Chapter 4

History and origin of Nguni cattle

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The history of domesticated livestock is an integral component of the history of the people to whom they belonged (Curson & Thornton, 1936). Archaeological findings cited by Duminy & Guest (1989) indicate that a Stone Age society, now known as San, a hunter gatherer society, resided in the eastern parts of South Africa (ranging from the Eastern Cape, the area currently known as KwaZulu-Natal, the southern parts of Mozambique and most of Swaziland) as well as an Iron Age society who entered the region between 2000 and 1500 BC. The latter group of people brought domesticated livestock to the area, which comprised cattle, sheep, goats and dogs. It is concluded that between AD 800 and 1200, this Iron Age society became more complex and by 1500 the cultural patterns, in which cattle figure prominently and are associated with the Nguni-speaking people, had evolved.

It is commonly accepted that cattle were present in large numbers along the south-east African coast and the immediate interior by the 17th century, based on diaries kept by sailors passing these coasts at that time as well as remains found at archaeological diggings (Bisschop, 1937). Robinson (1872) records that, as far back as 1689, some shipwrecked mariners described Natal (currently KwaZulu-Natal) as "full of cattle". It is likely that these were the ancestors of present day Nguni cattle. The influx of white settlers to the region south of the Tugela River, which commenced in 1836, had a profound effect on the peoples living in these areas. Not only did this change the composition of the people, with the San people being expelled from the region, but the white settlers brought their own cattle with them as well as their way of livestock farming. The cattle population in South Africa was significantly changed by the devastating rinderpest epidemics and subsequent livestock imports at the end of the 19th into the 20th century (Curson & Thornton, 1936).

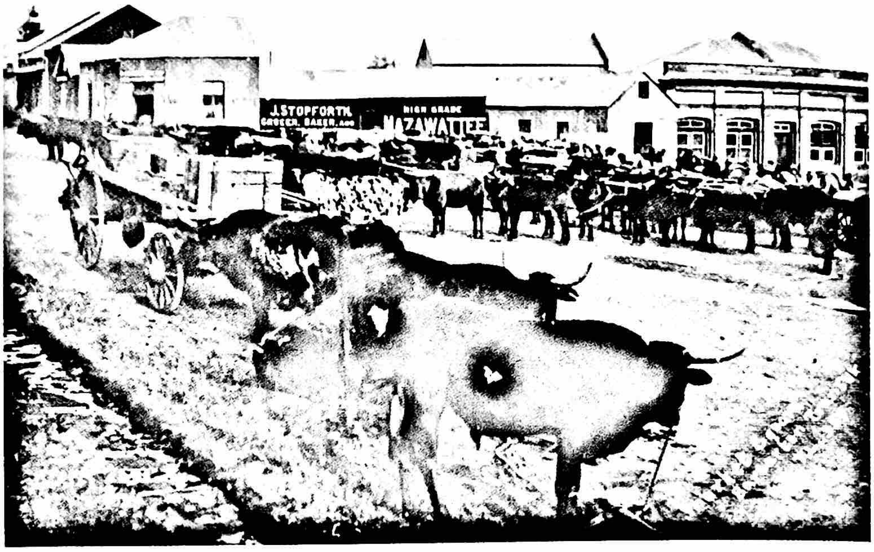

Figure 4.1: Nguni X Drakensberger cattle – 1890's

Because of the large numbers of cattle lost due to disease (the rinderpest and east coast fever epidemics), drought and wars between 1897 and 1905 and in order to replenish cattle, which were also a mainstay of the economy for many of the white people residing in South Africa at the time, European cattle were imported to South Africa in the early years of the 20th century. Furthermore, white farmers were very partial to the Afrikaner breed of cattle which they had developed from the cattle they obtained from the Khoi people (Brown, 1959).

Curson & Thornton (1936) found substantial herds of cattle throughout southern Africa. They state that apart from scattered herds of Afrikaner cattle found throughout the Cape and Free State, cattle of Bechuana origin in Northern Transvaal (currently Limpopo Province) and Zulu (Nguni) cattle in Natal, most cattle in South Africa were non-descript i.e. crossbreds. By 1956 the majority of cattle in the central parts of South Africa comprised a relatively uniform red Afrikaner (Epstein, 1956).

The Afrikaner breed of cattle was propagated extensively from stock that had survived the rinderpest. Curson & Thornton (1936) stated that, after the Anglo-Boer War of 1899-1902, the Transvaal Department of Agriculture showed some interest in Afrikaner cattle, but that farmers generally were not interested in the indigenous cattle i.e. the Nguni, using them mostly as a female line which they bred to exotic bulls. What is evident is that there was an emerging interest on the part of scientists in the indigenous breeds because there was indications that upgrading with exotic breeds resulted in a "general degeneracy in type and function" (Curson, 1936; Bonsma *et al.*, 1951). Fortunately for the purity of the breed, in many remote rural areas, Nguni cattle were kept and bred with little incursion of exotic genetic material.

The recorded history of the Nguni cattle starts in the period spanning the last years of the eighteenth century and including the first decade of the twentieth century. Sir Arnold Theiler sent a number of cattle skulls to Germany for craniological study (Curson & Thornton, 1936), the results of which appeared as a thesis in 1911. This was the first effort to characterize indigenous cattle in South Africa. Curson & Thornton (1936) and Bisschop (1937) did pioneering work in bringing the Nguni cattle, which were considered inferior to European breeds, to the attention of scientists and farmers through publications and talks presented at shows and farmers' days.

Very little is known of the management practices the Nguni people applied in keeping their cattle in times gone by. It is known that cattle owners usually kept their cattle within an enclosure in close proximity to their dwellings (Poland *et al.*, 2003). It is probably safe to assume that random mating took place in these cattle herds, except that, if current practices prevalent in the remote areas of Zululand can be relied on, breeding bulls were selected on their ability to overcome other bulls in combat. To prevent continuous fighting between bulls, the male animals that were not considered suitable for breeding were castrated (by crushing the spermatic cord between two stones). Poland *et al.* (2003) assert that, apart from a preference for skin colour, for the Zulu people numbers of cattle were the prime consideration.

An important factor emanating from a study of the early social practices of the Zulu people and, therefore, the cattle they kept, is that it is likely that genetic material was continuously moved around between cattle herds. This assumption is based on the fact that it was the custom that the bride wealth (lobola) was paid in cattle. This meant that whenever a bride was taken, the lobola cattle, which the groom was required to hand over to the bride's family, joined the herd of cattle kept by her family. The bride, on the other hand, brought some of her own cows to join the herd of her husband's family (Poland *et al.*, 2003). The result was that genetic material from the husband's herd was transferred to the herd belonging to the father of the bride and vice versa. Because there were very strict rules of exogamy, which required that a bride be taken from outside the clans of the four grandparents of the bride and bridegroom (Poland *et al.*, 2003), it can be accepted that genes were disseminated widely amongst the cattle in Zululand.

A tradition that remained, although it has deteriorated somewhat in recent times with the advent of urbanization, was that the male members of the society cared for the cattle, which started from a very early age (Krige, 1965). This promoted good stockmanship because the men grew up and lived in close association with cattle all their lives (Poland *et al.*, 2003). Mapiya *et al.* (2009) found in a recent survey, that cattle owners were mainly adult males and were more involved with herd management than females and youths and that many cattle owners paid herders to care for their cattle.

It is of interest to note that Shoshanguve, a major chieftain in the time of Shaka, fled to Mozambique with his tribe in the early 1800's and is likely to have taken cattle with him from his initial abode in Zululand (Duminy & Guest, 1989). According to Brownlee (1977) and Swanepoel & Snijders (2005), Mzilikazi, another of Shaka's generals, after a battle with Shaka's forces in 1822, fled, taking his cattle with him. He, with his followers, traversed large parts of the current Free State, the Northern Cape, Northwest Province and Gauteng, to ultimately settle in Zimbabwe. Apart from the cattle he and his people brought from Zululand, they took cattle away from the local people in the areas through which they travelled, adding these to their herds, thus disseminating this genetic material widely. It can be accepted that these were the forbears of many of the cattle currently considered to be indigenous in Zimbabwe, particularly the Nkone, which were present in large numbers in the western parts of Zimbabwe (Brownlee, 1977). Although new technologies must be used to trace these genetic movements, it has been stated that the "use of biotechnology will make for new opportunities, but it will take time" (Ensminger, 1991; Kotze *et al.* 2005). Already, findings emanating from the use of molecular techniques link in with the above description of historical events to provide a better understanding of the *status quo*. Furthermore, findings by Hanotte *et al.* (2002) show an introgression of secondary influences of *Bos taurus* from Europe and India into Southern Africa, which backs up previous historical descriptions.

Summers (1960) is of the opinion that the Khoi group of people moved down to what is currently the Western Cape and western parts of the Northern Cape and that the cattle they brought with them were the progenitors of the Afrikaner breed of cattle. Brown (1959) states that because these people moved relatively quickly, there was little mixing with the cattle of the Nguni people. He postulates that this is one of the reasons why Nguni cattle differ from Afrikaner cattle, although both are Sanga types. The progenitors of Afrikaner cattle moved rapidly through the areas where pastures were lush to end up and develop in dry sweet veld areas where the natural resource was so poor that it did not allow a cow to lactate and be pregnant at the same time. Oliver (1983) supports this view and states that the Afrikaner breed of cattle is an improved Sanga that can walk distances, tolerate heat stress and produce on sweetveld. In contrast to the Afrikaner, the Nguni is not able to maintain its body weight under these conditions (Bonsma *et al*., 1953). However, the Nguni is better suited to the moist climates of the eastern parts of southern Africa (Bonsma et al., 1953; Ramsey, 1985; Ramsey, 1989).

The ancestors of the Nguni breed of cattle, moved down the African continent at a slower pace than the ancestors of Afrikaner cattle (Oliver & Page, 1962; Swanepoel & Snijders, 2005).This allowed interbreeding on the way, which expanded the gene pool and allowed natural selection for animals better adapted to the relevant environments to take place. Less well adapted cattle did not survive.

Only 5 million km² out of the total of just over 30 million km², in the African continent is suitable for cattle production. The remaining area is either too dry for cattle or trypanosomiasis precludes or at best limits cattle production. The tsetse fly, the carrier of trypanosomiasis, resides mainly in wooded low lying areas with high temperatures and a high rainfall. This forced the movement of cattle to take place along the highlands, where trypanosomiasis is either absent or only a problem in wet years when the tsetse fly proliferates (Hofmeyer, 1968). Swanepoel & Snijders (2005) agree with Hofmeyer (1968) and say that it took 7500 years for cattle to appear in South Africa from the time archaeological findings indicate the first presence of domesticated cattle north of the trypanosomiasis belt. They postulate that the presence of the tsetse fly was the cause of the slow migration because herds could only be moved during dry periods when the tsetse fly was less prevalent. The Nguni cattle arrived on the sourveld of the east coast of southern Africa with the Zulu people (Brown, 1959) where they had to adapt to the harshest imaginable conditions for cattle production. Based on archaeological evidence, the Nguni people and their cattle arrived along the East Coast in the 5th Century AD and reached what is currently known as KwaZulu-Natal, Swaziland and the Eastern Cape around 700 AD (Hundleby *et al*., 1986). Assuming these findings are correct, the Nguni has had 1500 years to adapt to these climates.

The distribution of cattle considered to be Ngunis is reflected in Figure 4.2, which is from the survey by Bonsma *et al*. (1951). This distribution of the Nguni cattle is broadly similar to the distribution indicated by Brown (1959). Scholtz *et al*. (2008) indicate the area shaded with blocks in the map of Bonsma *et al*. (1951) as the natural home of the "Zulu" Nguni ecotype. Albero (1983) showed that the Nguni (called Landim in Mozambique) is naturally found in the areas indicated by Bonsma *et al*. (1951) and Brown (1959), as well as a broad area along the eastern areas of Mozambique to almost the border with Tanganyika.

Ramsey (1985) states that the Nguni had to adapt to the high humidity of KwaZulu-Natal, where rainfall can be erratic and where cattle diseases allow only the most hardy, disease tolerant, individuals to survive. A major cause of mortalities in cattle in these areas are tick-borne diseases, which are rampant in years when rains are plentiful and insects, including ticks, proliferate (Spickett & Scholtz, 1985; Scholtz *et al*., 1991). It has been shown that in rainy years, many diseases increase in incidence and result in increased cattle losses and the areas where the various tick vectors are found, expands. Global warming can therefore be expected to influence the distribution of ticks and the areas where they are currently found could expand to places considered tick-free, with concomitant livestock losses in animals that lack resistance to ticks and tick-borne diseases. The Department of Veterinary Services has reported that there are indications that the tsetse fly, which was eradicated in Zululand by aerial spraying in 1947, is again becoming prevalent in the area.

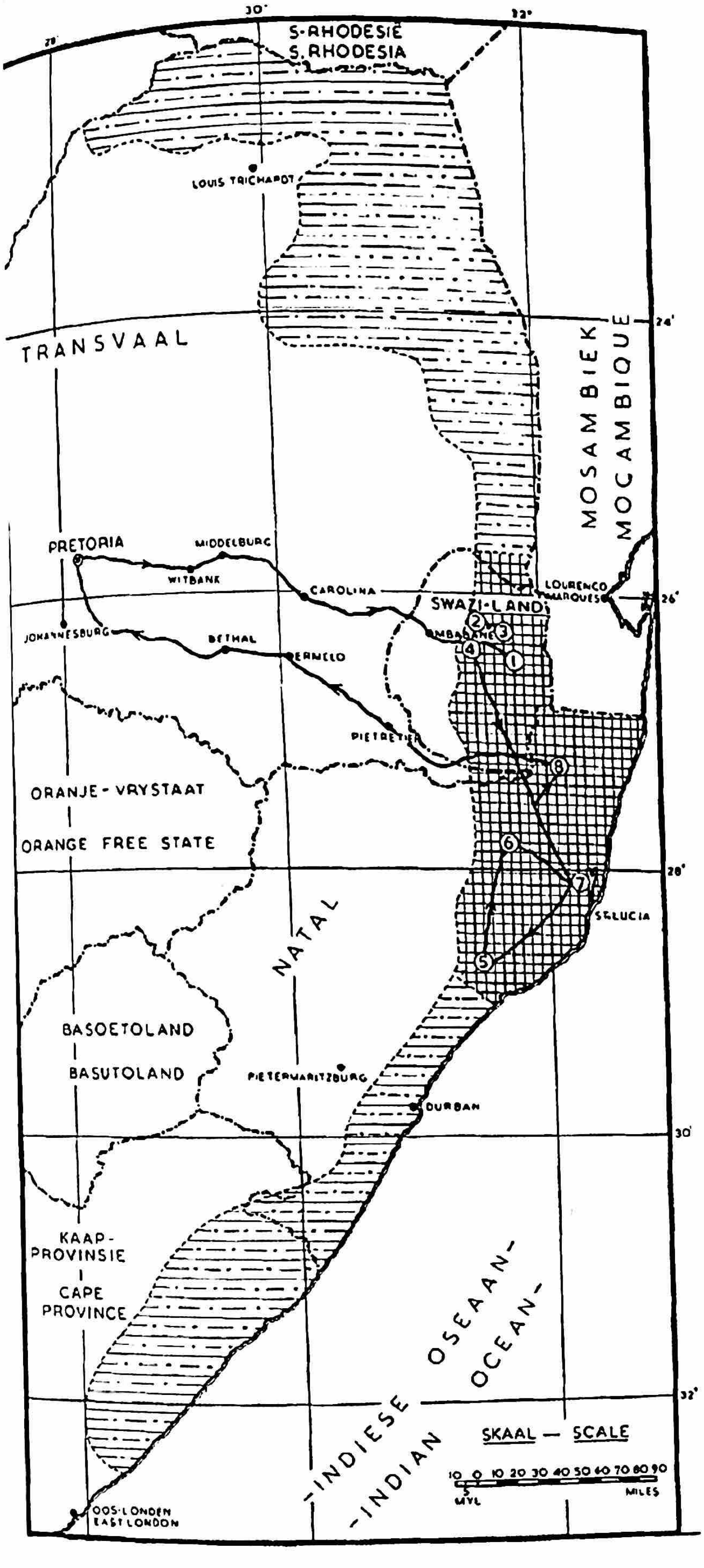

Figure 4.2: Distribution map of Nguni cattle ex Bonsma *et al.* (1951)

The line joining Pretoria with numbered sites in Swaziland and KwaZulu-Natal and the return trip to Pretoria show the route followed by Bonsma *et al.* (1951). All the shaded areas indicate the distribution of Nguni type cattle based on regional reports obtained from the relevant government offices.

Bisschop (1937) states that evidence for the presence of prehistoric bovine populations (*Bos taurus* primigenus or aurochs), are only found in Asia, Europe and Africa and that remains of these extinct wild cattle have been found all over Europe and the Middle East. south western Asia, in an area ranging from Turkey, through Iraq and Iran to the Indus valley, is the putative site for the domestication of cattle (Payne, 1964; Bruford *et al.*, 2003). Bruford *et al.* (2003) conclude that all domestic cattle are descendents of *Bos taurus* primigenus. They continue and say that domestication took place between 8 000 and 10 000 years before the present at a time when climatic conditions had improved following a preceding ice age. Earlier investigators assumed that there was a single domestication site.

However, Kantanen *et al.* (2009) cite investigations using DNA which indicate that humpless taurine (*Bos taurus*) and humped zebu cattle (*Bos indicus*) have two independent domestication events from genetically differentiated aurochs (*Bos primigenus*). They continue and state that the modern European and northern Asian domestic cattle are of humpless taurine type which came from the Middle East (Route 1, Figure 4.3) and descend from one of the aurochs populations domesticated in that region (Troy *et al.*, 2001; Edwards *et al.*, 2007). There is agreement that there was a second migration route from this first domestication site, which was towards the south west to Africa across Egypt (Route 2, Figure 4.3), although an intra-African domestication of cattle in the Nile valley is not excluded. There are images in many of the Egyptian tombs of humpless, long horned cattle which date from as early as 2000 BC. A third migration route (Route 3, Figure 4.3) is postulated to explain the origins of indicus types, which would have been towards the east, culminating in India. In the past, there was much speculation as to the origins of humped cattle (*Bos indicus*) of India and Africa, including theories that the indicus types originated as a cross between humpless cattle that had migrated there and wild cattle found further east e.g. the banteng. This postulate is refuted by the findings of Lenstra & Bradley (1999) who concluded that the separation between the taurine and indicus types from that of the bison, banteng, gaur and yak, predate the separation between the taurine and indicus types. Furthermore, Bradley & Cunningham (1999) state that there is strong evidence for a second domestication site of an eastern *Bos taurus* primigenus in the vicinity of Baluchistan and that this was the progenitor of *Bos indicus*, rather than the cattle which could have come from the third postulated migration from the first domestication site to the east, which they question (Figure 4.3), a view supported subsequently by Kantanen *et al*. (2009).

Currently most Indian cattle and the cattle of many African countries are classified as indicus, with strong evidence that the indicus types found in northern Africa were the progeny of cattle migrations from India and the Eastern parts of Arabia to Africa. According to Li *et al*. (2007), Ethiopia is a putative migratory route for both *Bos taurus* and Arabian and Indian *Bos indicus* cattle into East Africa. In the opinion of Linington (1990) and Schoeman (1989), the Sanga are a cross between *Bos indicus* and *Bos taurus*, which is assumed to have taken place between the cattle migrating south from Egypt and the Sudan, and the cattle that migrated from Arabia and India. This view is based on the postulate by Curson & Thornton (1936) that mixing of the Egyptian Longhorn with Lateral Horned Zebu cattle resulted in the Sanga. Bisschop (1937) however, suggests that the Sanga originated from a cross of the Egyptian Longhorn with Brachyceros. Brachyceros was smaller than the Egyptian Longhorn, was a shorthorned type and was humpless, like the Egyptian Longhorn. Furthermore, the base of the horns in the Egyptian Longhorn is oval, whereas it is round in Brachyceros and Nguni cattle. Bisschop (1937) based his assumption on the bifid dorsal spine found in indicus types as well as in some Sanga types, but which is absent in Brachyceros (Epstein, 1956; Brownlee, 1977). Bradley & Cunningham (1999) state that more work is required to verify these postulates, including the origin of what is currently classified as Sanga. These authors agree that the cattle that migrated south with their owners are likely to have been subjected to selection, either by the harsh climates they passed through or through discrimination against certain types by their owners. It is feasible that the Sanga is the result of natural and directed selection that took place during the migration southwards.

According to Bradley & Cunningham (1999) some 120 breeds of cattle have been classified for Africa. Of these cattle breeds, the majority found north of the trypanosomiasis belt are classified as indicus, whereas those found in Central and Southern Africa are of an intermediate type i.e. have a cervico-thoracic hump therefore are Sanga types. Whether the Sanga originated from a *Bos indicus* cross with *Bos taurus*, as discussed above, or that it is the result of natural selection from cattle originating from only one of the first two postulated domestication sites, must still be researched. In any event, if two domestication sites are possible, and the evidence for two sites is convincing, then a third domestication site cannot be excluded (Origins of Sanga?; Figure 4.3). Such a possibility is supported by the findings of Bruford *et al*. (2003) who say that the big surprise of their investigations using DNA markers was the evidence for a high number of domestication events and the diverse locations in which they took place. Furthermore, Bruford et al. (2003) conclude that recent genetic studies revealed a complex picture of domestication and that this information could radically change the approach that is necessary to conserve livestock biodiversity in indigenous breeds. Nijman *et al*. (2003) point out that hybridization between wild and domestic bovines is known to have taken place, which means that the cattle that migrated through Africa could have resulted from an introgression of genes from wild bovines mating with cattle owned by the people migrating south. There are therefore a number of possibilities and combinations of these events cannot be excluded for investigation.

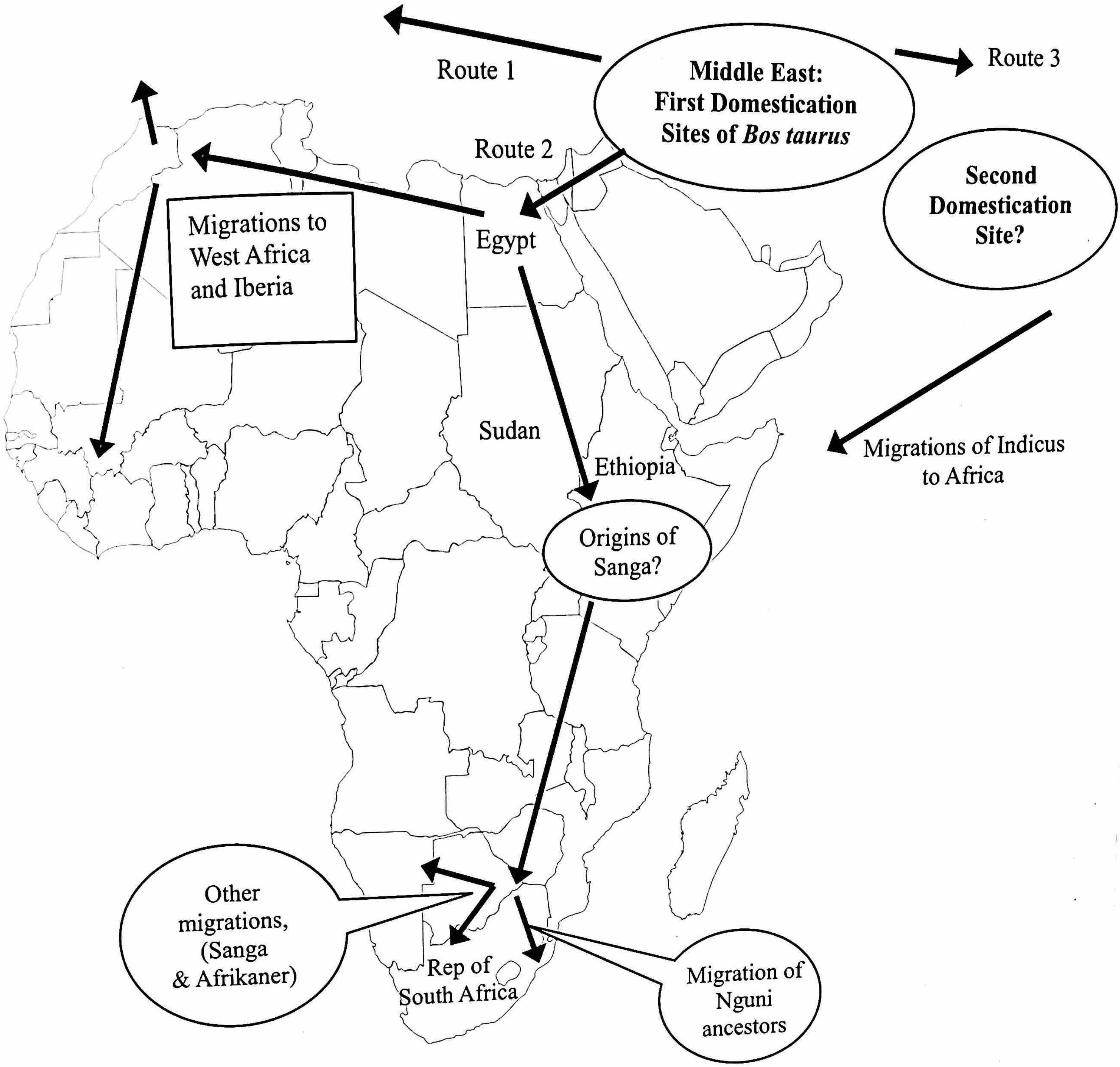

Figure 4.3: Schematic representation of postulated domestication sites and migration routes of bovines through Africa, a condensed excerpt of current data (Brown, 1959; Loftus *et al.*, 1994; Bradley & Cunningham, 1999).