly superimposed on non-shaded bichromes; and (c & d) Game Pass Shelter, KwaZulu-Natal, so-named on account of its position overlooking a historic game trail into and out of the highlands. Images by the authors.

2.2. Vegetation belts

The Maloti-Drakensberg region lies within southern Africa's Grassland Biome, although its topography sets it apart from other grassland habitats. Grass communities in southern Africa are often differentiated according to palatability, or degree of nutritive benefit, to grazing animals. "Sweetveld" is dominated by grasses that remain palatable and sustain animal body condition through the year. They grow in relatively warm and dry environments on soils derived from acidic (e.g. sandstones, quartzites) to intermediate (e.g. granites, shales) parent material, but in mesic conditions when soils are more basic (e.g. volcanics) (Ellery *et al.*, 1995; O'Connor and Bredenkamp, 1997). In contrast, "sourveld" occurs in areas where available moisture is high and soils are intermediate to basic, or in warmer and drier areas where soils are acidic. Sour grasses lose nutritive value after the growing season (Rowe-Rowe and Scotcher, 1986:14), leading to health declines should animals continue to forage exclusively on them in winter (Ellery *et al.*, 1995; O'Connor and Bredenkamp, 1997). Complicating the situation is that while some grass species are either sour or sweet, many can be either depending on local conditions (Mentis and Huntley, 1982). In the mountainous Maloti-Drakensberg, cool temperatures and high rainfall on mostly basaltic substrates generally favour sour grasses. Nevertheless, there are strong gradients of palatability conditioned by altitude and aspect, as well as localised substrate-related anomalies.

Vegetation communities in the mountains occur as a series of altitudinally-stacked belts. On the western (Lesotho) side of the uKhahlamba-Drakensberg Escarpment, which constitutes the Maloti mountains and the vast bulk of the region (see Figure 1), the lowest altitude (~1600–1900 m asl) areas occur along the terraces and valley slopes of the Orange-Senqu River and its tributaries. Today this fluvial network is covered with Senqu Montane Shrubland, characterised by diverse and abundant evergreen trees and shubs, and thicket in sheltered valleys (Mucina and Rutherford, 2006). Interspersed with the woody taxa are tall, heliophyte, perennial grasses; all are C_4-photosynthesizing, and numbers are mildly to highly palatable, including species of *Eragrostis*, *Hyparrhenia* and *Themeda*. However, much of the vegetation comprising this unit stems from recent eastern intrusions of more xerophytic, lowland-affiliated taxa. Prior to the onset of highland settlement by isiNtu-speaking groups in the nineteenth century, *Themeda triandra* – a C_4 species renowned for its superb pasturage (Tainton, 1981; Snyman *et al.*, 2013) – was almost certainly dominant here (Staples and Hudson, 1938; Bawden and Carroll, 1968; Swallow *et al.*, 1987).

On the overlying plateaus and high mountain ridges, at altitudes of ~1900–2900 m, is Lesotho Highland Basalt Grassland (Mucina and Rutherford, 2006). This is a denser and shorter C_4 grassland with *Themeda triandra* prevalent up to ~2100 m on south-facing (cooler) slopes and ~2700 m on north-facing (warmer) slopes. Sparse shrubs dominated by *Passerina montana* and *Chrysocoma ciliata* also occur, especially in disturbed areas. As with Senqu Montane Shrubland, however, these and numerous other pioneer taxa are considered to be recent invaders resulting from more than a century of overgrazing (Swallow *et al.*, 1987:20; Mucina and Rutherford, 2006).

Above these altitudes, but still within the Lesotho Highland Basalt Grassland belt, a major ecological transition occurs from a predominance of C_4 to one of C_3 grasses. These are cold-adapted (Pooid) afroalpine grass types that dominate the highland landscape up to ~2900 m asl, with species of

Festuca and *Merxmuellera* the most prevalent. Shorter, harder and less sustaining to grazers than *Themeda*, they are palatable when young but quickly become unappealing and indigestible (*letsiri* or "sour") after the relatively short growing season at these altitudes (Tainton, 1981). The ecological contrast between the two grasses is such that some advocate splitting this vegetation unit in two, with a montane belt (~1900–2300 m; C_4) below an upper subalpine belt (2300–2900 m; C_3) (Morris *et al.*, 1993). However, the large vertical overlap between *Themeda* and *Festuca* speaks to this unit's cohesiveness as a montane belt, albeit one with complex, aspect- and altitude-driven vegetation gradients. Nevertheless, the changing vertical position of vegetation belts dominated by C_3 versus C_4 grasses has long been recognised as an important indicator of regional climate change (Vogel, 1983).

The Maloti-Drakensberg's highest reaches (2900–3400 m asl) constitute southern Africa's only alpine environment, and a well-known hotspot of African plant biodiversity and species endemism (van Wyk and Smith, 2001; Carbutt and Edwards, 2004, 2006, 2015; Carbutt, 2019). Here we find Drakensberg Afroalpine Heathland (Mucina and Rutherford, 2006), a fynbos-affiliated *Erica-Helichrysum* heath with hard-leaved, dwarf alpine bushes interspersed with short, tussocky *Festuca-Merxmuellera* grasses (all C_3Pooids). The basalt-derived soils on which these temperate grasses mostly grow are heavily leached by high, regular rainfall at these altitudes, impoverishing their nutrient base and limiting grazing potential (Rowe-Rowe and Scotcher, 1986; Carbutt and Edwards, 2001, 2015; Grab and Nüsser, 2001; Mucina and Rutherford, 2006). As a consequence, the alpine zone today is used almost exclusively for small stock and only in summer when foliage is young. But even then, and in contrast to the rest of Lesotho, grazing pressure here is low (Quinlan and Morris, 1994). Summer is also when alpine forbs are available, whereas "in spring and late autumn there is very little in flower and in winter practically nothing" (Killick, 1963:91). Within the alpine zone are patches of streambank communities and peat-forming mires, which regulate headwater flow into the Orange-Senqu fluvial system (Jacot Guillarmod, 1971; van Zinderen Bakker and Werger, 1974; Killick, 1978, 1990; Grab, 1997). Grass and sedge communities on the mires offer this zone's most palatable vegetation, which itself is subject to intense summertime overgrazing (Schwabe, 1995; Grab and Deschamps, 2004).

2.3. Mountain fauna

Until overhunting, farm fencing and habitat degradation in the nineteenth and twentieth centuries led to precipitous declines, the Maloti-Drakensberg teemed with animal life (Du Plessis, 1969; Ambrose, 2006; Grab and Nash, 2022). Many taxa were central to hunter-gatherer lifeways in the region, as evidenced from its Late Quaternary excavated and rock art records. The largest were dominated by a rich variety of grazing ungulates, the most common and persistent of which were black wildebeest (*Connochaetes gnou*), red hartebeest (*Alcelaphus buselaphus*), blesbok (*Damaliscus pygargus phillipsi*), plains zebra (*Equus quagga*) and quagga (*Equus quagga quagga*). Also noted by numerous historical observers (e.g. Clarke, 1888; Germond, 1967; Arbousset, 1991) were common eland, which came to hold acute significance both dietarily and in the spiritual life of the Mountain San (How, 1962; Vinnicombe 1976; Lewis-Williams and Dowson, 1989). Many medium- to small-sized antelope also maintained a long-term presence in the mountains, including grey rhebok (*Pelea capreolus*), oribi (*Ourebia ourebi*) and klipspringer (*Oreotragus oreotragus*), all three being resident year-round in the alpine belt, as well as springbok (*Antidorcas marsupialis*), mountain reedbuck (*Redunca fulvorufula*), steenbok (*Raphicerus campestris*), common duiker (*Sylvicapra grimmia*) (Plug, 1997; Plug and Mitchell, 2008).

Numerous other ungulates only appeared sporadically at various times as Late Quaternary climatic and associated habitat changes opened windows of opportunity, among them blue antelope (*Hippotragus leucophaeus*), roan antelope (*Hippotragus equinus*), blue wildebeest (*Connochaetes gnou*), bushbuck (*Tragelaphus scriptus*), impala (*Aepyceros melampus*), and blue and red duiker (*Cephalophus monticola* and *natalensis*) (Ambrose, 2006; Germond, 1967; Grab and Nash, 2022). A particularly marked change in species composition occurred in the highlands after the mid-Holocene, when a series of large grazers that had been regular components of archaeofaunal assemblages there disappeared, either largely or entirely. Likely dissuaded from penetrating the mountains by late Holocene temperature downturns, these taxa include roan antelope, quagga, plains zebra, springbok, blesbok, blue antelope and black wildebeest (Plug and Engela, 1992; Plug, 2003; Plug *et al.*, 2003; Plug and Mitchell, 2008). In contrast, late Holocene faunal assemblages across the Maloti-Drakensberg region register an uptick in smaller browsing antelopes, signalling enhanced woody vegetation cover at this time (Opperman, 1987; Plug and Mitchell, 2008). In the highlands themselves, the only large ungulate to endure into the late Holocene in any abundance was eland, a mixed feeder (Plug *et al.*, 2003:147).

Freshwater fish were another important dietary resource for past peoples in the Maloti-Drakensberg (Hobart, 2003; Plug and Mitchell, 2008; Plug *et al.*, 2010; Stewart and Mitchell, 2018a). Fourteen species of indigenous fish currently exist in the upper Orange-Senqu system (Schrijvershof, 2015; Skelton, 2001), of which four were of particular interest to prehistoric people: three cyprinids – the largemouth yellowfish (*Labeobarbus kimberleyensis*), the smallmouth yellowfish (*Labeobarbus aeneus*) and the Orange River mudfish (*Labeo capensis*) – and the rock catfish (*Austroglanis sclateri*). Exploited intermittently from at least the late Middle Stone Age, the cyprinids in particular were heavily targeted by afromontane foragers due no doubt in part to their size. All are very large-bodied, with the largemouth yellowfish southern Africa's largest scale-bearing indigenous fish, reaching fork lengths of 82.5 cm and weights of 22.2 kg (Arthington *et al.*, 1999; Skelton, 2001). The smallmouth yellowfish and Orange River mudfish are smaller, but both can still reach fork lengths of 50 cm and weights of 9 and 3.8 kg, respectively (Skelton, 2001). Size estimates from archaeological specimens of all three cyprinid taxa in highland Lesotho have, moreover, exceeded these modern maxima (Plug, 2008). The smallmouth yellowfish is known for its hardiness and adaptability, thriving in colder waters and at higher altitudes (≥2200 m asl) than other taxa indigenous to the Orange-Vaal River system (Skelton, 2001; Gerber *et al.*, 2012). Fishing scenes in Maloti-Drakensberg rock art provide some indication of the capture techniques, which included spearing and leistering from small rafts, as well as diverse forms of mass capture involving nets, baskets and/or drag screens (Stewart and Mitchell, 2018a).

2.4. Game and fish migrations

A number of the region's grazers – black and blue wildebeest, springbok, blesbok and the two equids (quagga and plains zebra) – appear to have been collective migrants into the Maloti-Drakensberg region. Documentary and oral historical data indicate that aggregated herds of these ungulates once migrated across the southern Highveld, in numbers potentially rivalling East Africa's famous Serengeti-Mara migrations (Harris *et al.*, 2009; Boshoff and Kerley, 2013, 2015; Boshoff *et al.*, 2016; Grab and Nash, 2022). While the collapse of these systems in the nineteenth century makes specific routes difficult to reconstruct, a broad migratory pattern has emerged. Specifically, herds of large ungulates appear to have traversed rainfall gradients on a seasonal basis. In the autumn and winter months they were observed grazing sweetveld at the relatively low-lying margins of the Highveld and beyond, including the eastern and northern Free State, the southeastern North West Province, and the KwaZulu-Natal midlands. The spring and summer months saw them move to the Highveld's higher, cooler, better-watered plateau regions, where sourveld grassland offers palatable new forage (Boshoff and Kerley, 2013, 2015).

Bounding the Highveld's southeastern margin, the Front Range of the Maloti has been argued to have presented these dry plains-adapted migrants with something of a habitat edge, with the uKhahlamba-Drakensberg Escarpment beyond forming a biogeographic barrier (Figure 1; Grab and Nash, 2022). However, zooarchaeological remains from the Lesotho Highlands show that these plains species, throughout the Late Quaternary, did filter into the highlands (Carter, 1978; Plug and Badenhorst, 2001; Plug *et al.*, 2003; Plug and Mitchell, 2008; Boshoff and Kerley, 2013; Boshoff *et al.*, 2016), at times reaching high altitudes >2200 m asl (Badenhorst *et al.*, 2019). Drawing them in was likely the burst of nutritious sourveld grazing that becomes available in the growing season. As spring/summer warmth progressively greened the grasses in an upslope direction – primarily the low- and mid-altitude C_4 *Themeda* belts and to a lesser extent the high-altitude C_3 *Festuca-Merxmuellera* zones – animals would have increased their elevation. The subsequent downwards "souring" of the mountain grasses with the coming of autumn pushed these grazers back to lower elevations surrounding the Maloti-Drakensberg and in places off the Highveld altogether.

Eland and red hartebeest were year-round residents of the region rather than seasonal visitors. These species have wider ecological tolerances than the plains taxa just discussed, including cool, topographically broken uplands (Skinner and Chimimba, 2005). Vibrant populations were encountered as early nineteenth century Europeans settled the mountain peripheries (Arbousset, 1991) before the former retreated into the mountain core "for which [they have a] decided preference" (Arbousset and Daumas, 1846:4). Nevertheless, both historical and more contemporary data suggest that these taxa, too, took advantage of seasonal windows of high-quality pasturage at altitude. Boshoff and Kerley (2013:295), for example, found historical instances of "local, altitudinal, migrations of [eland and red hartebeest] from high and exposed plateaux to deep, sheltered, neighbouring valleys … in central and eastern Lesotho" on a seasonal basis. Similar movements still take place on the South African side of (and over) the Escarpment, where once-threatened eland populations now thrive thanks to the early establishment of protected areas.

Large terrestrial game animals were not the only faunal resources to make use of the highlands on a seasonal basis; the large cyprinids – the largemouth and smallmouth yellowfishes – were also seasonal visitors. Before hydroelectric damming transformed the flow and temperature dynamics of the Orange-Vaal River system, adults of these two *Leobarbus* species would migrate far upstream from the middle Orange in the Karoo to the river's upper reaches in highland Lesotho in order to breed (Shortt-Smith, 1963; Jubb, 1966). Here, they would spawn on gravel or sand beds in swiftly moving, well-oxygenated waters (riffles and rapids) of the main river channel and larger tributaries (Mulder, 1973; Cambray, 1985; Skelton, 2001). For the hardier smallmouth yellowfish, these coordinated mass annual spawning runs are triggered by the downstream arrival of floodwaters with the first spring rains (Tómasson *et al.*, 1984). Their largemouth counterparts followed some four to six weeks later, as water temperatures warmed. For the early-migrating smallmouth yellowfish that season can last from October to January, whereas for their latecomer largemouth counterparts spawning typically takes place in January and February (Mulder, 1973; Tómasson *et al.*, 1984). In contrast, the Orange River mudfish and the rock catfish – the other two fish species exploited regularly by afromontane foragers – do not appear to undertake long-distance longitudinal migrations, although the former does expand laterally with early spring to summer rains to lay eggs on newly inundated highland floodplains (Mulder, 1973; Gaigher *et al.*, 1980; Tómasson *et al.*, 1984).

3. COSMOLOGICAL STRUCTURE: POTENCY NEGOTIATION AND HIGH-ALTITUDE HUNTING

How can we know how hunter-gatherers might have perceived the Maloti-Drakensberg? Owing to the work of nineteenth-century linguists Lucy Lloyd and Wilhelm Bleek, we have around 13 000 pages of verbatim San testimony from the |Xam San of the arid interior – some of which pertain to how mountains, such as the "Wittberg" in the southwestern Cape, were conceptualised (LL.II.-25.2239; Bleek and Lloyd, 1911; Hollmann, 2022:268). Notably, we have one hyper-local attestation from the Maloti by the Mountain San man, Qing, recorded in 1873 by Joseph Orpen (Orpen, 1874). The only testimony of its kind, it details the location of deities at altitude, their proclivities, and the legends in which they affect the lives of people and animals.

Beliefs of the |Xam San accord, in multiple instances of "fit", with the words of Qing in the Maloti (e.g. McGranaghan *et al.*, 2013). Much of the concordance between ethnographic texts has to do with the supernatural control of the weather – in particular "rain-making" or rain control, by way of negotiating with, or influencing, the water deity, *!Khwa*, and the creatures in which it was manifest or with which it was associated. These *!Khwa-ka-xoro* or "rain's animals" include "Water Bulls" or "Water Cows" (he-rain or she-rain) that can take the form of bovids and hippopotami with manes and tusks (Lewis-Williams and Pearce, 2004); snakes such as cobras (*Naja sp.* or *H. haemachatus)* and puff adders (*Bitis arietans*) that come out in the rainy season, or Water/Rain Snakes of enormous stature and power (Orpen, 1874; Schmidt, 1979; Hoff, 1997, 1998; Mallen, 2005; Challis *et al.*, 2013; McGranaghan and Challis, 2016; Skinner, 2021; Skinner and Challis, 2022).

Allied to this, and other startlingly correlative instances of fit, is the San conception of the world and how it is mapped out *in the mind,* not only among the southern San (the aforementioned |Xam and Qing) but also the northern San of the Kalahari. Famously fluid and changeable (e.g. Guenther, 1999), San cosmology exhibits plenty of features common to all groups (e.g. Barnard, 1988). At the regularly-held healing dances, San doctors push themselves into ecstatic states whereby they fall unconscious and their spirits travel *downwards* into waterholes or rivers, where they might deal with snakes and rain's animals, and *upwards* along threads-of-light into the sky, so that they may plead with their god for the souls of the sick, to influence the rain, or to influence the movements of the game animals (Lewis-Williams *et al.*, 2000). Importantly, contact with the spirits can only be achieved with the power of certain potent animals – the eland being chief among these – whose essence the women summon, in song and rhythm, at the dances for the men to harness (Orpen, 1874; Marshall, 1969; Lewis-Williams and Biesele, 1978; Katz, 1982; Biesele, 1993). As well as symbolising game, therefore, eland equate to healing and rain-making. Importantly, the eland is one of the animals whose form the rain takes (Lewis-Williams, 1981:106; 2000:222–3).

3.1. Rain-making in an elevated cosmos

Influence over rain, and weather more generally, was often performed at elevation: the |Xam informant, healer and rain-maker, ||Kabbo, spoke of a grandfather talking to his grandson (LL.II.-24.2213-2226; D. Bleek, 1933:309–310) thus: "I will milk a she-rain, I will cut her, by cutting her I will let the rain's blood flow out so that it runs along the ground … to make all places wet". The grandson replied: "I understand, for the she-rain is drawing her breath which resembles mist; you must please go and cut the rain at the great waterpits which are on the mountain". To which the old man said:

> I will really ride the rain up the mountain on top of which I always cut the rain. It is high, so the rain's blood falls down.

The reference to cutting is significant to sites mentioned below. The reference to mist is important because, just as the |Xam San believed rain clouds formed around mountain tops where the deity *!Khwa* resided (D. Bleek, 1933:308), so Qing alluded to a mist that concealed the places in the Maloti-Drakensberg where deities lived. This was a "freezingly cold mist" through which one could not ordinarily pass, except, according to the myth of Qantciqutshaa, by following an eland … (Orpen, 1874; Lewis-Williams and Challis, 2011:170; Lewis-Williams, 2013). Ansie Hoff (1997:24) found that among |Xam descendants the Jagersberg mountain near Carnarvon is believed to rumble before it rains, which indicates the presence of the Water Snake. The *!Khwa-ka-xoro,* "rain's animal", referring more to the bovid variant, was said by the |Xam to reside in the well known rock art mountain locations of the Strandberg and Springbokoog (Hoff, 1997; Deacon, 1988; cf. McGranaghan, 2016). Similarly, according to seven informants, Water Bulls preferred spring pools in the mountains, for example the springs in the Karee Mountains, on the farms at Tierkloof south of Fraserburg, Waterval and Jagersberg in the Carnarvon district, Groot Toren near Calvinia and the spring at the town Grootdrink. According to one informant, the Water Bull lived only at quiet places, which is why it preferred mountains (Hoff, 1998:113). Janette Deacon (1997:24–25), noting that Lloyd and Bleek rendered the Afrikaans word *bruinkop* ("brown hill", or a typical hill of Karoo dolerite boulders) as "Brinkkop", believes their informant Diä!kwain, being a "Brinkkop's Man", may well have been a rain specialist (on rain specialists see Lewis-Williams and Pearce, 2004:205–6). We can see, therefore, that mountains were associated with *!Khwa*, the supernatural acquisition of potency and weather control.

These associations are not limited to the |Xam. In Botswana, a Ju|'hoãn informant told Megan Biesele (1974:3) that the weather originates from the Tsodilo Hills, inside which the rain clouds dwell and from which they emanate. Sigrid Schmidt (1979:207) was told by Nama and Damara informants that Brukkaros Mountain in Namibia should avoid being climbed by women on account of a huge white snake that lived there. More recently, Andrew Skinner (2021, 2022a) has found that today's inhabitants of the Maloti-Drakensberg, the Sesotho-, Sephuthi- and isiXhosa-speakers who inherited the mountains from the San, have inherited the local idiom of water and rain beliefs, and mountain river pools are no exception. Like the San, they describe the "owner of the pool", (Sesotho: *Khanyapa-fito*), as variously an enormous "river snake" (cf. *noha ea metsi,* Rakotsoane, 1996, 2008) giving names for numerous adders, cobras and pythons, as well as water monitors and, in one instance, hippopotamus. Importantly, for the San and their descendents these entities are "persons" – non-human persons – with whom specialists establish and broker relations (Challis and Skinner, 2021). Such entities are known, not by what they are in western taxonomic terms, but in terms of *where* they are and by their actions; equally, the specialists who deal with them are known by their expertise in behaving properly towards them (Skinner, 2021; Challis and Skinner, 2021; Skinner, 2022b; Skinner and Challis, 2022). Among the |Xam, those able to influence the rain were known as *!Khwa-ka-!gi:tən* (D. Bleek, 1933:377; cf. Hollmann, 2022).

The same goes for specialist hunters, known by the |Xam as *ʘpwai:tən-ta-!gi:tən,* who influence the movements of the game animals. Only by acting "nicely" and with "understanding", observing all ritual protocols and using respect words on the hunting ground, can a hunter induce calm or "tame" behaviour so that animals might be caught (McGranaghan and Challis, 2016). Negotiating one's place among entities in the landscape is key to navigating it; the physical topography is a social topography and so, in the rock art of previous millennia, we see a forager idiom of negotiation-as-navigation (Challis and Skinner, 2021:20). From Qing's testimony (Orpen, 1874:10), we learn that those who were able to "tame" the game animals and control their potency were also those who were called upon to "tame" snakes and other creatures of the rain (Figure 3) – in other words, to influence the weather. *!Khwa,* in animal form, whether bovid or serpentine, had to be stalked, placated and captured, much as if it were a game animal. So-called "rain's animals" (or rain-animals) are a common feature of the religious San rock art of the Maloti-Drakensberg, and are typically depicted being approached, placated and captured – drawn out through cracks and fissures (from which water runs down the rock-face following heavy rains) (Figure 3). In the highlands, moreover, they tend to occur in shelters in the valley bottoms overlooking river pools (Challis *et al.*, 2013; Skinner and Challis, 2022).

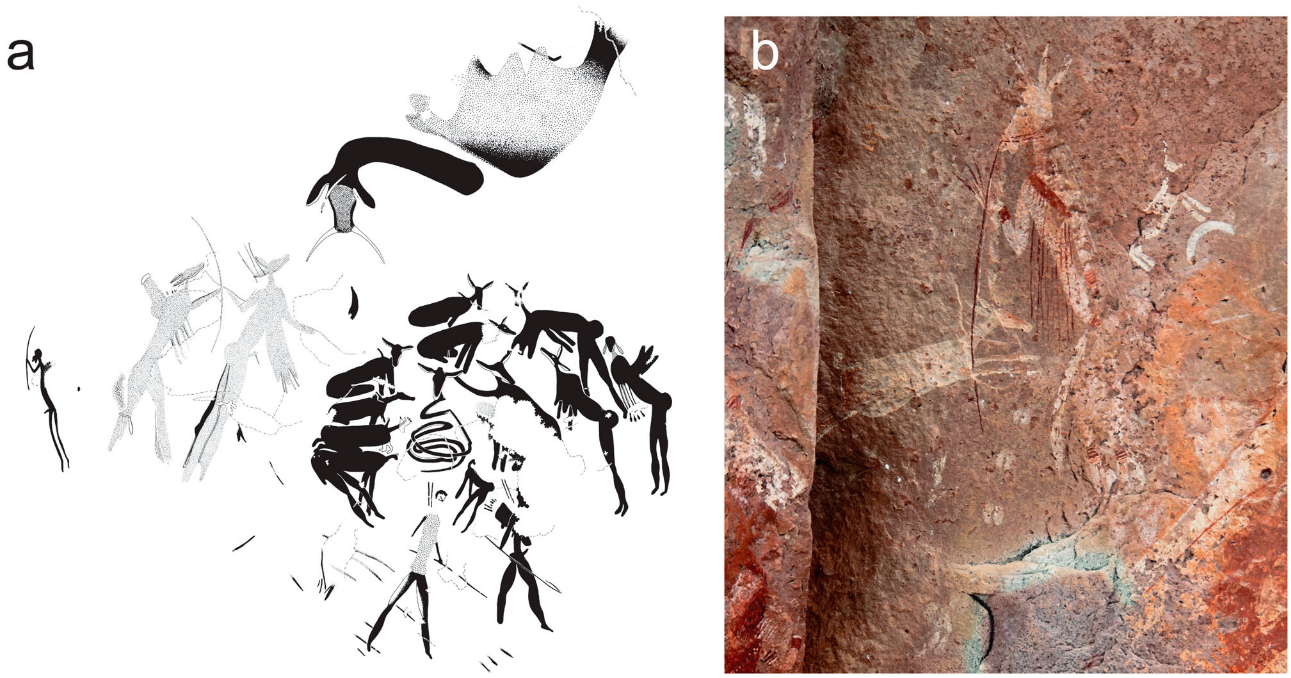

Figure 3. In (a) rhebok-headed tamers-of-the-game (left) approach a dangerous tusked rain serpent (top) painted to suggest that it emerges from behind the rock face, while other transforming rhebok-headed dancers interact with a smaller "tamed" snake – knowable by its rhebok head. In (b) a tamer-of-the-game with human body and rhebok head, surrounded by eland, bleeds from the nose and carries a hunter's bow, while a rhebok emerges from a shadowy step in the rock face. Note the white spoor/hoof prints. Images by Challis.

3.2. Taming the game in God's house: rock art and landscape

On the South African side of the Escarpment rock art shelters are commonly located in the sandstone cliffs overlooking the passes (Figure 2). Eland move through these passes on their annual summer migration into the high Maloti of what is today Lesotho (other eland once moved up from Lesotho's lowlands). The San, following the eland up through the passes and through the otherwise impenetrable mist, desired eland for their peerless fat content – the supernatural potency or essence harnessed at the dance, sometimes immediately following a fresh kill. Following the eland though the mist and up into the altitudinous hinterland was a pilgrimage both physical and spiritual (Lewis-Williams and Challis, 2011; Figure 4).

We can safely say that seasonal migrations of eland would have aggregated in highland Lesotho's pastures in their hundreds, if not thousands (cf. Carter, 1970, 1978:229; Vinnicombe, 1976; Rowe-Rowe, 1983:5; Plug, 2017:390). Indeed, today, reintroductions in the southern Drakensberg conservation area have led to sightings of herds up to 120–160 strong, feeding up high when there are good rains and returning to the valleys in autumn (D. Guy pers. comm.). To interpret such a concentration of eland from the perspective of the San, it would have represented a superabundance of fat and meat, and therefore of supernatural potency. Like electricity, it was desirable if controlled correctly but dangerous if mishandled (Marshall, 1969:351). Large concentrations of eland at altitude betokened the presence of the San god, |*Kaggen* (which Joseph Orpen recorded as *Cagn*), as Qing said: "have you not hunted and heard his cry, when the elands run to his call? Where *Cagn* is, eland are in droves like cattle" (Orpen, 1874:3). Such locations, having potency, would therefore have been both powerful and socially dangerous.

One example of excess potency comes from a particularly altitudinous painting in the Sehlabathebe National Park. Occuring at 2387m, it overlooks one of the most renowned grazing valleys in the region (R. Mokhachane pers. comm.) to which eland still venture up from below the Escarpment (Challis, 2019:177). The painting depicts perhaps the largest anthropomorph in the subcontinent and one which arguably cautions against the "monstrous" repercussions of excess consumption and the mishandling of potency (Figure 5; Challis, 2019; cf. Mullen, 2018). A summer shelter (winter temperatures here dropping to below −20°C), different family bands would likely have congregated here seasonally when the eland arrived (Carter, 1970). The superabundance of fat and potent eland would bring people together, but the aggregation of extended family and friends would exacerbate tensions. Resource distribution, of meat in particular, gives rise to accusations of gluttony, causing jealousy, antagonism and fighting (Marshall, 1976, 287–312; 1999, 65, 94), which is a serious threat to survival in an otherwise un-policed society. Showing respectful understanding, especially amongst extended family – known as *!k"werri:tənn* the |Xam San (D. Bleek, 1956:510; McGranaghan, 2012, 193–194) would have been paramount. People whose specialty it was to mediate with such forces for the good of the community would therefore have been called upon, and healing dances would be held (e.g. Katz, 1982:37–38).

Those who tamed eland (the game) and snakes (the rain) were able to harness antelope potency in the dances, enabling them to influence (and sometimes capture) these entities. If the potency is too great, however, healers can lose control of themselves and, with an undesirable surfeit of power,

Figure 4. Eland antelope move through a southern Drakensberg valley towards the high passes into the spiritual hinterland of the high Maloti, where the San deity, |*Kaggen*, lives. They concentrated in large numbers, drawing hunter-gatherers to these altitudinous locales in a spring-summer aggregation phase that required heightened social and spiritual negotiation. Image by Challis.

become lions: growing lion hair, lashing out and biting their fellow dancers (D. Bleek, 1935; Hollmann, 2022, 277). Danger not only to the individual, but danger to society, is apparent in this painting. Mark McGranaghan (2012, 2014a, 2014b) has highlighted the recurrence of "animal" qualities referenced in the narratives of the southern San, and lions are exemplars of behavioural impropriety – |*ke*||*ke*, "beasts of prey" – who did not act "nicely", who swallowed down food quickly and who did not share (LL.II.20.1844, 1846, 1862; LL.II.30.2695; LL.VIII.29.8554'). Furthermore, failure to broker relations properly and respectfully with the eland and with the rain's animals would be read as "lacking understanding" and deemed "monstrous" behaviour (McGranaghan, 2014a; Skinner and Challis, 2022).

The painted anthropomorph has three legs (likely to reference the experience of polymelia in trance) each with clawed toes, and one arm with clawed fingers (Figure 5). It is covered in long hair – the symbol of the beasts of prey – and has protruding teeth or tusks and lion's whiskers (Mullen, 2018). It also has a bulbous stomach to signify gluttony (Figure 5; McGranaghan, 2014a). This image, then, most probably reflects the concerns of game specialists who, having achieved the altitude that put them in the rarefied atmosphere of the gods, were struggling to maintain their humanity and not become monstrous, either socially or physically, in the presence of so much supernatural power (Challis, 2019). In terms of social consequences, the image betokens *what* the place does (its character or "who" it is) and *when* things happen there (Challis and Skinner, 2021; Skinner, 2022b). The timing of one's presence in a place is key to navigation, and being at the right place at the right time is key to negotiating with entities such as eland and rain (Skinner and Challis, 2022).

3.3. Fishing in the rain

The Maloti-Drakensberg was arguably the San tiered cosmos manifest, giving physical form to the *axis mundi* by reaching up into the sky (cf. Lewis-Williams and Challis, 2011:172–180). Far from being a simple up/down *axis*, however, the spirits can be encountered anywhere unfamiliar, dangerous or liminal. Travelling far away from camp across the hunting ground, for instance, was seen as a guarantee that beasts of prey, spirits-of-the-dead and other entities will be encountered; entities with whom negotiations had not been brokered (*cf.* Mguni, 2009; McGranaghan, 2012, 2014a,2014b; Skinner, 2017; Challis and Skinner, 2021; Skinner, 2022a,2022b; Skinner and Challis, 2022).

Both northern and southern San perceive healers to be able to mediate with, and travel to and from, other places in the cosmos (e.g. Katz, 1982; Biesele, 1993; Marshall, 1999). These other places can also be reached by going downwards, underground, or into rivers and waterholes where *!Khwa* can be found, and mountain river pools are no exception (cf. Skinner, 2021, 2022a). San healers go into trance, travel downwards, underwater, in order to interact with entities such as the Water Snake and other rain's animals as well as other snakes, bovids, freshwater crabs, eels, reptiles and fish (see Lewis-Williams and Pearce, 2004). Importantly, this is in the same sphere of ritual activity as the aforementioned "tamers" of the rain, the *!Khwa-ka-!gi:tən.* Those able to approach the Water Snake, *!Khwa*, nicely, having established proper relations with it, could influence it and its creatures – that is to say the rain and its resources.

One of the better-known painted examples of a rain's animal being tamed, and captured, is on a high and steep-sided outlier of the uKhahlamba in Underberg, "*eMvuleni*" or "the rain's place", known in English as Bamboo Mountain. In a neighbouring shelter there is a depiction of a fish trap. Indeed rain's animals and fish are often found together (see below; Challis *et al.*, 2008). Across the Sani Pass from this location is perhaps the best-known example of all: the rain's animal capture panel at Sehonghong. It was here that Qing – pointing at the bovid beast being captured – said "that *animal* that the men are catching is a *snake* (!)" (Orpen, 1874:10, emphasis and exclamation mark in original), thus confirming its designation as a creature of the rain. This was independently corroborated by Bleek and Lloyd's informant Diä!kwain in the Cape (Bleek in Orpen, 1874:12), and later by the rediscovered image of a serpent being captured in much the same manner on the opposite bank of the Senqu River (Figure 6; Challis *et al.*, 2013). Qing further said,

> They are all under water, and those strokes are things growing under water. They are people spoilt by the – dance,* because their noses bleed (Orpen, 1874:10, the asterisk is for a footnote explaining the dance of blood [the nosebleeds induced by hyperventilation]).

Figure 5. In Lesotho's Sehlabathebe National Park is a 1m long painting of a ritual specialist heralding the potential dangers of a super-abundance of resources that concentrate seasonally at altitude (Challis 2019). With bulging stomach (evoking associations of gluttony and poor resource distribution), tusks, and three legs with clawed toes (evoking leonine proportions of both power and gluttony), the figure in question may represent just such an instance of the strong ritual specialist struggling to control excess fat and potency while dealing with the entities above and below the water. Image courtesy of James Pugin.

Figure 6. This large image – at Rain Snake Shelter on the banks of the Senqu close to Likoaeng – perhaps best displays *!Khwa*, the rain in the form of the giant serpent. Tamers-of-the-rain, some in dancing postures, are bending forwards and bleeding from the nose while others clap and hold out "charms" to placate the animal while it is led by a line to the nose. At its fattest point, the serpent's body has six or seven "cut" marks, which parallel the incised cuts on the rock immediately below the painting (Challis *et al.*, 2013). The cliff line in which the shelter is formed is also engraved with many cut marks, as if the place itself were the snake (Skinner and Challis, 2022; cf. Hollmann, 2007).

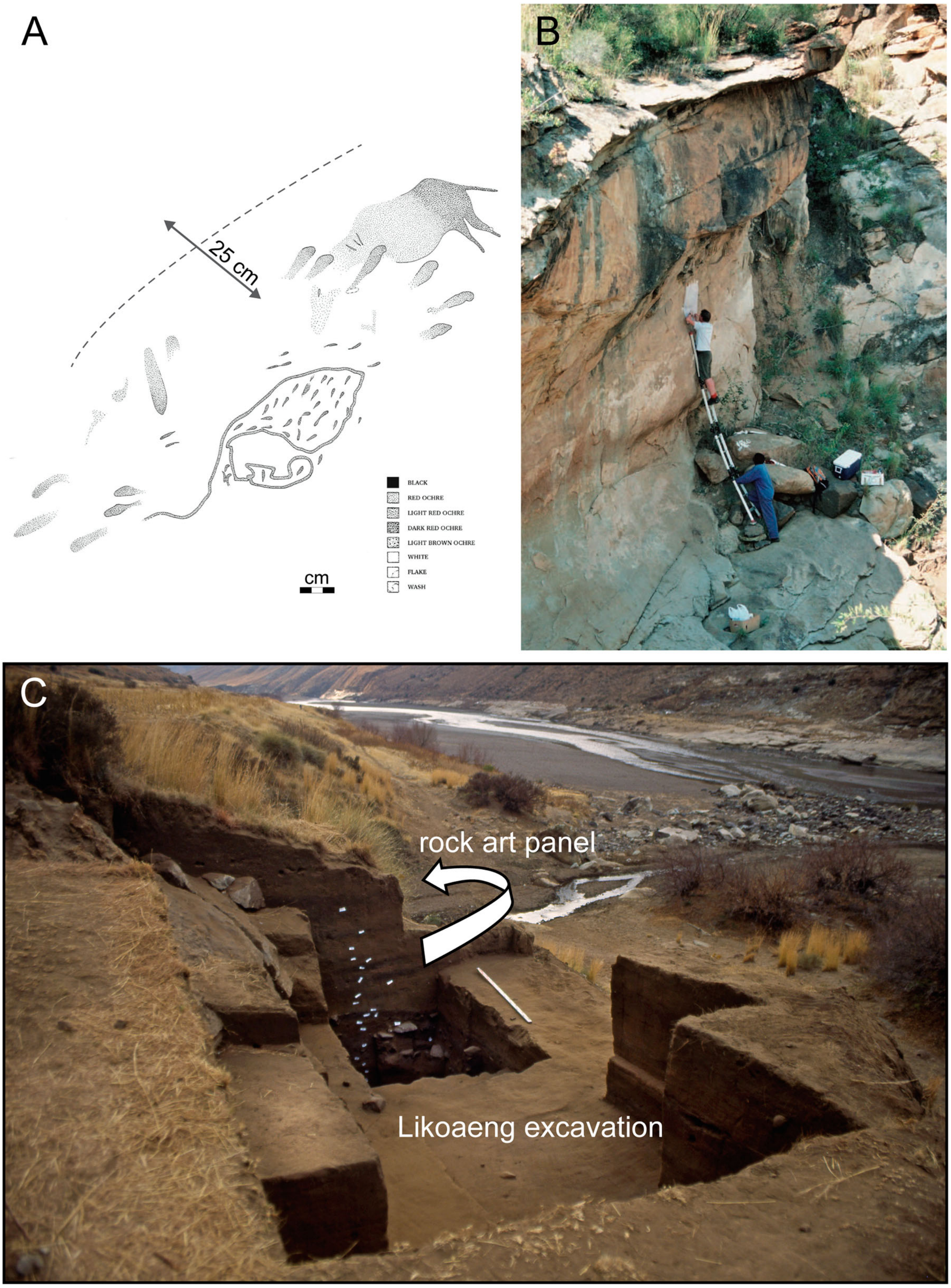

Figure 7. Rock art (a & b) and excavated archaeology (c) at Likoaeng, where millions of fish remains were recovered from Neoglacial-aged deposits. In a ravine immediately around the corner from the deposits, a rock art panel shows a dying eland and dancer ~25 cm away from a probable fishing net and rain's animal. The paintings are interpreted as depicting the harnessing of eland potency while in trance to summon the rain and thereby induce the seasonal running of migratory fish. Images courtesy of Peter Mitchell.

The statement unequivocally connects the trance dance with passing underwater to catch rain's animals, whether bovid or serpentine (Challis *et al.*, 2013; McGranaghan *et al.*, 2013).

These mountains receive some of the highest rainfall in the subcontinent. Why, then, should there be so many rain's animals painted at altitude? The reason is arguably connected with the *timing* (and taming) of the rains, not simply with rain-making *per se*. In this area, at high altitude and in the presence of the gods, resources could be excessively plentiful – even dangerously so – but the right conditions had to obtain at exactly the right time in order for this to happen. Adjacent to the aforementioned open-air fishing site at Likoaeng in the southern Lesotho Highlands, a small overhang exhibits key imagery in this regard. Specifically, one painting exhibits strong indications, per Challis *et al.* (2008), that it was made in order to summon the rain and so induce the running of the fish (Figure 7). The image depicts a dancing figure, bending forward and clapping, with a dying shaded polychrome eland that bleeds from the nose, setting the figures unequivocally in the context of the trance dance. Eland potency thus acquired then enabled the capture of the rain's animal, depicted moving towards the net or trap filled with fish-shaped flecks (Figure 7). Because we lack an understanding of when the Likoaeng paintings were executed, their environmental and social context is ambiguous, as is whether and how they articulate with the fish-rich site immediately adjacent. However, new dates for shaded polychrome eland in the wider Maloti-Drakensberg suggest that they originated during the Neoglacial (Bonneau *et al.*, 2017a,2017b, 2022), the climatic phase to which we now turn.

4. THE NEOGLACIAL: CLIMATIC, ENVIRONMENTAL AND CULTURAL CHANGES

After a relatively warm and variably humid mid-Holocene, southern Africa after ~4.5 kcal BP experienced a series of cool episodes. These entailed northward shifts of westerly frontal systems and strengthened atmospheric circulation leading to widespread temperature reductions and enhanced winter rainfall (Jerardino, 1995). The most enduring and widely registered of these was the Neoglacial, which lasted roughly one and a half millennia from ~3.5 to 2 kcal BP. Evident in archives across the subcontinent (Talma and Vogel, 1992; Jerardino, 1995; Holmgren *et al.*, 1999, 2003; Lee-Thorp *et al.*, 2001; Scott *et al.*, 2003; Nash and Meadows, 2012), this phase brought lower temperatures and higher (annual and/or winter) precipitation to the Maloti-Drakensberg (Fitchett *et al.*, 2016a; Stewart and Mitchell, 2018b; Herbert and Fitchett, 2022). Here we first review evidence for the Neoglacial's expression in the mountain zone, before outlining its potential impacts across diverse cultural spheres. All radiocarbon ages provided have been calibrated using the SHCal20 Southern Hemisphere Calibration Curve (Hogg *et al.*, 2020). Chronological resolution is limited in the latter half of the timeframe under investigation by a notable radiocarbon plateau ~2580–2430 radiocarbon years BP (the so-called Hallstatt Plateau).

4.1. Pollen, peat and geomorphology

Mafadi Summit (3390 m asl), on the Lesotho side of the northern Escarpment, is southern Africa's highest wetland. Perhaps on account of its altitude, the site's pollen and diatom records together suggest that cold and humid conditions characterised the entire period ~4.5–2 kcal BP (Fitchett *et al.*, 2017). Cold-tolerant *Fragilaria* and *Aulacoseira* diatoms spike at this time relative to the mid- or terminal Holocene, while frequencies of Poaceae (grasses) and Apiaceae (umbellifers) pollen increase at the expense of Asteraceae (forbs) and Cyperaceae (sedges). All point to the existence of a cold, shallow lake in alpine grasslands under relatively harsh conditions (Fitchett *et al.*, 2017:645).

Other high-elevation wetlands inform more specifically on the ~3.5–2 kcal BP episode itself. Sedimentary, diatom and pollen data from the Sekhokong Range on Lesotho's southern Escarpment indicate that the period ~3.4–1.2 kcal BP was persistently cooler than before. Wet phases are registered ~3.26–3.19, ~3.05 and ~2.69–1.47 kcal BP, the last of which may have seen more regular snowfalls (Fitchett *et al.*, 2016b). Likewise, increases in Poaceae, Aponogeton and sedge pollen relative to Asteraceae signal greater humidity after 3.5 kcal BP at the Mahwaqa wetland, located on an Escarpment outlier in KwaZulu-Natal's Midlands (Neumann *et al.*, 2014). At the Catchment IV wetland on Cathedral Peak (South African northern Escarpment), forest pollen (mostly *Podocarpus*) are reasonably common until ~3.8 kcal BP. Their subsequent decline and the onset of a heavier dominance of Poaceae pollen potentially speaks to a downslope forest retreat, a scenario bolstered by increases in cold-hardy heath and shrub taxa like *Urginea* and *Leucosidea sericea*, respectively (Lodder *et al.*, 2018). A sharp spike in moisture-loving *Leucosidea* pollen at ~2.8 kcal BP may signal that enhanced cold was accompanied by greater humidity. Broadly similar conclusions were reached by Herbert and Fitchett (2022), who recently compiled and analysed these and other pollen datasets from across the Maloti-Drakensberg spanning the past ~8000 years.

Geomorphological evidence, though less temporally-resolved and often discontinuous, mostly corroborates this picture of Neoglacial conditions in the mountain zone. At Sani Top near Sekhokong, for example, sedimentological analyses of cirque deposits revealed renewed peat deposition, after a previous early Holocene episode, between ~3.3 and 2.3 kcal BP (Marker, 1994). These deposits are broadly contemporaneous with peats bracketed more coarsely to between ~5 and 1 kcal BP at Tlaeeng Pass, further north along the Escarpment (Hanvey and Marker, 1992). In the Eastern Cape Drakensberg to the region's far south, various valley sediments have yielded ^{14}C dates of interest. Overbank flood sediments and paleosols atop high-energy river gravels were all deposited sometime prior to ~2.4 kcal BP at Kilchurn, while at nearby Athol bedded gravels were deposited earlier than ~2.35 kcal BP (Lewis, 2005:41). When this fluvial activity began is unclear, but Lewis (2005) highlights the existence of deep slopewash deposits and paleosols post-dating ~3.2 kcal BP at Kopshoring and evidence of gully erosion occurring after ~2.8 kcal BP at Tiffindell (Rosen *et al.*, 1999). Geomorphological proxies of temperature depressions are more elusive, but Grab (2000:186) wonders whether, given their fresh appearances, periglacial stone-banked lobes on Popple Peak, Njesuthi Summit and Thabana Ntlenyana (all 3400–3300 m asl) were "active during Late Holocene cold periods". Reinforcing this is a minimum age of a protalus rampart on Thabana Ntlenyana of cal AD 248–348, demonstrating that some periglacial landforms were indeed generated as recently as the late Holocene (Grab and Mills, 2011).

4.2. Ecological and dietary shifts at Likoaeng

Archaeological data also suffer from temporal discontinuities, but with adequate preservation they, too, can shed valuable light on prevailing environmental conditions during phases of deposition. Probably the best record of Neoglacial environments in the mountain core comes from the site of Likoaeng in the southern Lesotho Highlands (Mitchell *et al.*,

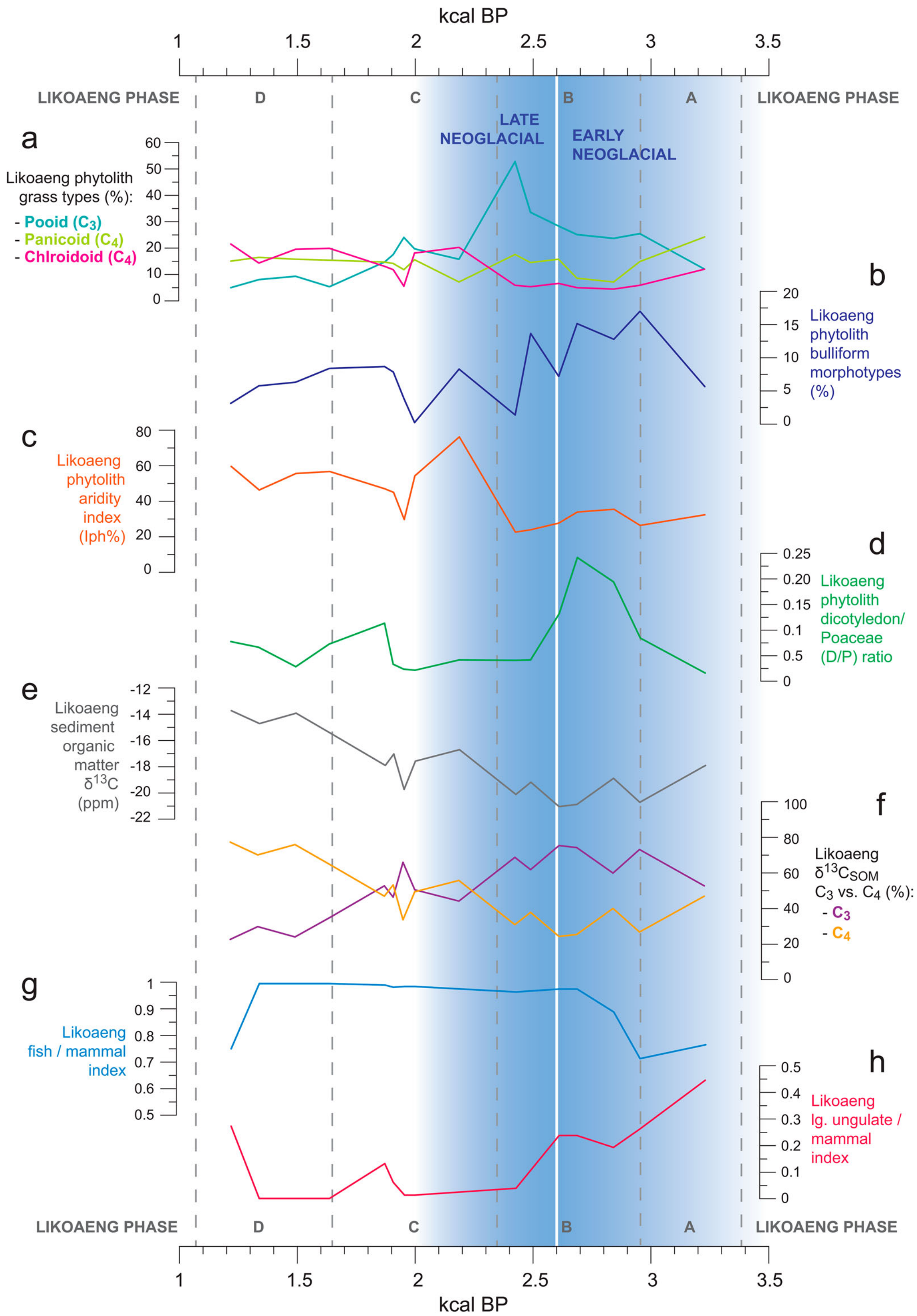

Figure 8. Selected palaeoenvironmental proxies (Parker *et al.*, 2011) and faunal indices (Stewart and Mitchell, 2018a) from the archaeological sequence at Likoaeng, highland Lesotho, discussed in the text: (a) percentages of phytolith short cell morphotypes diagnostic of different grass types (Pooid C_3, Panicoid C_4 and Chloridoid C_4); (b) percentages of bulliform phytolith morphotypes, argued to be preferentially laid down under conditions of enhanced humidity (Sangster and Parry, 1969; Andrejko and Cohen, 1984); (c) Likoaeng phytolith aridity index (Iph% = Chloridoid / Chloridoid + Panicoid), which provides a measure of xeric versus mesic grassland composition (Diester-Haas *et al.*, 1973); (d) Likoaeng phytolith dicotyledon/Poaceae (D/P) ratio, a measure of woody (ligneous dicotyledon morphotypes) to grassy (Poaceae morphotypes) vegetation abundance and thus community openness (1 to 0, with 1 representing maximum woodland coverage and 0 none; Alexandre *et al.* 1997); (e) Likoaeng $\delta^{13}C$ of sediment organic matter ($\delta^{13}C_{SOM}$); (f) Likoaeng percentage proportions of C_3 (versus C_4) from $\delta^{13}C_{SOM}$ values (% of C_3 plants = (δ13C −2 + 12.5)/−0.14; Wedin *et al.*, 1995; after Bousman, 1991); (g) Likoaeng fish/mammal index (Σ NISP all fish / Σ [NISP all fish + NISP all mammals; 1 to 0, with 1 representing only fish and 0 only mammals]; Stewart and Mitchell, 2018a); (h) Likoaeng large ungulate/mammal index (Σ NISP all large ungulates / Σ [NISP all large ungulates + NISP all other mammals]; 1 to 0, with 1 representing only large ungulates and 0 only other mammals). The age/depth model employed is that found in Parker *et al.*, 2011. The chronological boundaries of the late Holocene Neoglacial *sensu lato* can be seen in shaded blue, with the environmental and zooarchaeological inflection point that we identify at ~2.6 ka highlighted.

2011; Parker *et al.*, 2011). Multiple proxies – phytoliths, $\delta^{13}C$ of sediment organic matter ($\delta^{13}C_{SOM}$), charcoals and faunal remains – contribute to a picture of pronounced ecological changes to highland Lesotho's Senqu Valley during the third millennium BP (Figure 8). They show that the site's earliest occupational phase (Phase A), with ^{14}C ages spanning 3.4–2.9 kcal BP, was deposited when the local landscape was not dissimilar to today – a C_4 (likely *Themeda triandra*)-dominated grassland with minor contributions of C_3 elements. This contrasts sharply with the subsequent phase (Phase B), deposited during the height of the Neoglacial ~2.9–2.16 kcal BP (Figure 8).

Phase B witnessed a marked increase in cool-adapted C_3 Pooid grass phytoliths at the expense of Panicoids and Chloridoids (both C_4; Parker *et al.*, 2011; Figure 8(a)). Corroborated by the presence of phytoliths of *Erica* and other heathland taxa, as well as *Protea* and *Leucosidea sericea* charcoals, this apparent cooling signature is mirrored in the more negative $\delta^{13}C_{SOM}$ values (−21.0‰ to −18.9‰) relative to Phase A (−17.9‰ to −16.7‰) (Figure 8(e)). C_3 grasses in today's Maloti Mountains, as discussed above, dominate at altitudes exceeding 2700–2100 m (depending on aspect). Given Likoaeng's location deep in the Senqu Valley at an elevation of ~1700 m, the Neoglacial therefore saw vegetation belts fall by at least 400 m. Altitudinal depressions of this magnitude are estimated to have been triggered by MAT reductions of ~2.5°C relative to present-day (Parker *et al.*, 2011). As elsewhere, accompanying this cooling is evidence of heightened humidity: frequencies of bulliform phytoliths – morphotypes argued to precipitate in wet conditions (Sangster and Parry, 1969; Andrejko and Cohen, 1984) – reach their highest values of the Likoaeng sequence (Figure 8(b)), while the phytolith aridity index (Iph%; Diester-Haas *et al.*, 1973) in Phase B hits its lowest (Parker *et al.*, 2011; Figure 8(c)).

Beyond contrasting with the occupational phases above and below, Phase B at Likoaeng evidences important ecological shifts within the Neoglacial itself. In keeping with the regional trend, the local environment responded to progressively colder and more humid conditions. While proportions of C_3 Pooid grass phytoliths increase from 12% in Phase A to nearly 30% in lower Phase B, for example, after ~2.6 kcal BP (upper Phase B) they rise sharply to 54% (Parker *et al.*, 2011; Figure 8(a)). At the same time there is a drop in woody (ligneous dicotyledon) morphotypes, with the index of tree cover density (dicotyledon/Poaceae or D/P ratio; Alexandre *et al.*, 1997) falling from a sequence high of 0.20 in lower Phase B to 0.04 immediately after ~2.6 kcal BP (Figure 8(d)). This drastic reduction in trees and bushes, after what was a relatively well-wooded earlier Neoglacial, corresponds with the lowest phytolith aridity index of the sequence (Iph%) (Parker *et al.*, 2011; Figure 8(c)). Temperatures after ~2.6 kcal BP were apparently sufficiently cold, therefore, for alpine grasses to proliferate in the Senqu Valley at the expense of woody taxa. The latter were either outcompeted or, very possibly, reduced under intense pressure from browsers. The $\delta^{13}C_{SOM}$ record bottoms out at ~2.6 kcal BP with a value (−21.05‰; Figure 8(e)) suggesting grass cover in the vicinity of Likoaeng reached >70% C_3 (Figure 8(f)). The subsequent uptick after this time likely stems from the resulting reductions in woody contributions to the C_3 signal, although an eco-topographic lag effect cannot be ruled out (e.g. Alexander *et al.*, 2018).

It is against this ecological backdrop that forager subsistence at Likoaeng underwent profound changes, evidenced in the site's faunal assemblages. The shift, in the broadest terms, was one from an emphasis on mammalian game to one on fish. In Phase A, mammal bones comprise over 90% of the total faunal assemblage. This changed drastically during the Neoglacial apex (Phase B), when frequencies of mammal remains plunged relative to those of fish (Mitchell *et al.*, 2011; Figure 8(g)). From being less common in the earliest levels (Phase A and lowermost B), fish start overwhelming mammals by ~2.8 kcal BP (Layer XIV; NISP = 808 to 118) before increasing exponentially ~2.6 kcal BP to eclipse them by a ratio of 21:1 (Layer XIII; NISP = 19,138 to 414) (Stewart and Mitchell, 2018a:181; Figure 8(g)). The species of fish targeted also changed at this time, from a relatively even mix of Orange River mudfish (*Labeo capensis*) and smallmouth yellowfish (*Labeobarbus aeneus*) to an almost singular focus on the former above Layer XIII (Mitchell *et al.*, 2011:1234; Stewart and Mitchell, 2018a:184–185). Of the mammalian prey that declined, the most conspicuous are the large ungulates (i.e. size class 3 or above; Brain, 1981). Whereas the sequence's five lowest archaeology-bearing levels (Layers XVII–XIII) yielded a total large ungulate NISP of 300, less than one-sixth this amount (NISP = 46) was recovered from the overlying 12 layers combined (Layers XII–I). Particularly striking is near-total disappearance of eland – the site's only large bovid identifiable to species – after ~2.6 kcal BP (Layer XII and above) (Plug *et al.*, 2003; Figure 8(h)).

Stewart and Mitchell (2018a) have argued that expansions of alpine grasses were deleterious to large game populations, forcing longer range out-migrations in winter and constraining opportunities for seasonal (summertime) hunting. With encounter rates reduced, foragers were obliged to expand their diets to lower-ranked aquatic resources, which have been shown to offer hunter-gatherers viable intensification options (e.g. Broughton, 1994, 1997; Zangrando, 2009; Jerardino, 2010, 2012; Toso *et al.*, 2021). Indeed, they may represent the *only* such option when primary productivity is low. Binford (2001), in his ethnographic sample of 339 foraging societies worldwide, noted that those inhabiting areas with effective temperatures (ET) < 12.75°C subsist mostly on aquatic fauna or terrestrial game (rather than plantfoods), but that only the former can sustain enhanced population densities. Given that present-day ETs in the Maloti-Drakensberg do not exceed 14°C, and with much of the highlands <13°C (http://www.worldclim.com), the MAT drop of ~2.5°C estimated for the Neoglacial would have pressed the region below this "terrestrial plant dependence threshold" (Binford, 2001). Faced with dwindling large game and unproductive alpine flora on which to fall back, afromontane foragers during the Neoglacial emphasised freshwater fish and other smaller food packets. High artefact densities, moreover, are suggestive of afromontane foragers converging on productive stretches of the deep valley bottoms along which resources had become concentrated, encouraging a degree of population packing in river corridors (Stewart and Mitchell, 2018a).

4.3. A new approach to painting?

Given foragers' preoccupation with resource control and otherworldly negotiation, the magnitude of the ecological and dietary changes just described raises questions about concomitant ontological shifts. In the previous section, we saw that adjacent to Likoaeng is a highly suggestive rock art

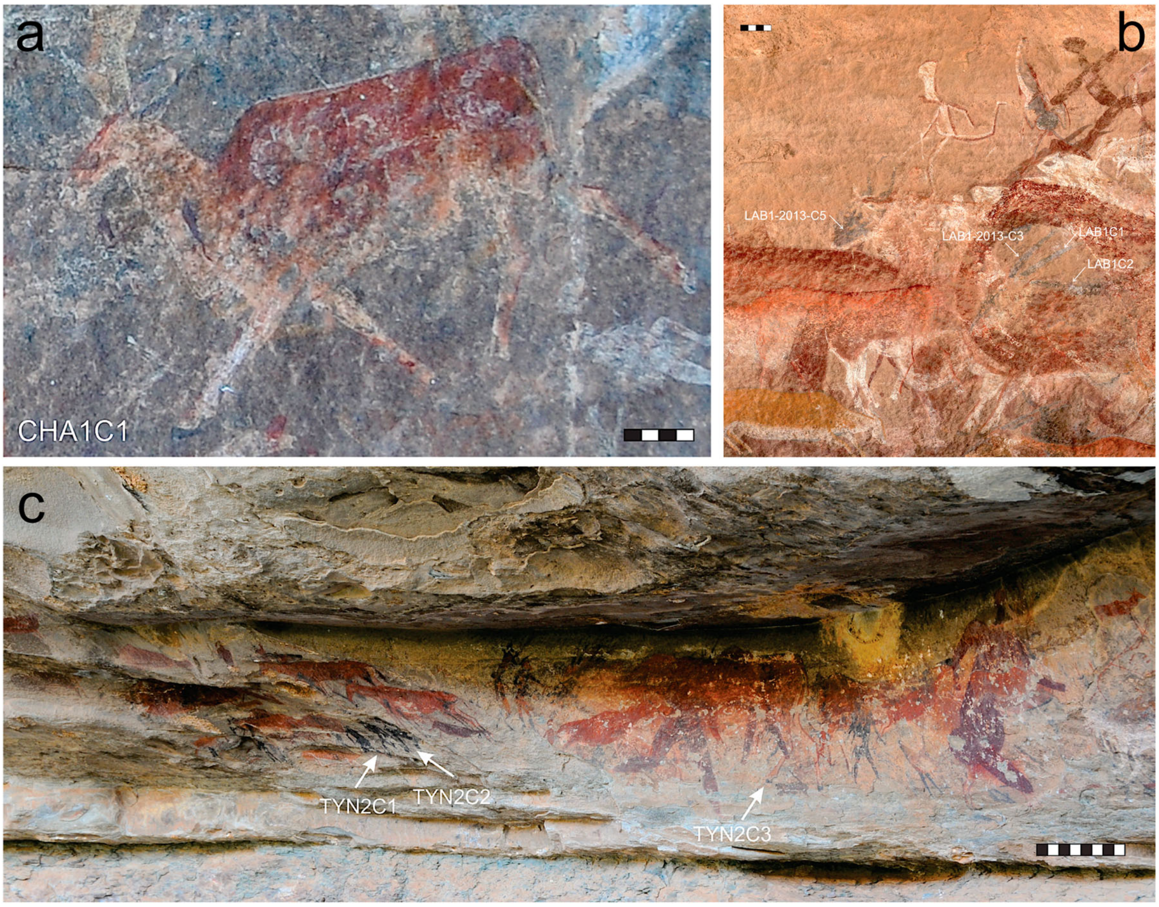

Figure 9. Sites in the Eastern Cape Drakensberg with directly dated shaded polychrome eland paintings. Carbon black was identified and isolated with pretreatment protocols to remove atmospheric carbon, and directly dated using AMS ^{14}C, yielding results shown in Table 1. Images courtesy of Adelphine Bonneau and David Pearce.

panel involving eland and fish, interpreted as expressing concerns with influencing rain and the resources dependent on it (Challis *et al.*, 2008). The Likoaeng paintings remain undated, but the dietary shifts from eland to fish registered in the Neoglacial levels of the adjacent excavation might suggest the paintings relate to events at that time. A rare opportunity thus arises to gain a fuller understanding of cultural change by bridging the parietal and excavated archaeological records, but how to seize it?

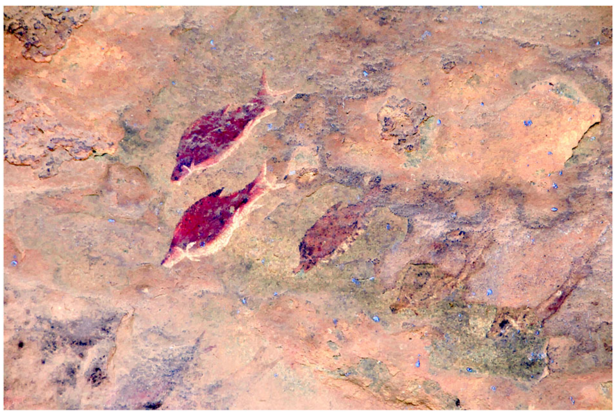

Figure 10. Shaded polychrome fish at Likholong ha Piti on a tributary of the Senqu in southern Lesotho (see also Hobart and Smits, 2002; Hobart, 2003).Image and enhancement by authors.

Fortunately, a handful of direct ^{14}C dates now exist that help illuminate the ontological response to Neoglacial conditions in the Maloti-Drakensberg. We argue that this both involved and necessitated an elaboration of pre-existing artistic practice.

Specifically, the recent work of Bonneau and colleagues (2017a, 2017b, 2022; cf. Bonneau *et al.*, 2011) has produced dates for shaded polychrome eland antelope, owing to the carbon black paint in their manufacture. The samples were taken from images in the Maclear region in the southern Maloti-Drakensberg (Figure 1). As a whole, it appears that shaded polychrome eland entered the archaeological record during the Neoglacial, between ~2.9–2.3 kcal BP (Table 1; Figure 9). As we have seen, Mazel (2009:89) notes that shaded polychromes (eland as well as other animals, such as rhebok, bushpig and aardvark – and possibly fish: Figure 10) appear at the same point in the relative sequence across multiple research areas. Oxalate crusts underlying images produced dates of ~4 kcal BP (Mazel and Watchman, 2003), which might in general terms corroborate a Neoglacial date. However, Mazel places shaded polychromes nearer the 2 kcal BP mark, in accordance with his ongoing hypothesis that they were produced in response to stress relating to the arrival of African agropastoralists (e.g. Mazel, 2009:103–7).

Table 1. The four direct dates obtained for shaded polychrome eland in the Maloti-Drakensberg, after Bonneau *et al.* 2017a and supplementary material.

Sample	Lab code	Conventional ^{14}C	Calibrated age BP*
CHA1-C1	OxA-X-2590-20	2590 ± 110	2848–2352
LAB1-2013-C5	OxA-X-2555-16	2690 ± 100	2998–2381
LAB1-2013-C3	OxA-X-2555-17	1530 ± 90	1585–1189
TYN2-C3	OxA-25964	2080 ± 90	2306–1754

*Calibrated with Southern Hemisphere Calibration 2020 (SHCal20) calibration curve (Hogg *et al.*, 2020).

While shaded polychromes may very well *disappear* because of contact (Mazel, 2009:104; cf. Challis and Sinclair-Thomson, 2022), the new direct dates place their inception between 500 and 1000 years *before* such arrivals (*pace* Mazel, 2022). Questions raised by Jolly (2020) regarding the veracity of these dates have been forcibly rebuffed (Bonneau *et al.* in Jolly, 2020).

Rather than catalysed through culture contact, this new, embellished manner of depiction can best be understood, we suggest, as another cultural response to the Neoglacial, one visible in the socio-ontological domain. Viewed through the lens of San idiom, the placing of shaded polychromes in their chronological, environmental and excavated archaeological context allows us to make sense of this technique, and why it came about at this time. Especially during a phase when the environment was changing, the forager response would have been one of propriety and negotiation. If access to resources was achieved only on condition of correct behaviour, so respect toward the entities – rain, fish, eland – would have been enhanced. Conversely, the paintings so contextualised help complete the archaeological and palaeoenvironmental picture presented above.

5. DISCUSSION: ONTOLOGICAL ADAPTATIONS IN A VERTICAL WORLD

Afromontane foragers during the Neoglacial adjusted dynamically as their world in the high Maloti-Drakensberg changed around them. Responding to broader subcontinental climatic trends, local environments opened and closed windows onto resources whose successful capture demanded flexibility not only in diet, settlement and technology, but in social and ontological realms as well. Over the span of a millennium, societies went from year-round hunters of eland (pre-Neoglacial) to seasonal mass-harvesters of cyprinid fish (late Neoglacial), with an intervening phase when both resources were emphasised (early Neoglacial). This transition from terrestrial to aquatic resources placed premiums on logistical aptitude, requiring sharp seasonal timing and heightened spiritual precautions. Foraging, social and spiritual strategies were developed to capitalise on seasonal rainfall regimes, vegetation growth and concordant movement of prey animals. We hypothesise that the Neoglacial in the Maloti-Drakensberg witnessed a spiritual intensification married to that found in the faunal record. We also suggest that ideas about eland and fish, while originating before the Neoglacial in a pre-existing "grammar" (Barnard, 1988), coalesced in new ways that were both salient and enduring. Indeed, the impacts of these events on the Mountain San were profound, influencing highland foodways and artistic traditions into historic times.

5.1. Early Neoglacial (~3–2.6 kcal BP)

In the early Neoglacial, high-altitude alpine vegetation began to move downslope with enhanced cooling (Parker *et al.*, 2011). Like many mountain systems, surface area in the Maloti-Drakensberg decreases monotonically with elevation (Elsen and Tingley, 2015). Past depressions in vegetation belts would have resulted, therefore, in unpalatable alpine grasses covering larger proportions of the landscape than they do today. However, this expansion of C_3 grasses would have also resulted in much more of the mountains experiencing the short "burst" of higher grazing potential in the growing season. Eland are known for taking advantage of tight seasonal windows by congregating in very large numbers (e.g. Hillman, 1987, 1988; Keeping *et al.*, 2018). Thus, while overall mammal biomass on the landscape was likely lower, for a brief window in summer large terrestrial fauna would have been plentiful – particularly the locally migratory and mountain-loving eland antelope.

Mitchell *et al.* (2011) hypothesise that Likoaeng's immense quantities of (often very large) fish suggests that its inhabitants aggregated there to exploit seasonal fish runs. We concur, but maintain that this scenario more likely characterised the late Neoglacial and after. In the early Neoglacial, we believe that eland was the target resource that motivated such aggregations. Seasonal aggregations so focused would have included locals on the Senqu and, via regional social networks (Stewart *et al.*, 2020; Mitchell and Stewart, In press), probably bands of friends and relatives from elsewhere. Indeed, eland herds – congregating at altitude from surrounding lowland zones to consume the tender new C_3 grass shoots – would have exerted a heavy draw on nonlocal foragers. To maximise the narrow hunting window, foragers may well have anticipated it by several weeks or more, readying their hunting gear for the arrival of up-migrating eland (cf. Binford, 1978). Rivers rising with spring rains would have precipitated spawning runs of fish, presenting those assembled with ready sources of protein and fat (Mitchell *et al.*, 2011). That early Neoglacial foragers at Likoaeng were fishing from late spring to mid-summer is suggested by the relatively even representation, as we have seen, of Orange River mudfish and smallmouth yellowfish in these levels (Plug *et al.*, 2010).

This historical trajectory thus entailed evolving encounters with two very different prey types – eland and cyprinid fish – which, during the early Neoglacial, came to share one trait: both were warm-season migrants into the high mountain zone, the first rains triggering their up-valley ascents. The arrival of the rains, the subsequent running of the fish, and finally the arrival of the herds would have created conditions in which a number of actions – according to San idiom – were necessary. Because the high mountain pastures create a seasonal pulse of flora and fauna, so people's subsistence and spiritual strategies pulsed to converge here. Specifically, the need to influence the rain and the game would have become critical, with ritual specialists probably working together as they do today when bands aggregate, as well as holding healing dances to dissipate tensions (Katz, 1982; Wiessner, 2002).

As people came together in the highland summer for the eland hunt, their behaviour in this sense echoed that of the eland themselves (Vinnicombe 1976; for large summer aggregations of eland see Melton and Snyman, 1989). Eland venture upwards in the San idiom because they are called by *|Kaggen* and fed by *!Khwa* – the rain. Both deities are involved in these aggregations, giving them supernatural power (both danger and raw potential). Because human society mimicked eland society in this way, we postulate that relations brokered between humans and non-humans were likely to have been that much more closely and well negotiated.

The response to the more temporally-focused eland aggregation would, in the San idiom, have required a mediation with the forces on the landscape including the rain which brought the new grass, and therefore the animals. People summon/tame and "cut" the rain's animal so that the veld is regenerated and eland arrive. Never is this more important than in this time-pressed context. Concentrating efforts on influencing the rain (*!Khwa*) for the grass to shoot and the fish to run, in anticipation of the arrival of the eland in a narrowing window of opportunity, entailed a tightening of focus and a heightening of ritual action in an environmental ontology well suited to such adaptation. The spiritual links between eland, fish and rain would have become emphasised, the three things mutually reinforcing each other during this time of plenty. Once the game started arriving and the "glut" of highland hunting began, further ritual mediation was required to control the dangerous levels of supernatural potency – the superabundance and the social ills that can follow. Therefore, as well as wishing to make animals behave "nicely" in the hunt, there would have been a need to coerce people to behave nicely as well. Indeed, the former cannot be achieved without the latter (Challis and Skinner, 2021; Skinner and Challis, 2022).

Depictions of eland – already central to the forager canon of rock art – receive lavish attention in the early Neoglacial, as the dated record from Maclear attests. We hypothesise that the enhanced care afforded these images reflects these concerns and may mark the beginning of the hyper-attentive focus on eland for which the Mountain San are well-known (Vinnicombe 1976). While other species are rendered with the shaded polychrome technique (including rhebok, bushpig and fish), these are rare, whereas for eland this portrayal becomes the standard. Indeed, shaded polychrome rain's animals, whether bovid or serpentine, may well relate to the same era. Fish traps, nets and the act of fishing are usually painted in monochrome, but probably on account of their linear format – being usually too thin to "carry" shading. As we have seen, moreover, they often occur in close proximity to and in the same panels as shaded polychrome eland. Further to the observation that rain's animals, fish and eland are associated, we ask whether this was in fact the origin of equating rain with eland – did the eland become one of the rain's animals at this time? The pre-existing grammar is flexible enough to accommodate major dietary transitions, but at the same time this transition may have precipitated precedents of Mountain San ontology.

5.2. Later Neoglacial (~2.6–2 kcal BP)

After ~2.6 kcal BP, rainfall increased and became more evenly distributed throughout the year, with greater amounts falling in winter as snow (Fitchett *et al.*, 2016b; Herbert and Fitchett, 2022). Colder temperatures encouraged even more intensive downwards incursions of "sour" C_3 alpine grasses at the expense of more palatable ("sweet") C_4 *Themeda*-dominated communities. Crucially, multiple archives also suggest that woody vegetation declined as well, placing strain on the browsing antelopes that had come to dominate the region's ungulate communities after the mid-Holocene (Plug and Engela, 1992; Plug *et al.*, 2003; Plug and Mitchell, 2008).

As we have seen, Likoaeng at this time registers a dramatic downturn in eland remains, a pattern at odds with that of fish, which continue to dominate most of the rest of the sequence. It might be tempting to relate this purely to changes in site function in an otherwise unaltered resource landscape. For example, during its depositional history Likoaeng experienced a major geomorphological transformation that also could have affected how or when people used it. Specifically, it switched from a rockshelter to an open-air site when accrued sediments filled and then buried the former (Layer XI; Mitchell *et al.*, 2006:83). However, the shifts in ungulate and fish frequencies occurred prior to this – that is, when the site was still a shelter.

Rather than a change in site function, we interpret the crash in eland numbers as signalling a downturn in their abundance on the landscape. Today, the primary limiting factor on populations of wild antelope in uKhahlamba-Drakensberg parks, whether endemic or reintroduced, is food quality. While never high due to the region's extremely leached soils, the nutritive quality of even palatable forage like *Themeda triandra* plunges during the cold-season (Mentis, 1978; Rowe-Rowe, 1983). Eland are highly unselective mixed-feeders that eat mostly grasses in spring and summer, but in winter are dependent on browse. For this reason, as we have seen, they disperse widely and migrate to low-lying, well-wooded valleys (Melton and Snyman, 1989). In the late Neoglacial, with higher annual rainfall, colder temperatures and longer-lasting snow leading to widespread alpine grasses with few woody plants atop intensely leached soils, highland environments were likely unsuitable for eland populations, even in summer. Obliged to migrate further for winter forage, their return migrations during the growing season evidently reached up less frequently into highland Lesotho.

As mentioned, by the late Holocene eland were apparently the only very large ungulate present in the highlands (Plug *et al.*, 2003), a pattern at odds with sites below the Escarpment where other large game, though rarer than in the mid-Holocene, nevertheless persisted (Mazel, 1984; Opperman, 1987, 1996). For highland foragers, losing eland – their only large game species – would have thus been particularly serious. Perhaps unsurprisingly, then, after eland populations began eschewing the highlands the trend towards enhanced fishing continued. The representation of fish species also narrowed sharply to a taxon that spawns earlier in the year (Orange River mudfish). This suggests a concomitant change in the season of site use, from extended occupations spanning spring to mid-summer before ~2.6 kcal BP to shorter, springtime-focussed ones after that time. Thus, the intensified focus on aquatic resources (and other small food parcels) went hand-in-hand with a change in foragers' annual schedules to a different timetable: with no hunting glut to incentivize longer (spring-summer) occupation, late Neoglacial aggregations focused on the beginning of a short fish run, in spring.

The crash in eland numbers might otherwise be interpreted as a trigger for stress, and a seasonal abandonment. Yet we suspect something of the reverse in that the robust ontology

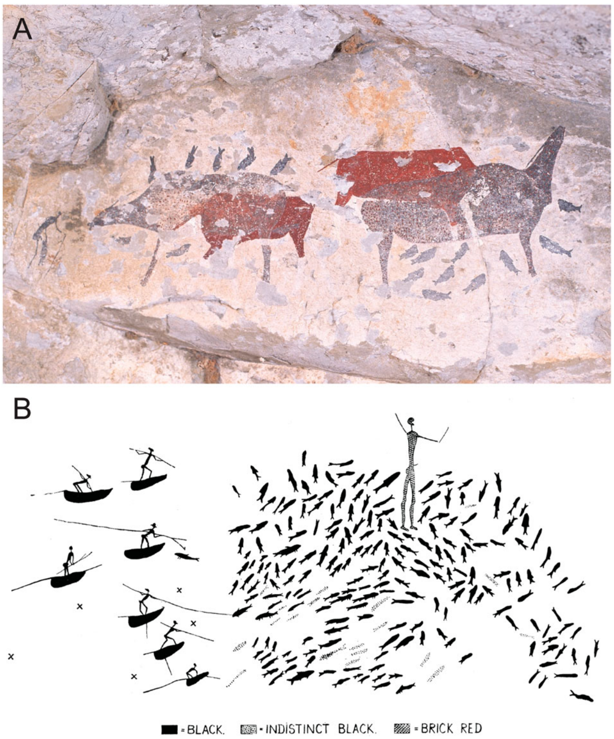

Figure 11. From the Eastern Cape Drakensberg, the upper painting (a) depicts an underwater encounter between a *!Khwa-ka-!gi:xa* tamer-of-the-rain and two dark *!Khwa-ka-xoro* rain's animals surrounded by fish. The rain's animals are superimposed on two bichrome eland, not by chance, because the eland is the quintessence of supernatural potency and *itself* came to symbolise the rain. In (b) we see Patricia Vinnicombe's re-drawing of (part of) a "fishing scene" on the Tsoelike, not far from Sehlabathebe. A.J. Goodwin (1949) noted the "fishing scenes" at Kenegha Poort and Mpongweni on the south-eastern side of the Drakensberg Escarpment and in 1960, Vinnicombe, already familiar with the Drakensberg "scenes", began finding images of fishing in high Maloti (Vinnicombe, 1960). The human figure standing amongst the fish she thought must have been unrelated. Thanks to her own (1976), Lewis-Williams's (1981:112) and others' later research, what we now know of San cosmology allows us to see the human figure underwater, controlling the movements of the subaquatic game. Images from ARADA, Rock Art Research Institute.

of the San, shaped as it was over the millennia, allowed these afromontane foragers to pivot, as conditions altered, from terrestrial to subaquatic game. Images of fish traps, nets and spearfishing from boats occur across the southern Maloti-Drakensberg on both sides of the Escarpment. The southern Maloti-Drakensberg also exhibit the highest concentration of rain's animal depictions (Dowson, 1994, 1995, 1998). It is more than coincidence that fishing and rain's animals come together in this region. The change in climatic and faunal data must have had an ontological counterpart, and we hypothesise that this will be seen in a change in spiritual emphasis, from negotiating primarily with the entities of the uppermost tiers of the cosmos to those associated with the lower places.

5.3. A Cosmos Compressed

The high Maloti-Drakensberg – above the cloud and shrouded in mist, where elands are in droves like cattle, and where fish run up the rivers into the sky – are a manifestation of the San cosmos (Lewis-Williams and Challis, 2011). This conceptualisation would have been thrown into sharp relief in the early Neoglacial, when the vertical *axis mundi* became "compressed". Descending vegetation belts brought eland from higher-altitude grazing grounds to within closer range of reconfigured, valley-centred human settlement systems and their hunting parties, but only for a short time. For local (and perhaps visiting) groups aggregated in highland valleys to take advantage of this glut of game, timing was everything. Successful hunting demanded presence and preparation, themselves dependent on similarly time-sensitive, aquatic resources: the rains arriving, the rivers rising and the fish running. The reliance on fish to sustain preparatory aggregations of hunters and their families thus brought these two mountain resources together both physically and, by extension, ontologically.

Specialist tamers of the game and of the rain (of elands and snakes) would have been expected to ensure the arrival of rains and associated resources. Equally crucial was the need to dissipate the inevitable tensions of the aggregated families, as well as deal with the superabundance of spiritual power present in the aggregated eland herds. San testimony suggests that all such tasks were undertaken in altered states of consciousness (e.g. in the sky or underwater), during which relations with those entities were brokered. Because of the anticipation, the tension and the need to broker "nice" relations with one another, with the animals and with the spirits, we have hypothesised a summer burst of ritual activity, visible in the inception of concentrated attention on eland paintings via the shaded polychrome technique. The exertion of influence over rain's animals would have been the first priority to ensure precipitation and the rising of the rivers. Underwater cosmology reflected in rock art depicts not only the manifestations of *!Khwa*, but the specialists themselves influencing the movements of the fish (Figure 11). Fish, in turn, enabled hunting parties to anticipate the arrival of the eland. In this way, the realms of the cosmos above and the cosmos below were compressed, creating an ontological fusion of fish and eland (Figure 11) – both of which *came to be* rain's things. This, we suggest, helped ease the subsequent dietarily substitution of the latter with the former when eland populations ceased congregating in the highlands. It follows that this ontological flux will be reflected in fish-related concerns in paintings, direct dates for which are thus a major research priority.

6. CONCLUSION

Few regions of the world boast richer visual and material archives of hunter-gatherer lifeways than the Maloti-Drakensberg Mountains. The region's first professional archaeologists, Patricia Vinnicombe and Patrick Carter, understood both their individual importance and the power of coupling them. While still far too few, direct dates from specific paintings present a long-awaited opportunity to do this, and so begin constructing the three-ply cable braiding the region's ethnography, rock art and excavated archaeology (cf. Ouzman and Wadley, 1997). In this paper, we have hypothesised several interlocking phenomena with repercussions for the last ~3 kcal BP in the high Maloti-Drakensberg. Integrating cultural remains from rock walls and sedimentary deposits with New Animistic readings of critical San testimonies, we see an overall spiritual intensification during the Neoglacial that mirrors the evidence for dietary intensification (Stewart and Mitchell, 2018a). This process played out in two distinct phases divided by a noticeable inflection point ~2.6 kcal BP.

In the early Neoglacial, the target of social aggregations in the highlands were eland populations who themselves were congregating there to exploit the short summer burst of shooting C_3 grasses. By this time, large ungulates had become rare across the Maloti-Drakensberg except for eland, which came to prominence (Carter, 1978:187; Opperman, 1987:85; Plug and Mitchell, 2008:48). The earliest shaded polychromes were painted, displaying an enhanced degree of care and attention that reflects San idioms of correct behaviour that, we argue, relates to a summer burst of ritual behaviour necessary at such aggregations. Fishing also ramped up, with an extended spring-summer season geared towards feeding the groups amassed for the hunt. Triggering the in-migrations of both fish and eland was early seasonal rainfall, and ritual practitioners specialised in taming the rain worked towards the dual goal of enticing game and raising the rivers to bring fish. One consequence was the ontological fusion of rain, eland and fish, a conceptual blurring which facilitated the subsequent shift in emphasis from terrestrial to subaquatic resources when eland vacated the highlands in the later Neoglacial (after ~2.6 kcal BP). Direct dates are needed to assess whether the onset of fish-related concerns in paintings mark this shift, but clear associations between paintings of fish – in some areas enhanced in shaded polychrome (Figure 10) – with rain animals (Figures 6 and 9) ties them unambiguously to seasonal rainfall and thus concerns about spawning (Challis *et al.*, 2008).

Placing directly dated shaded polychromes (Bonneau *et al.*, 2017a,2017b, 2022) in their full archaeological context, our model seeks to account for when and why the eland became the Mountain San's large game animal *par excellence* (Vinnicombe 1976). Indeed, those dates show that painting of said shaded polychromes did not cease with the Neoglacial, and there is clear evidence that eland remained ontologically central to Mountain San into historical times (Orpen, 1874). Eland feature in Qing's creation story as god's favourite animal "in droves like cattle" where he gives it special prominence; he further speaks of the eland and the rain in the same context of negotiation and influence. At present, however, we do not know how and why these ideas proliferated and endured over the past two millennia, nor what explains their variable expression across the region. Many questions remain. To what extent, for example, were ontological associations formed under one set of ecological circumstances still adaptive after conditions changed? Does the profusion of large, shaded polychrome eland along the Escarpment (e.g. Figure 2(c,d)) stem from preservation bias or attempts to influence up-migrating eland? Do occasional shaded paintings in other parts of the subcontinent (Pager, 1973; Mazel, 2009:111) speak to similar concerns as shaded polychromes in the Maloti-Drakensberg? Answers to these and other questions must await further data, not least from Neoglacial-aged sites in highland Lesotho other than Likoaeng. That this open-air site survived on the banks of the upper Senqu, a river segment known for its violent floods and erosive flushing of highland sediments, is extraordinarily fortunate and something on which we have admittedly tried to capitalise.

There is a trope in anthropological archaeology that heightened stress results in heightened ritual (e.g. Johnson, 1982; Jochim, 1983; Alberti, 2014). Typically, however, such claims lack specificity as to which stressors may have been filtered through what socio-cultural mechanisms and thus, in the absence of ethnographic scaffolding (Conkey, 1985; Hayden, 1987; Hitchcock and Ebert, 1989; Turpin, 1990), are deficient in explanatory power. Rather than viewing it as a Pavlovian response, our model can and does include the particulars of when, why and in what forms heightened ritual occurred. The ontological shifts that we infer, moreover, speak less to a society in trouble than to one "doing particularly well" (cf. Johnson, 1982:406) That is to say, they are not a response to stress but an adaptation to change. This society's success lies in the inherent mutability of the San's pre-existing spiritual grammar, an attribute that lends their spiritual system marked durability (Guenther, 1999, 2020b).

Resilience returns us to the concept of environmental ontology. Ecologically-induced transformations of relationships between people, resources and the supernatural entities they embody, all rooted in landscape, are both spiritual *and* inherently adaptive. Though hunter-gatherer religious life cannot be reduced to single characteristics, one common feature is that it can serve to promote – and thus cannot be separated from – survival (e.g. Biesele, 1993; Whallon, 2011). To deny that hunter-gatherer religion provides means to an end is to suggest that indigenous epistemologies are not pragmatic – indeed relational ontologies "function" to serve the purposes of the hunter, as Willerslev (2004:646) observes. In our case, supernatural re-negotiations eased the ecological changes and logistical challenges faced by upland communities via the creation of new ontological associations from a pre-existing grammar. The outcomes of these adaptations are both material and intangible, infusing key aspects of ethnographically-attested Mountain San ideology and its expression through a spectacular new mode of painting. Direct dates for shaded polychrome eland and all rock art imagery are critical to the long-pursued project of bridging the parietal and excavated archaeological records, but they are not enough. Employing the lens of environmental ontology affords archaeologists the inferential tools necessary for making synchronous archives mutually intelligible, rendering hunter-gatherer pasts – like shaded polychromes themselves – in fuller colour.

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