Milk not meat: the role of milk amongst the Khoe peoples of southern Africa

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Abstract

Historical sources emphasise the uses of milk of livestock in southern African Khoe societies. We review the role of milk amongst the Khoe, as recorded over the last few centuries, and demonstrate that it was of greater subsistence value than the meat of livestock. In addition, we highlight the recorded technological, social and ritual importance of milk amongst the Khoe. Finally, attention is drawn to recent genetic research that suggests the dependence of southern African Later Stone Age herders on milk.

Résumé

Les sources historiques soulignent les différents usages du bétail dans les sociétés Khoe d'Afrique australe. Nous examinons ici le rôle du lait parmi les Khoe, documenté au cours des derniers siècles, et montrons que le lait était, en termes de subsistance, d'une plus grande valeur que la viande du bétail. Nous soulignons également l'importance technologique, sociale et rituelle du lait parmi les Khoe. Enfin, nous attirons l'attention sur la recherche génétique récente qui suggère la dépendance des éleveurs de l'âge de pierre en Afrique australe à l'égard du lait.

Keywords

Khoe, Later Stone Age herders, livestock, milk, historical accounts

Introduction

Recent decades witnessed ongoing, sometimes vigorous, debate amongst archaeologists about how stock keeping was introduced to, and maintained by, southern African populations of the last two thousand years who also maintained a Stone Age technocomplex (see e.g., Sadr 2013 for summary of the debate). (Note: throughout this paper we use Later Stone Age herders to distinguish them from Iron Age agropastoralists [see Lombard et al. 2012 for interpretation of the Stone Age sequence in southern Africa].) Yet, little attention focused on a key aspect of stock keeping – milk. Archaeological exploration of southern African Khoe herders and their predecessors traditionally revolves around distinctive faunal remains and portable material culture (e.g., Smith et al. 1991; Beaumont et al. 1995; Sadr et al. 2003), although stone structures (e.g., Sampson 1985, 1986; Kinahan 2001) and rock art (e.g., Smith & Ouzman 2004; Eastwood & Smith 2005) are also sometimes considered. The potential impact of pastoralism on people's diet has furthermore been explored through stable isotope analyses (e.g., Sealy 2010).

Recent, genetic work provides a new dimension for discussions on Stone Age herding in southern Africa centred around milk. Genetic research that focuses on lactase persistence conducted on living Khoe, San and Coloured populations in southern Africa, indicates that non-Bantu-speaking herding populations from East Africa admixed with local San hunter-gatherers (Breton et al. 2014; Macholdt et al. 2014; Pickrell et al. 2014), probably resulting in what is now known as the Khoe population (i.e., groups with a Khoe linguistic affinity, and historically known to have possessed livestock). One of the strongest genetic pointers is that several local communities have a lactase persistent variant, allowing them to digest milk into adulthood. This specific genetic variant evolved amongst East African herders, and in southern Africa, has the highest current representation in the Nama Khoe of Namibia (e.g., Breton et al. 2014); a heterogeneous group with a complex recent history who roamed most of the western regions of South Africa and Namibia (e.g., Webley 1986). The genetic evidence for lactase persistence amongst a descendant population of southern Africa's Later Stone Age herders, serves as a timely reminder that owning livestock represents more than meat in terms of subsistence (also see discussion).

The dilemma for Later Stone Age pastoralist archaeology, is that milk does not preserve, nor does much of the material culture associated with its use, such as the historically recorded plant- and animal-based utensils such as wooden milk pails and containers (Fig. 1), or milk sacks made from animal skins (e.g., Table 1). Lack of preservation may thus contribute further to the already ephemeral-seeming Later Stone Age pastoralist footprint in southern Africa. We propose, however, that the value of fresh liquid, in the form of milk obtained from

domesticated animals, can hardly be underestimated in the arid western regions of southern Africa where we find early traces of Later Stone Age stock keeping. We also argue that by understanding the relationship between Later Stone Age herders and milk better, we might increase our understanding of the archaeological record associated with these groups.

Archaeological interpretations of Later Stone Age herding practices and material culture in southern Africa tend to make limited use of historical accounts, often referring obliquely only to reports of large herds of livestock that drew European seafarers to stop along the coast for fresh provisions (see Raven-Hart 1967). Exceptions include investigations by Rudner (1979), Boonzaier and colleagues (1996), Bollong and colleagues (1997), Stewart (2005), Fauvelle-Aymar (2008) and Sealy (2010). Smith (Smith & Pheiffer 1992, 1993, 1994; also see Cullinan 2003) has furthermore worked to make available and/or shed light on historical sources themselves. Regular consumption of milk by the Khoe has been highlighted (e.g., Smith & Pheiffer 1993; Sealy 2010), but as far as we are aware, early literature has never been scrutinised with the specific purpose to understand dairying behaviour in local Later Stone Age populations.

Historical sources may require circumspect use. For example, while Le Vaillant set out to write stories, with himself as main protagonist, to entertain his audience, Gordon based his accounts on detailed, first-hand observation and often critically compared his findings with those of Kolb (Huigen 2009). Indeed, the early 19th-century observer Lichtenstein (1928 [1812]: xii) remarked that each traveller "in succession has found great fault with his immediate precursor, … too often not undeservedly". South African travel accounts, in particular, have also become the subject of influential postcolonial readings, which view them as the intellectual vanguard of actual European annexation (see e.g., Huigen 2009; but also see Raum 1997). Although problems may exist with the context, content and translation of some historical records, snubbing the texts in their totality might deprive archaeologists of what could be valuable information about the people responsible for the archaeological record. Here we review the role of milk in Khoe populations as recorded historically over the last few centuries. We demonstrate that meat, obtained from domesticated animals, was of lesser day-to-day subsistence import than milk, and that milk had social, symbolic and ritual value within the context of the Khoe worldview.

Dairy in the day-to-day lives of historical Khoe

Fresh milk

One of the first experiences of the Dutch, when they arrived at the Cape of Good Hope in 1652, was to be welcomed with fresh milk by the Khoe (Goodwin 1952: 9 from Van

Riebeeck's diary; also see Sutherland 1864: 72-73). The Khoe men sucked milk from a small animal-hair brush (instead of cups), but children were observed to drink directly from the udders of sheep. At first, the Dutch were perplexed about the local herders' reluctance to sell healthy cattle to be slaughtered for fresh meat. They soon realised, however, that based on the low milk yield per day, ten cows per person were necessary for people depending almost entirely on milk (Sutherland 1864: 23; Goodwin 1952: 6). Several European correspondents at the Cape during the 1600s also mentioned the drinking of milk by the Khoe. For example: "[t]hey drink water or the milk of their cattle" (Dapper 1668 in Schapera 1933: 57), and based on personal acquaintance with the Khoe, Ten Rhyne (1686 in Schapera 1933: 129) reported: "[t]hey drink the milk of cows and sheep". Theal (1922: 99) even suggested that, if they had an adequate number of cattle to provide them with milk to subsist on, there was little need for the Khoe to put much energy into other subsistence activities.

Kolb (1719/1745 in Jopp 1979: 125), who reported on his experience with the Khoe between 1705-1713, wrote that, in order to quench their thirst, fresh milk was sometimes drunk out of the milking container immediately after having been milked. He mentioned that both fresh cow's and sheep's milk was drunk (Kolb 1719/1745 in Jopp 1979: 128), and that men enjoyed drinking water or cow's milk with their food (Kolb 1719/1745 in Jopp 1979: 152). According to Alexander's (1838: 97, 98) observations in the early 1800s, the staple of the Khoe, old and young alike, was milk from their cows and goats, often being the only food for weeks on end as a result of unsuccessful hunting, and because livestock were generally not slaughtered for food. A century later Dornan (1975 [1925]: 212) too reported that, together with game and veld food (plant foods gathered from the natural surroundings), the milk of cows and sheep was the principle food of the Khoe, and that children were taught to drink milk directly from animal udders. In fact, there is a special Khoe word for "to milk into the mouth" (e.g., Blench et al. 2008: 8), and boys who started herding at a young age quickly learned how to catch a goat and, sitting under or behind it, to squirt milk directly into their mouths (Schapera 1963 [1930]: 269). Schultze (1907: 258) reported that, during milking, the colostrum was considered harmful for the calf, resulting in a hard belly, but the Khoe valued and enjoyed drinking this milk, mostly boiled and thinned with fresh milk.

The Khoe also used milk as a boiling liquid or mixing agent for a variety of foods. Schultze (1907: 184-206) provided the most comprehensive and dependable record of this behaviour. For example, concerning the consumption of game hide, he wrote that, in order to make it tasty, it was roasted in a fire to remove the hair, cut into strips and hammered with stones before boiling it in water, or preferably, in milk (Schultze 1907: 186). A more opportunistic food source was locusts (preferably females, fat with eggs). The Khoe women would pound

the collected grasshoppers into a pulp, which was eaten raw or mixed with milk (Schultze 1907: 191-192). One of the main veld foods of the Khoe, *uintjies* (small, wild bulbs and corms), were sometimes also dried, pounded with stones and cooked with milk into a porridge (Schultze 1907: 194). Depending on the season, fresh milk, cooled or still warm from the cow, was reported to be mixed with *Acacia horrida Willd* (Cape gum) blossoms or the pea-sized chewed fruit of *Euclea pseudebenus* (blue guarri) (Schultze 1907: 197). Two types of white- and yellow-flowering *Gazania* spp (Namaqualand daisy) blossoms were also collected and eaten raw or boiled with milk into a porridge (Schultze 1907: 202). The Khoe knew that a large, black ant species collected certain grass seeds that are palatable to humans, especially those associated with *Aristida* spp (buffalo grass). They therefore raided the ant provisions for *mierkos* (ant food), which they roasted and ground to a flour with grinding stones. The flour was then cooked with milk into a delicious porridge (Schultze 1907: 200).

According to Schapera (1963: 294), "[t]he milk of their cows is the staple article of diet", but Khoe children subsisted mainly on fresh goat's milk, also often drunk by adults to save cow milk for butter churning (Schultze 1907: 188). However, when family or group wealth allowed, each child was given a cow for their own use (Schapera 1963: 194), which he could milk throughout the day for sustenance. Fritsch (1872: 325) commented on how, in contrast to Bantu speakers, Khoe adults enjoyed drinking sweet milk. In fact, he reported that milk mixed with water was the preferred drink of the Khoe – something also noted by Vedder (1937: 58) about the Nama Khoe of Namibia. Even though the meat of game was highly prized by the Khoe, milk was preferred above any other food source and served as *lebenselixer* (elixir of life), and the close relationship with milk was expressed in the language that includes specific terms for, for example, "cow-warm milk" or "cooled milk" (Schultze 1907: 186).

In more recent times, with the increasing impoverishment of the Khoe, goat's milk became ever more important, but sheep's milk was still rarely used (Schapera 1963: 298). In fact, goat's milk was probably the fall-back mode through time for early African herders. Alexander (1838: 278) claimed that "[t]o an African traveller goats are invaluable; they can accompany him every where [*sic*], and live where cattle would pine away and die; though the cattle of South Africa are assuredly the most hardy and enduring in the world. What care they for clover fields, and meadows of thick green grass, as long as they can range among the thorn bushes, and fearless of the prickles, get their tongue round the blades of white and sweet grass which grows up among the twigs. They also eat the tops of many bushes, but not of so many as the goats, each of which give nearly as much milk as a Namaqua cow, and of much richer quality".

Finally, a number of travel reports emphasise that Khoe hospitality involved offerings of fresh milk. Paterson, who travelled in the Cape and Namibia between 1777 and 1779, and "presented a series of facts, noted down upon the spot" (Paterson 1790: viii), recounted several occasions where various Khoe hosts presented him and his entourage with milk upon arrival at their encampments (Paterson 1790: 27, 51, 56, 120). Gordon (1779 in Cullinan 2003) likewise mentioned a number of instances where he asked for and/or was given milk when encountering Khoe on his fourth expedition into the South African interior. During his first journey into the interior (1781-1782), Le Vaillant's (2007 [1790]: 117) travelling party was apparently also brought "large quantities of milk every evening" by the women from a nearby Khoe group, whom his Khoe travelling companions had befriended. Upon his departure, he was given "a large provision of milk" in a pitcher (Le Vaillant 1972 [1790], I: 311). Milk was also one of the major barter items, and frequently offered as currency to Europeans instead of cattle (e.g., Paterson 1790; Alexander 1838; Sutherland 1864).

Fermented milk

Apart from fresh milk, Khoe groups also used fermented milk as a major part of their subsistence. Milk that was left standing, but was still liquid, was called "piss milk", because of its urine-like taste (Schultze 1907: 187). Similar to their Tswana neighbours, the Khoe sometimes produced curdled milk by allowing fresh milk to stand untouched for two days in a calabash until a thin, sour liquid formed on top, and a thick curdled substance at the bottom of the calabash (Schultze 1907: 187). Schapera (1963: 237) suggested that, because of the abundance of milk after good summer rains, Nama Khoe families subsisted almost entirely on dairy, including thick sour milk that was considered a staple, and made by adding plant ingredients (Schapera 1963: 237). Mixing some plant foods with milk probably enhanced the thickening process. Schultze (1907: 202), for example, reported that *Oxalis* spp (sorrel) were used in this way. The leaves, stems and flowers were dried in a pan over the fire, crushed, cooled and mixed with raw milk, which then thickens. We also know that some Khoe groups used plant roots in an effort to preserve milk through curdling. Plants used in this way included *Aspilia eenii*, *Boscia albitrunca* (caper busch), *Cullen obtusifolia* and *Tephrosia dregeana* (Van Damme et al. 1922).

In fact, and notwithstanding several records to the contrary, some reporters suggest that "milk is never drank while it is sweet" (e.g., Paterson 1790: 20), and that soon after milking, it was mixed with curdled milk and kept in a leather sack. Sparrman (1785: 239) also told of how the Khoe welcomed his company by inviting them to drink sour "sack-milk", which tasted like syllabub. On this occasion, their hosts informed them that sweet milk was

"unwholesome", and thus always mixed with sour milk in the milk sack. They were assured, however, that this was done daily to supply them with fresh sour milk without having to bother with cleaning the bag in which it was kept. Barrow (1801: 170) also reported that the milk baskets of the Khoe he encountered were never "washed nor cleaned". The fresh milk poured into them thus immediately curdled, and was used as such "and never sweet from the animal". He speculated that "[h]aving no bread, nor vegetables, nor roots, but such as grew spontaneously in the country, and as they seldom kill any of their cattle for the sake of the flesh, the necessity of taking something solid into the stomach led them, perhaps, to adopt this manner of drinking their milk; and the best proof of its nutritious quality, in such a state, was the general healthy appearance and vigor of their persons" (Barrow 1801: 170).

Butter

The South African cows encountered by the Dutch produced about 2-3.5 pounds of "very fine and yellow" butter per week (Sutherland 1864: 22 [from the Van Riebeeck diary, New Year's day 1653]). Several descriptions exist of how the Khoe made butter. One of the earliest is provided by Schreyer (1931 [1681]: 46), who did not find the process very amusing. He described how milk was poured into a sack of animal hide with the hairy side turned inwards and with a small hole at the bottom that was tied closed. Two people would then take the sack, each to an end, and shook and threw it as long as it took to churn the milk into butter. The buttermilk was then drained from the small hole at the bottom of the sack, and the slightly sour butter removed. What Schreyer did not find "funny", but rather repulsive, was the fact that the resulting butter was full of hair, yet the Khoe did not seem to mind eating it hair-and-all.

Grevenbroek (1695 in Schapera 1933: 247) described a similar butter-churning scenario. "They take a skin bag, with the woolly side in, and almost fill it with milk; then the neck is tied tightly with a thong, and the butter-maker, standing with his legs apart, and holding one end of the bag in his left hand and the other in his right, moves it vigorously up and down, to and fro, shaking and churning it, until the cream has been massed and hardened into butter". Kolb (1719/1745 in Jopp 1979: 125) provided a further sack-churning vignette, and was as disgusted as Schreyer by the butter full of hair and other "small stuff". He suggested that the Khoe did not consume butter, but that they used it only for smearing on their bodies or selling it to the Europeans. Ten Rhyne (1686 in Schapera 1933: 129), however, found that butter was made "by an elegant process". A bird would be skinned and the skin turned feather-side in. This sack was tied to a hollow stick and shaken until the milk separated into butter and whey. The whey was drunk, whereas the butter was used to smear on their heads. Ten Rhyne further

commented on the fact that the Khoe did not know how to make cheese, nor did they like to eat it.

Schultze (1907: 187) reported a different butter-churning method. He described how sour milk was ladled from a wooden bucket into a calabash with a wooden stopper (Fig. 2). The calabash was then rolled back and forth on a soft surface, often constructed by layering animal hides on top of each other. This would happen in the full sun and close to a fire, so that after about three hours of rolling, butter concentrated in the top of the calabash. The freshly cut roots of *Portulaca* sp. (pigweed) were sometimes added to the churning calabash to increase the butter yield. The buttermilk was enjoyed immediately after churning, and the butter eaten fresh or fried with plant foods (Schultze 1907: 187). The leaves of *Mesembryanthemum edule* (sour fig), for example, were sometimes fried in butter (Schapera 1963: 238).

Dairy as technology

The use of milk, however, extended beyond consumption. We have already mentioned that it was often used as a skin balm (e.g., Ten Rhyne 1686 in Schapera 1933: 129; Schapera 1963: 237; Kolb 1719/1745 in Jopp 1979: 125). However, Gordon (1779 in Cullinan 2003) noted that milk would be poured into flutes, made from "reed or thorn tree bark", to keep them "moist and sound", and that a "chewed-up plug of thorn-tree bark is then pushed in [to the flute], after it has been moistened with milk" to produce a single note when played. String, used for a variety of daily activities, like the sewing of skin objects, the construction of reed matting, the knotting of net bags, and setting snares, could also be prepared using milk. Schultze (1907: 241-242), for example, described how the best string was produced from *Acacia horrida Willd* (Cape gum) branches. A freshly chopped branch was quickly drawn through hot ashes and bashed on the ground to loosen the bark and thorns, which were then stripped. The inner white layer of fibre was separated out from the rest of the branch and hung up to dry. Later, the fibrous mass was soaked in lukewarm milk or, if in an emergency in water, before being sucked and chewed. Finally, a length of fibre prepared in this way was twisted between the right palm and thigh, while the end of the fibre was held in the left hand.

Milk yield and the milking of cows

As mentioned previously, Europeans who wanted to obtain cattle for meat soon realised that the Khoe were loath to let go of healthy cattle because of the relatively low milk yield and their dependence on milk for subsistence (Sutherland 1864: 23; Goodwin 1952: 6). Dornan (1975: 211-212) reported that the wealth of the Khoe consisted of long-horned cattle and sheep, and that the milk of cows and sheep was their principle food, together with game and

veld food. He also noted that the cows did not give as much milk as their European counterparts. However, they were "hardy and throve well", and the sheep had fat tails and were able to exist on the sparsest of pastures (Dornan 1975: 211-212).
In a rather technical discussion, Schultze (1907: 257-258) indicated that, in contrast to European milk cows, South African stock's milk yield was still synchronised with the fertility of cows and whether they were suckling calves. When the calves could feed themselves, the milk dried up. Yet some cows, exposed to good pastures, were able to give milk until shortly before giving birth to the next calf, even though the quantity of milk decreased with time. Under ideal circumstances, a cow could produce 10-15 litres of milk per day, but four litres seems the average for Afrikaner (Sanga) cows. During years of drought, calves starved when cows did not produce enough milk, and then milking for human consumption was equally dire. For a week after a calf was stillborn or died prematurely, only about 0.5-0.75 litres of milk, apart from colostrum, were produced each morning and evening. However, with the correct treatment, such a cow could be brought to produce similar quantities of milk compared to cows with healthy calves. The treatment would include blowing hard into the vulva of the cow (insufflation), or by using the hide of the dead calf to "cheat" the cow into believing that she still had an offspring. After the third or fourth calf, a cow was at her most productive regarding milk yield.

In one of the earliest accounts of milking, Schreyer (1931: 45-46), who wrote about his experiences at the Cape of Good Hope during 1669-1677, related how women would bind the hind legs of a cow together and then set a calf under the cow to start suckling. Once the milk was flowing, the teat would be removed from the calf's mouth and the women would start milking. When the cow refused to give milk, her rumps were pulled apart and blown into, stimulating milk flow. Another early description (Grevenbroek 1695 in Schapera 1933: 187) told how the cattle were brought from the pastures into their enclosure by dusk. Cows were then tethered to a stake by the left forefoot, and the women proceeded with their milking. Here too it was observed how, if a cow withheld her milk, the woman, or sometimes a man, would blow into her to make the milk flow. A drawing, thought to pre-date 1713 (Fig. 3), exists of this practice. Its accompanying note specifies, in the original Dutch, that a reed may have been used to blow air into the cow (Smith & Pheiffer 1993: 54-55).

Kolb (1719/1745 in Jopp 1979: 124-5) too described the use of calves to stimulate milk flow before milking. To the milking repertoire he added that, when a calf succumbed, its hide was placed over another calf to suckle on the calfless cow. According to Le Vaillant (1972, II: 90] the hide could simply be placed next to the cow, although this device was apparently only successful for a limited amount of time. If the hide was not available, the back legs of the cow

were bound and the cow blown into “from where the calf came”. A journal entry by Gordon (1779 in Cullinan 2003; also see Alexander 1838: 146) described the same practice: “[h]ere I saw for the first time that after they have milked a while they grip the labia of the cow’s vagina in both hands and then blow strongly into it. Shortly afterwards the cow pisses and they go on to milk. They say they do this if the cow withholds its milk”. Schapera (1933: 186 note 15) noted that “[e]ven at the present day, among the Naman, if a cow refuses to give milk, as may happen when its calf has died prematurely, someone may stand behind it and blow hard into its vulva while the milking is taking place”.

Levin (1972: 301) found that the woodcut of a person “with face almost buried in a cow's posterior”, that illustrates Kolb’s (1719/1745 in Jopp 1979: 126-127) description of insufflation, was worthy of further comment in a medical sense. He explained how posterior pituitary extract contains oxytocin, a chemical that will not increase, but hasten milk flow in lactating mammals by increasing intra-alveolar pressure. Oxytocin production is activated through the stimulation of the sensitive nerve endings in and around the skin of a teat or nipple, as well as distension (enlargement or ballooning) of the cervix and vagina. He went on to say that, even though the physiology of insufflation is only a recent discovery (dating to 1911), “its practical value has long been known”. The Scythians (Iranian equestrian tribes), for example, used bone pipes to inflate the vaginas of their mares, and some African farmers are also known to practise it. Levin (1972: 302) suggested that “Kolb’s woodcut is perhaps the earliest representation of augmented lactation”. However, rock art in northern Africa that might be more than 2000 years old also depicts insufflation (e.g., Le Quellec 2011). Le Quellec (2011) gives a thorough ethnohistorical summary of the behaviour amongst pastoralists, showing that it is most often practised in Arabia and Africa (see map 2 in Le Quellec 2011: 89). Indeed, Fauvelle-Aymar (2004) emphasises that the practice of insufflation is found amongst the Khoe and Nilotic-speaking specialised cattle herders in eastern Africa and the Sahel (the zone of transition between the Sahara Desert to the north and the Sudanian Savanna to the south), while Smith and Pheiffer (1993: 54) mention its occurrence amongst the Fulani and Nuer in particular.

The Khoe also had milking strategies for when many milk cows were not available to them. For example, Schultze (1907: 258) described how, when an adequate number of cows were available for milking, each was milked only once in a single sitting. However, when only a single cow or few animals were available, calves were brought to suckle for a second time. The “after milk” that is obtained during a second milking, is mostly thicker and more yellowish than the first yield, so that after milk was often diluted with water. The Khoe also had specific words for the milk obtained from third and fourth milkings in a single sitting, but

cows were seldom submitted to such an extreme milking regime. Goat's milk was the staple of cattle-poor Khoe groups or families. A goat delivers about 1-1.25 litres of milk per day. Sheep's milk was the least favourite for the Khoe, and sheep would only be milked when an ewe lost a lamb (Schultze 1907: 264).

Milk in Khoe social status and gender

Dairy products in social and economic status

Some accounts provide a glimpse into how milk is associated with social and/or economic status. For example, Grevenbroek (1695 in Schapera 1933: 259) reported how, when a chief died, the Khoe would shave their heads and throw any headgear "into the nearest river or mountain stream as a sign of mourning". During the first month of mourning a chief, no one would eat curdled milk, and for a year after his death, everyone would refrain from using butter on their bodies and would "go with uncovered heads and shaven chins". Shaw (1821 in Schapera 1963: 334) furthermore noted that a Nama chief would keep "a large quantity milk at the door of his hut", to be given to the poor.

Amongst some groups, wealth and consequently status could also be signalled symbolically, in the person of the *teyaap* or "milk-drinker" (Wikar 1779 in Mossop 1935: 43). Wikar (1779 in Mossop 1935: 43) explained how the milk-drinker would be confined to his bed for at least three to four months. During this time, an attendant fed him the milk of eight cows on a daily basis. Nobody else, apart from the attendant himself, could share this milk, and the drinker was not allowed to get up under any circumstances. After several months he would start to gain weight and his buttocks to display stretch marks, "like the abdominal skin of a young woman who is pregnant". Finally, once he had drunk all the fat of a specially slaughtered sheep and became a "monstrosity of fatness", he was allowed to get up. Wikar's informants noted wryly that "his one-time attendant, the one who was with him during his treatment, is not by any means emaciated either".

Gender roles pertaining to the Khoe dairy industry

Strong gender roles were adhered to regarding day-to-day milking activities and the consumption of milk. Hahn (1881: 19), for example, tells us that in every Khoe household, the wife was the "supreme ruler", and that the husband had no say. If he so much as dared to take a sip of sour milk without the wife's permission, his nearest female relatives would impose a fine to be paid in cows and sheep to his wife. Khoe wives thus had their own herds, some of which she would have received from her parents as a child, and some when she was married (Schapera 1963: 251). A husband would not sell or slaughter his wife's animals without her consent, and would even consult her when bartering his own stock (Schapera

1963: 251). Women were in charge of milking livestock at fixed times, i.e., at dawn and dusk (Ten Rhyne 1686 in Schapera 1933: 129), and men would only help with this activity on occasion (Schultze 1907: 257). According to Hahn (1881: 20) the eldest daughter was highly respected, so much so that the milking of the cows was left entirely in her care. He also cited a charming song that illustrates the daughter's status by calling her a "lioness" and a "great man's daughter" who milks the cows with a soft hand (Hahn 1881: 21). Amongst the Nama who possessed "in abundance horned cattle, sheep, and goats, which were assigned to the care of the children and boys" (Stow 1964 [1905]: 253), the women too would milk the cows and the men would produce the wooden vessels for holding the milk.

According to some accounts, children mostly consumed goat's milk, but adults would also do so when they wanted to save the milk of cows for butter production (e.g., Alexander 1838: 97-98; Schultze 1907: 188; Schapera 1963: 237). Wikar (1779 in Mossop 1935: 206), however, noted that while the Nama did not eat their goats, they used their skins and importantly, adored (*beminne*) their milk. Sheep's milk was rarely drunk, and men were not allowed to drink even a drop of it; only women and children could have this commodity (e.g., Schreyer 1931: 46; Stow 1964: 235; Kolb 1719/1745 in Jopp 1979: 128). In fact, sheep's milk, as opposed to that of cows and goats, was most often offered for sale to early European colonists (Kolb 1719/1745 in Jopp 1979: 128). Kolb tried on several occasions to establish the reason for the Khoe's seemingly odd relationship with sheep's milk, and spent a lot of tobacco in an effort to prise answers from men and women alike, but was only ever laughed at (Kolb 1719/1745 in Jopp 1979: 128).

Milk in Khoe medicine, taboos, beliefs, rituals and folktales

Milk and medicine

Difficulty in child labour was remedied by invoking "a plant of wonderful efficiency, which happily expels the foetus" (Ten Rhyne 1686 in Schapera 1933: 147). Kolb (1719/1745 in Jopp 1979: 92-3) provided more detail about this remedy, describing it as a drink decocted from finely chopped tobacco cooked in some cow's milk (sheep's milk could be used if cow's milk was not available). After the brew had been cooked for a while, it was sieved so that the plant material was removed from the liquid, and the birthing mother drank of the cooling liquid. The remedy helped to increase contractions, lessen pain and resulted in the woman throwing up heavily so that the child was "pushed forth". We digress here from our topic of milk, by contemplating the use of tobacco in this context. Kolb (1719/1745 Jopp 1979: 93) was amazed by the use of tobacco in this seemingly well-established "horse remedy", because the plant was not known, nor cultivated, in South Africa before the arrival of Europeans. He established from the Khoe that they used local *dagga* (cannabis) during earlier times. This

seems consistent with Ten Rhyne's (1686 in Schapera 1933: 147) account that he was unable to buy the plant he observed used in this way, and was always told that it was "forbidden by law to share it".

Dapper (1668 in Schapera 1933: 64, 65) observed healers bleeding patients with a knife, and sealing the wound by applying "a glowing bit of iron to the patient's arms". Afterwards a local herb mixed with freshly-cooked sweet milk was dripped into the wounds, probably to disinfect and help heal the wound. Patients were often treated for a variety of ailments by way of fasting and dieting during which cow's milk, boiled with aromatic herbs, was favoured (Grevenbroek 1695 in Schapera 1933: 243). Schultze (1907) also reported on two remedies in which milk was used. The treatment for chickenpox, for example, was to have a daily drink consisting of half a litre of diluted milk boiled with a handful of fresh (or two hands full when dry) goat's dung. Other than this concoction, the patient was only allowed a bit of dried goat's meat (Schultze 1907: 223). When a child suffered from unexplained fainting fits, s/he was given, mixed into a mouthful of milk, a powder made of eland skin, first cut into small (lintel-sized) pieces and then burnt. A fat-softened eland thong was then bound around the child's chest, and if it fell off within a day, the healing was considered successful, and the healer paid with a goat skin (Schultze 1907: 227). Finally, Watt and Breyer-Brandwijk (1932: 83) recorded the Nama to have boiled the tuber of *Pelargonium antidysentericum* (*namiewortel*/namie root) in milk for treating dysentery and diarrhoea.

Taboos and beliefs associated with milk

We have already noted that drinking sheep's milk was taboo for adult men (e.g., Schreyer 1931: 46; Stow 1964: 235; Kolb 1719/1745 in Jopp 1979: 128). Children were permitted to nourish themselves with sheep's milk, but the commodity was considered dangerous for adults (e.g., Grevenbroek 1695 in Schapera 1933:179). Schultze (1907: 297) also reported that menstruating girls and women were not allowed near the cattle or to milk them, and Frazer (1938: 9) indicated that Nama Khoe girls were not allowed to drink milk during their puberty rite seclusion. Barrow (1801: 163), in contrast, noted that girls amongst the southern and eastern Khoe groups were restricted to a milk diet while having their periods.

Until the third day after its birth, it was considered unfit for an infant to drink his or her mother's milk (Schultze 1907: 221). If a wet nurse was not available, the child was given goat's or cow's milk, and often would be very weak, even too weak to suckle, by the time it was allowed to take its mother's breast. Schapera (1963: 263) reminds us that although Schultze provided no explanation for this taboo, a similar custom was recorded amongst the !Kung hunter-gatherers who believed that both mother and child might die if a child was

allowed to have milk from its mother's breast too soon. Remarkably, snakes were believed to be fond of milk, and to suck on cows in the kraal at night, or even on women in their huts. It was held that, should a woman or cow dare to refuse a snake, they would get bitten (Hahn 1881: 81). Also, sorcerers could use the roots of a harmless shrub in milk to "cause the death of a person" (Hahn 1881: 83).

Milk and anders machen *(to change) rites and rituals*

Milk also appears to have played an important role during various ritual activities of Khoe groups. *Anders machen* is the term used by Kolb to indicate rites and rituals that changed the nature of things, for example (but not exclusively), rites of passage. One such an event would be a young girl's puberty rite. During this time the girl is *!nau* (*!* represents one of the several click sounds in the Khoe languages). Generally speaking, *!nau* is a state of crisis during which a person is believed simultaneously to be exposed to danger, and to pose a danger to other people and animals. Such a person had to be secluded from his or her everyday surroundings, to be reintroduced after a while as a changed person with new characteristics, assuming their normal place in the group (Hoernlé 1918 in Schapera 1963: 257). Barrow (1801: 163) reported that little was preserved of the religious behaviour of the groups that he encountered during his travels, but one custom that persisted, was that associated with a girl's "first symptoms of maturity". During this time her head was shaved, all ornaments were removed from her body, and for the first and only time in her life, she was "clean washed and scoured". For the duration of the girl's menstruation, she was restricted to a diet of milk and could not be in contact with men. Schultze (1907: 296) described how, after her first period ended, an older woman would apply fresh cow or sheep dung mixed with milk into a paste over the girl's whole body. This mixture quickly dried on the warm skin of the girl and fell off her body by the end of the cleansing rite. The cleansed girl could then emerge from her seclusion hut as a sign to all that she was eligible.

Hoernlé (1918; 1923 in Schapera 1963: 272-279; also see Seligman 1961: 32, 33) also gave a thorough description of how, when a Nama girl has her first period, she was temporarily secluded. When her confinement neared its end, she was thoroughly cleansed of "child dirt", in this case with melted butter and cow dung, which was then secreted away in an animal hole or ant heap (Schapera 1963: 274). After feasting and dancing, the girl was taken around the kraal and reintegrated into the community. During this reintroduction phase, she was thought to increase the fertility of all that she touched, including men, male animals, and milking vessels. Before resuming her normal milking duties, the girl first had to milk a cow, ideally one with calf for the first time, and the resulting milk had to be drunk by the *aba taras*, the old woman who officiated during her puberty rites. In future, she was not allowed to milk

cows during menstruation, because it would be dangerous to anyone who drank it. Milk also seems to have played a role in the puberty rites of Khoe boys. Gordon (1779 in Cullinan 2003) noted that the Khoe did not drink sheep's milk after becoming men, while Olpp (1888 in Schapera 1963: 282) observed how, for a period of one or two months during their puberty ceremony, Nama boys were only allowed to drink large quantities of cow's milk. If any other food was consumed, the rite had to be repeated from scratch.

Another form of *anders machen* was when sheep were chased through fire or smoke (Kolb 1719/1745 in Jopp 1979: 85-6). This was an infrequent event. First, the women had to milk the cows, add all the milk together, and bring it to the gathered men. The men would receive the milk with solemn demeanour, and after a short, serious discussion, drink all the milk so that not a single drop was left. Women were not allowed to drink any of the milk produced for this occasion; if this was to happen the whole ceremony would be rendered fruitless. As soon as all the milk was consumed, the men would rise and start a fire outside the kraal, which they covered with green branches to produce much smoke. A passage was left for the sheep to pass through the smoke. The sheep did not like to do so, so that the men had to circle and chase them through the smoke. As soon as one sheep passed through successfully, the others would follow. When all the animals passed through the smoke, a loud cheer could be heard accompanied by joyful jumps and jigs. The reason given for this ceremony was to protect the sheep from wild dogs.

Milk and rain making

Milk also featured during the great annual Nama rain-making ceremony. In 1913, Hoernlé (1921: 20-21) was told what follows about rain making, or the "yearly killing" that was the most important Khoe feast:

> "All families which could possibly do so took part in it. It was held near the chief's kraal, and if possible on the banks of a stream. If there was no stream near, then a trench to simulate one was dug. When the old men judged that the summer rains were due (in November or December) they told the chief that it was time to hold the yearly feast, and he sent word to all outlying families and decided the day and spot for the ceremony. Each family contributed according to its means, all bringing milk, and those who could some female animal, which in the old days was either a cow or a ewe, which must be pregnant. The feast could not be held at all without one pregnant animal. … When the fire at the riverside was ready, and a channel to the river had been made, "the old men of the tribe who were good at prophesying would take the uteri, hold them over the fire and pierce them with sticks so that the uterine fluid

> would flow directly through the fire and down into the river. At the same time milk in plenty and fat from the animals were thrown on to the fire, so that liquid really flowed, and great clouds of smoke rose into the sky, while all the people called to the rain asking it to come, to come in plenty, to make the ground soft, and the grass green, that people might have plenty of food for the year" [quotation marks here indicate the words of Hoernlè's informant] … This rain ceremony seems to me [Hoernlè] as full of symbolic rites as any I know. Female animals must be used, and those, too, pregnant, the more to typify fertility. Milk is there in abundance, and milk and water stream through the fire, putting it out just as the rain does, and run into the river, symbolising the running of the rivers after the rains. The smoke ascends to the sky in huge clouds, darkening everything, and so, too, do the rain clouds when they come" (Hoernlè 1921: 21).

Milk and Khoe mythology

Kolb (1719/1745 Jopp 1997: 63) described, as a religious act of the Khoe, the dancing to the moon, which was given godly reverence. He observed for several years how the dancing, clapping of hands and singing took place throughout the night during new and full moon. During one of the songs, the dancers would look up at the moon, greet it, and then pray for much honey as well as good pastures for their cattle so that they may have much milk. Hahn (1881: 42) fully endorsed Kolb's observations and confirmed that he had witnessed the same behaviour.

An old Nama man told Hahn (1881: 61) the following story: "Tsũi//goab [// represents click sound] was a great powerful chief of the Khoikhoi; in fact, he was the first Khoikhoib, from whom all the Khoikhoi tribes took their origin. … He could do wonderful things, which no other man could do, because he was very wise. He could tell what would happen in future times. He died several times, and several times he rose again. And whenever he came back to us, there were great feastings and rejoicings. Milk was brought from every kraal, and fat cows and fat ewes were slaughtered. Tsũi//goab gave every man plenty of cattle and sheep, because he was very rich. He gives rain, he makes the clouds, he lives in the clouds, and he makes our cows and sheep fruitful".

Heitsi-eibib is another "good being", with characteristics similar to those of Tsũi//goab (Hahn 1881: 65). Heitsi-eibib was born a calf from a cow, who grew into a large bull that ran away from those who wanted to slaughter him, transforming himself into a man making milk tubs (Hahn 1881: 65). In the legend of Heitsi-eibib's fight with the lion (Hahn 1881: 71-73), his mother poured sour milk from the calabash for him after he conquered the lion, anointed him

with fresh-roasted butter and sprinkled him with *buchu* (*Barosma crenulata* and *Barosma betulina*) after signing the following song:

> "Thou son of a great woman,
> Thy body looks like a cow's body;
> Thou big acacia with large branches,
> Thou red bull,
> Thou son of a red she-Bull (i.e., of a heroine)!
> Thou who drankest my milk!
> Thou whom I did not give the breast slowly (i.e., thou whom I nursed very carefully and gave much milk)".

Schmidt (2005: 158) discusses the concept of the evil co-wife/stepmother in Nama folklore. In one such tale, "driven by jealousy or by an attempt to obtain an orphan's heritage for her own child", a stepmother tries to kill the orphaned half-brother of her son by burying him alive so that all the milk of the orphan's cow could be used to feed her own son. Barren couples are another regular topic in Nama lore (Schmidt 2005: 164). In one example, a childless couple with a herd of cattle, but no children to help tend them, is "advised by a crow to kill a completely black cow, to butcher it and then to put all the parts back into the hide again and to bury it. This they do, and many children come forth from it and they have the names of the different parts of the cow – Head, Ear, Stomach and so on. The youngest and most beautiful one is called 'Milk' and she becomes the heroine of the tale" (Schmidt 2005: 164).

Finally, in two different Khoe stories (Bleek 1864: 50-56; Schultze 1907: 406-409) a girl is chased around a bush by an enraged lion that eventually catches and eats her. The lion then creeps into her undamaged skin. So disguised, he slips into her sister's bed, but the sister recognises the lion by its sharp claws. She shouts for help and, subsequently, the hut that she and her sister used to share is burned to the ground. Her mother, however, retrieves the sister's heart from the ashes, and places it in a bowl of milk upon which the girl is brought back to life. In both stories fresh, rich milk had to be used, retrieved from a "young cow who has just calved" (Wittenberg 2012: 672).

Meat and livestock in the Khoe worldview

Centuries of historical writing recorded how the Khoe obtained meat for every-day consumption mostly by hunting game, and that they did not routinely slaughter their livestock for meat (e.g., Barrow 1801; Alexander 1883; Dapper 1668 in Schapera 1933; de Beaulieu

1620, 1622 in Raven-Hart 1967; de Flacourt 1655 in Raven-Hart 1967; von Mandelslo 1639 in Raven-Hart 1967; Le Vaillant 1972, II; Kolb 1719/1745 in Jopp 1979; Gordon 1779 in Cullinan 2003; but also see Smith & Pheiffer 1993: 10). Especially during the winter months, when milk and plant foods became scarce, the men would resort to hunting, snaring and trapping game to supply their groups with food (Schapera 1963: 237). Animals from the stock herds were never slaughtered, unless there was an extraordinary reason (e.g., Kolb 1719/1745 in Jopp 1979: 147), such as festive and/or ceremonial occasions "when a feast has to be provided" (Schapera 1963: 237; also see Boonzaier et al. 1996: 41, 46).

Even the wealthy families would rarely, if ever, slaughter livestock for food (Schapera 1963: 237), but because many animals die from weakness, sickness or old age, and because nothing edible was ever discarded, the meat of domesticated animals **was** consumed. "They slaughter no cattle for food, except those which owing to sickness, old age or lameness are unable to follow the herd; nor any sheep, except when two people get married. … Two of the fattest sheep in the whole village are then sought out and slaughtered for this newly-married couple and dished up partly boiled, partly roasted" (Dapper 1668 in Schapera 1933: 55, 61; also see Le Vaillant 1972 [1790], II). Likewise, upon the birth of a child the farther, permitting he is well stocked, would offer one of his cattle for a "birthday feast" (Grevenbroek 1695 in Schapera 1933: 205), and even when a child was stillborn the farther had to slaughter one or two sheep (Kolb 1719/1745 in Jopp 1979: 93).

Using the Dutch term for Kolb's *anders machen*, Wikar (1779 in Mossop 1935: 62-63) distinguished between killing for the household, and ceremonial killing or *andersmaak* slaughters amongst the Khoe. Everyone was allowed to eat of a household kill, and this sets it apart from an *andersmaak* kill. According to Wikar (1779 in Mossop 1935: 63), the latter was a "kind of sacrifice of which only certain people may eat, i.e., those who of their own free will have already performed such a sacrifice". Thus, women and children could not eat the ceremonial killing of a man, and conversely men could not eat the ceremonial killing of a woman or child. Ceremonial killings were made when girls had their first periods, when women were courted, married, fell pregnant, went into labour, and passed away. Such killings were made for men after their first game kill that involved daring, or upon their own death. Ceremonial killings also occurred after battle, for those who had been killed, and for healing purposes, as a *plijsterbeest* (plaster cattle). Unusually, everyone was allowed to partake of a healing kill (Wikar 1779 in Mossop 1935: 67, 69). Wikar (1779 in Mossop 1935: 81) further recorded that a girl experiencing her first menstruation remained at home and, noticing this, her parents or friends proceeded to slaughter sheep and cattle for her. If they were wealthy, this could continue for two weeks, but if they were poor, one animal would suffice. The girl

then wore the gall bladder of the slaughtered animal on her head, the omentum (*netvet*) around her neck, and the sinews around her legs.

When a woman accepted a man's marriage proposal, a sheep or ox belonging to the suitor was killed for her (Wikar 1779 in Mossop 1935: 85). During the celebrations that followed, men and women competed to see who could continue singing and dancing the 'humming dance' (*bromdans*), longest; if the men lost, they slaughtered for the women (but not *vice versa*!). The dance could continue until the next evening, and lead the participants to lose their voices so that they ended up "chirp[ing] like finches" (Wikar 1779 in Mossop 1935: 89). The suitor paid a bride price of two milk cows to the mother, and in return she provided the couple with a few basic household items. This settled the matter, and the marriage was finalised. Then the groom exchanged cattle with his new father-in-law (Wikar 1779 in Mossop 1935: 89, 91). Gordon's (1779 in Cullinan 2003) account confirmed the payment of bride price, in the form of ten heifers and the slaughter of one of them for the bride. Interestingly, according to Gordon the bride price was actually a loan, and the animals were returned after a few years. Stow's (1964: 253) observations, made another century later, complement Wikar's in that the husband gave cattle to the parents of the bride who would slaughter some of them for a feast.

Some initiation practices included that a young man would first be washed with water to rid him of the dirt of childhood, cleansed using fat, and then urinated upon by the old men for three days. Finally, he would be cleansed with the blood of a purposely killed animal, and again washed and rubbed with fat before his cattle were sprinkled with fat too (Wikar 1779 in Mossop 1935: 93). In this way he attained manhood. Wikar (1779 in Mossop 1935: 109, 111) recorded that when one of his companions was initiated as a hunter, the merry making first involved cooking of the dangerous animal killed, a rhinoceros, and was then repeated with the meat of a sheep. Finally, a pregnant ewe would be killed when a woman could not have children, whereafter the woman would carry, or *aba*, the placenta of the lamb on her back like a baby (Wikar 1779 in Mossop 1935: 92-93).

Hoernlé's account of the ceremony surrounding a Nama widow further extends the suite of special circumstances under which livestock were slaughtered. According to her, a Nama woman became *!nau* when her husband died. She was largely excluded from the death rites that followed, until cleansed (Schapera 1963: 365). Interestingly, the rites involved the slaughter of animals by the dead man's relatives, "to their means" (Schapera 1963: 364). Once the widow had been ritually purified, she scattered the content of a slaughtered animal's stomach in the cattle kraals, while saying "let there be plenty of milk" (Schapera 1963: 365).

Discussion

The central importance of milk to European-observed stock-keepers in southern Africa is one that many investigators appear to overlook (but see, e.g., Fauvelle-Aymar 2008; Sealy 2010). Historical accounts of the Khoe, as presented above, emphasise the social, symbolic and ritual value of milk. They attest to a daily dependence on fresh and processed milk as sustenance; practical uses of milk in technology; technologies devised around the processing of milk; symbolic employment of milk to indicate status, wealth and hospitality; an interweaving of milk and ritual practices; and the presence of milk in Khoe mythology. They furthermore emphasise the involvement and responsibilities of women in the management of stock, similar to some other pastoral communities (e.g., Bollig & Schnegg 2013: 7), and importantly, they report quite consistently the irregularity of slaughtering healthy livestock outside of a ceremonial context. Regarding the latter, Jesse and colleagues (2013: 78) explain that cattle herders in dry environments, such as the western part of southern Africa, tend to subsist predominantly on milk products. In such contexts cattle are slaughtered only during social, ritual or ceremonial occasions, and meat shared within the community (Jesse et al. 2013: 78). The authors view ritual and sacrifice as a coping mechanism, and refer specifically to Dahl and Hjort (1976 in Jesse et al. 2013: 81) who stated the following:

> "[A]part from slaughter in cases of emergency, the most frequent type of slaughter is … for ceremonial purposes. These may relate to life-cycle ceremonies, yearly thanksgiving or prayer for rain, etc. It should be remembered that such sacrificial feasts do not involve the destruction of the sacrificed animal, but rather public ceremonies with communal and communial sharing of food … [and] many such feasts, such as appeasements for better times, occur during famines when milk production is low".

Historical sources on the Khoe confirm the slaughter of livestock during life-cycle ceremonies, held at a person's birth, coming of age, marriage, and death, and also as part of rain-making ceremonies (also see Boonzaier et al. 1996). Khoe herders were well adjusted to living under pressure, in arid and semi-arid conditions. In the historical accounts outlined above, this is hinted at by accounts of sour milk being refreshed on a daily basis; of families contributing animals for slaughter and communal consumption, **within their means**; and perhaps also by the practice of only breastfeeding babies once their resilience has been determined. It may be possible that, under comparatively vulnerable conditions, highly valued domestic stock were integrated with ritual and ceremony to allow "societies to cope both physically and **mentally**" (Jesse et al. 2013: 93, our emphasis), rather than slaughtered as a

daily food source. The Khoe exploited their livestock in a reliable, future-orientated way, i.e., by subsisting essentially on their milk, instead of their meat.

Whereas the Later Stone Age dairy economy remains largely invisible, archaeological evidence does point to livestock as a meat source after approximately 2000 years ago in southern Africa. For example, at Boomplaas Cave (Western Cape Province, South Africa; see Mitchell 2002: 228 for locations of archaeological sites mentioned in the text) calcified or vitrified dung layers included sheep remains that were taken to indicate both the herding and consumption of stock in the cave (Deacon et al. 1978). Jakkalsberg A and B in the Richtersveld region of the Northern Cape Province stand out for yielding remarkably high numbers of domestic animal remains (Brink & Webley 1996; Sadr 2002, 2003). Simultaneously, archaeological faunal components suggest that herders supplemented their diet by hunting and gathering, so that sites lacking large numbers of domestic animal remains may well represent stock keepers, 'out hunting' (Klein 1986; Schrire 1992).

Another possible explanation for the absence of domestic faunal remains could be that stock was kept elsewhere. Kinahan (2005) suggests that livestock was not kept in encampments during aggregation periods in the Namib, but at stockposts located kilometres away. Sampson (1996) attributed small numbers of lithics or ceramics associated with animal enclosures to herders camping away from kraals. Finally, Webley (1986) noted in an ethnoarchaeological study amongst descendants of Nama herders, that huts were built between 30 and 50 m away from the kraal at stockposts. Taking into account the added influence of factors such as sampling bias and preservation, there clearly are a number of possible reasons for the limited occurrence of domestic animal remains at ceramic final Later Stone Age sites.

The overall limited occurrence of domestic animal remains in these contexts, however, has meant that their discovery in more substantial numbers draws particular attention. Sadr has offered a provocative explanation for their presence at sites such as Jakkalsberg and Kasteelberg (KBA and KBDe), which attributes the large-scale accrual of sheep remains to a feasting economy. Feasting, the "communal consumption of food and drink for a special purpose" that essentially represents a political act enabling the manipulation of social relations (Sadr 2004: 5), has been associated with the development of a local final Later Stone Age 'Big Man' economy rather than as evidence of true pastoralism (e.g., Sadr 2004, 2013; but see above historical references to rain-making and other Khoe ceremonies).

The historical record, like the archaeological one, is imperfect. It features some inconsistencies, gaps, and biases, but the overwhelming message seems to be that milk

yielded by their stock was highly valued by the Khoe – adding an important perspective often lost by studying and interpreting archaeological assemblages in a detached manner. Evidence of milk and of dairying behaviour during the Later Stone Age is difficult to trace archaeologically. Material culture could be an indicator, but may not always preserve, especially if manufactured from fast-perishing plant or animal materials (see Table 1). Culling patterns of livestock may be another line of evidence, but do not always yield clear results (e.g., Jesse et al. 2013). Rock art and linguistic evidence, for example, has been used to suggest that prehistoric features in the eastern and central Sahara, hinting at ritual cattle slaughter, may represent rain making ceremonies in response to environmental aridification (e.g., di Lernia 2006 in Jesse et al. 2013). Archaeological traces of ritual behaviour and language studies (see, e.g., Ehret 2008; Güldemann 2008) may likewise be of use in exploring prehistoric uses of milk in southern Africa. In this part of the continent, however, the dependence of Later Stone Age herders on milk is already persuasively born out by genetic evidence.

A high presence of the lactase-persistent genetic variant (-14010C), associated with specific East African pastoralist populations currently living in northeast Africa, persisted in the local Khoe, especially the Nama (Breton et al. 2014; also see Mcholtd et al. 2014, 2015). This genetic variant is one amongst a handful that allows the ability to metabolise lactose (the main sugar in milk), and thus the consumption of fresh milk into adulthood, and has an age estimate of 6000-7000 years (e.g., Tishkoff et al. 2007; Ingram et al., 2009; Itan et al. 2010; Gerbault et al. 2011; Mcholdt et al. 2015). Apart from it being present in current-day Ethiopian populations, it is also frequent in the non-Bantu-speaking groups of Kenya and Tanzania, and thus probably linked with the emergence of pastoralism in the Great Lakes region of East Africa (Rocha 2012; for additional arguments for links between northeast Africans and the Khoe see, e.g., Fauvelle-Aymar 2008; and Henn et al. 2008 for Y-chromosome evidence). Selection on the variant was initially weak, which implies an extended period for subsistence practices to develop to a level that would allow populations to reach the full fitness benefits of lactase persistence, probably by about 5000 years ago (e.g., Macholdt et al. 2015).

Macholdt and colleagues (2015) also suggest that the comparatively stronger signal of selection on the -14010C genetic variant in southern African populations show that pastoralism was fully established in the groups who started moving southwards by at least 3000 years ago. Thus, the lactase-persistence fitness benefit was already present with the first gene flow between the migrants and the local hunter-gatherer San (Macholdt et al. 2015). Because of natural selection, genetic lactase persistence occurs most commonly in

populations with a longstanding tradition of milking pastoralism and the consumption of unprocessed milk, whereas lactose intolerance is high where fresh milk is not a major part of the diet (Rocha 2012). For example, lactase persistence variants are under-represented or absent in many Bantu-speaking groups of Africa who consume dairy products only when fermented or processed (e.g., Rocha 2012). Milk-based pastoralism seems a necessary subsistence behaviour for lactase persistence to reach and maintain high frequencies in human populations (Rocha 2012). The genetic evidence for lactase persistence in current southern African Khoe populations such as the Nama would thus indicate that, amongst other things, the consumption of fresh milk was part of their continued subsistence behaviour – as indicated by several historical reports.

Concluding thoughts

Despite a clear message about the importance of milk amongst the historically known Khoe, accounts do not always correspond on every point. This may reflect the contexts within which sources were produced, or indicate actual variability in dairying behaviour. Indeed, precise uses and processing of milk may well have differed between groups. For example, whether it was used in its sweet or sour forms probably depended on a suite of factors such as season, abundance or scarcity of milk, the availability of fresh drinking water, and so forth. Different Khoe groups, especially those in close contact with Bantu-speaking communities, also may have had different preferences, for example, consuming fermented rather than fresh milk. Today we see that although the lactase-persistent genetic variant is high in a group such as the Nama Khoe, it is lower in other Khoe-San groups in the region, which may indicate variation in lactose tolerance amongst groups. Inter-group variability aside, however, the historical record conjures a picture of a society relying not so much on the meat, as on the milk, of their livestock. This reliance on milk crosscuts subsistence, technological and ritual behaviour and may, if rooted in prehistory as genetic evidence suggests (more than 1300 years ago [Breton et al. 2014] or between 900 and 1800 years ago [Pickrell et al. 2014]), justify a modification of our expectations of, and approaches to, the archaeological remains of the Khoe and their predecessors.

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Table 1. Khoe material culture historically associated with milk.

Items	**Authors**
Plant-based utensils/equipment	
Hollowed blocks of wood (milk vessels)	Sutherland 1864; Theal 1922
Wooden milk pails	Fritsch 1872; Schultze 1907 (Fig. 1)
Wooden dishes, basins and bowls	Fritsch 1872; Hahn 1881; Schultze 1907
Wooden butter bucket	Schultze 1907
Hollowed milk 'bamboo'	Fritsch 1872
Large calabashes (which hold 20 or 30 quarts)	Sutherland 1864; Albrecht 1806 in Sydow 1965
Sour milk calabashes	Hahn 1881; Schultze 1907
Drinking calabash	Hahn 1881
Churning calabash with wooden stopper and leather holding sling	Schultze 1907 (Fig. 2)
Milk baskets (beehive-shaped, watertight and woven from a strong reedy grass)	Barrow 1801; Thunberg 1770/1772 in Sydow 1965
Animal-based utensils/equipment	
Skin bags (milk vessels)	Theal 1922
Leather bag for sour milk	Paterson 1790; Fritsch 1872
Hairy leather bags (for butter churning)	Schreyer 1931 [1681]; Kolb 1719/1745 in Jopp 1979
Leather bowl (for drinking goat's milk)	Burchell 1824
Tortoise shell (milk drinking basin)	Theal 1922
Polished tortoise shell spoons	Kolb 1719/1745 in Jopp 1979
Mother of pearl spoons	Kolb 1719/1745 in Jopp 1979
Ox horn spoons	Kolb 1719/1745 in Jopp 1979
Hair swab/brush (to suck milk from)	Burchell 1824; Theal 1922; Goodwin 1952
Pottery	
Self-made clay pots for drinking, cooking and storage of dairy, amongst other things (similar in shape to Roman urns, but with two small handles through which a thong could be passed)	Kolb 1719/1745 in Jopp 1979
Small clay containers	Fritsch 1872
Pots made of clay and ground quartz	Hahn 1881
Clay pot with thong handle	Schultze 1907

Figure 1. A wooden milk pail and two wooden milk vessels used by the Khoe as recorded by Schultze, redrawn by ML after Schultze (1907: 244 and 245).

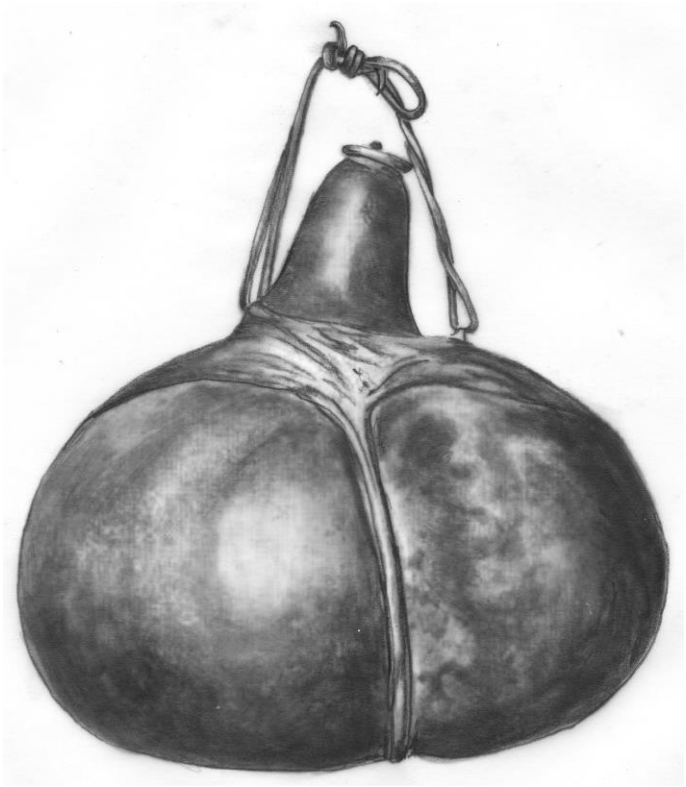

Figure 2. Butter-churning calabash with wooden stopper and leather holding sling as described by Schultze, redraw by ML after Schulze (1907: 187).

Figure 3. A drawing of insufflation, thought to pre-date 1713, in which a reed may have been used to blow air into the cow (see Smith & Pheiffer 1993: 54-55).