

# Commission on Nomadic Peoples

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# Origins and spread of pastoralism in Africa<sup>1</sup>

Andrew B. Smith

Based on a great amount of present archaeological data, the author of this paper seeks evidence about ancient African pastoralism. He estimates the influence of different environmental factors on the development of early subsistence systems. Environmental phases, conditions of lands and water availability are among the factors influencing food production and domestication of animals. Through archaeological findings of the spreading of early pastoralism in Africa, the author brings together disparate regions, while not losing awareness of the many unanswered questions concerning the intervening, archaeologically less understood areas.

The antiquity of African pastoralism is no longer in dispute. We now have information about more than the broad outlines of the origins and spread of herding societies in the continent. Several regional studies, when combined, allow a coherent picture of the wider scope of pastoral adaptation.

We start with a basic ecological model of adaptation to the grassland environments of Africa, against which we then can understand the socio-political relationships between the different groups that can be identified in the archaeological record. None of this means that we have worked out the whole picture. As will be seen in the ensuing narrative, fundamental theoretical disagreements remain—for example, about what constitutes a “domesticated” animal, or with respect to the problems of understanding the transition from hunting to food production and these indicate the need for more data. Pastoral archaeology in Africa is currently a growth area, and it is to be hoped that this article will encourage entry both into the arguments and into research efforts to fill gaps in our knowledge.

To understand early pastoralism in Africa we must look at its precursors and estimate the degree to which culture and environment influenced early food production.

## The environmental background

Evidence is widespread in the Sahara of fluctuating environmental conditions throughout the Holocene (Maley 1977, Rognon 1976). Such fluctuation is most apparent in (a) diatomite exposures found over a wide area in Mali (Riser *et al.* 1983) and Niger (Faure *et al.* 1963), indicating standing water in the form of lakes over considerable periods as well as high beach levels around Lake Chad (Servant and Servant-Vildary 1980), and (b) data from sediment cores in Sebkhia Mellala (Algeria) and the Manga Plateau (Niger) (Gasse *et al.* 1990). In the Air Mountains, Niger, a relict sub-Mediterranean flora, such as olive and cypress trees, is still to be found; in the Ténéré (Niger) we find evidence from charred wood of a savanna vegetation 400 km north of its present distribution 7000 years ago (Neumann 1989). Archaeological data back up the evidence of a considerably ameliorated environment in the past: Rock engravings and paintings, as well as cultural debris, are found in areas with less than 20mm annual rainfall today. This rock art shows giraffe, hartebeest, ostrich, etc., all of which, though dry area adapted, need vegetation to survive, even if water is not available. Cattle paintings indicate that water had to exist, at least seasonally. The Tassili n’Ajjer (southeastern

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Algeria) (Lajoux 1963) or Jebel Uweinat (where Egypt, Sudan and Libya meet) (Rhotert 1952), where many of these paintings are to be found, are presently stark desert environments.

### Saharan early holocene lacustrine/riverine adaption

During the wet phase between 10,000 and 8000 BP which affected all of north and east Africa (Nicholson and Flohn 1980, Street and Grove 1976, Williams 1984), we can find the cultural and economic remains of people who lived around lakes and rivers and exploited aquatic resources. This would appear to have been a period of experimentation, as the equipment used differed markedly from what had preceded it. Bone tools, particularly harpoons, in association with a microlithic industry, have been found across a wide area stretching from the Nile Valley, at the confluence of the White and Blue Niles (Adamson *et al.* 1974, Clark 1989) and the Atbara and Nile Rivers (Haaland and Magid 1991), to the central Sahara in Niger (Clark *et al.* 1973, Smith 1980), Mali (Gallay 1966) and Chad (Courtin 1966), and even around Lake Turkana in northern Kenya (Barthelme 1977, Rigby 1987). Not all the sites were located around lakes or along rivers, as the area just to the east of the Nile was occupied at such sites as Shaqadud (Marks *et al.* 1985) by similar people at this time. But perhaps more significantly is the appearance of associated ceramics, first found around Khartoum (Arkell 1949), whose antiquity has only recently been recognised (e.g. Barich 1987, Hakem and Khabir 1989, Roset 1983, 1987).

This early cultural expression has also been found in the western desert of southern Egypt (Wendorf and Schild 1980, 1984). Large bovid bones, identified as cattle, have been found with material (Gauthier 1984). The rest of the faunal material is dominated by hares and gazelles, and, as the argument goes, the environment can only support small mammals will be inadequate for large

bovids without human intervention. Therefore the cattle are considered to have been domesticated. In addition, pits have been identified dug into the centre of the playas. These are interpreted as water holes used for watering the stock.

Domestication of cattle here by 9500 BP would be earlier than anything found in the the Near East, so research designs are being created to determine the Sahara's influence on Europe, via the Maghreb, Sicily, Sardinia and Corsica (James Lewthwaite, pers. comm.).

A part of the mind-set of those claiming very early domestication in North Africa sees ceramics as an indicator of food production. As Camps (1974:217) has said: "L'abondance des poteries dans le Néolithique saharo-soudanais du Sahara méridional sera donc considérée par nous comme une preuve indirecte d'un développement de l'agriculture".

Not everyone is convinced, however, that this early ceramic tradition indicates a food producing society. A number of questions remain to be resolved. These revolve around the interpretation of the environment at the time the sites were occupied. Proponents of the interpretation discussed here are explicit about the grassland conditions that would have existed around the playas during the phases in which they held water. Williams writes that "The monotony of the large samples of fauna collected at both Bir Kiseiba and Nabta reflects the restricted environmental characteristics of the North African Sahel. Vegetation must have been limited, and almost all of it concentrated around the seasonal playas" (1984:408), but Williams also concedes that the environment could have looked like Kordofan and Darfur with "stands of grasses and herbs on the uplands, and by galleries of bushes and trees...along drainages and around basins" (p. 408). Why, then, could the environment only support hares and gazelles? Where are the medium-sized bovids: oryx, hartebeest, or even the extremely arid-adapted addax? These animals can get the water from the vegetation they eat (Schmidt-Nielsen 1964).

Where in Africa does an environment occur in which only hares and gazelles are found? Because no such environment is to be found, the faunal sequences at Nabta and Bir Kiseiba do not accurately reflect the environment. A clue to the fact that the faunal sequence may be incomplete can be seen in Gauthier's (1980) re-identification of some of the "cattle" bones as medium-sized bovids (1984:59).

Fayum, site 2, shows a similar pattern of exploitation (Brewer 1989). The animals found in the earliest of the Fayum industries, called Qarunian and dated between 7th and 6th millennium B.C. (Kozłowski and Ginter 1989), include hares, canids, gazelles and cattle, none of which the analyst can identify as domesticates (Brewer 1989:130).

Because standing water was available in the playas of southern Egypt and around the Fayum (some 30 km from the Nile) at time of occupation, and because grass was present as well, cattle would likely have survived without human intervention; the circumstantial environmental evidence for domestication is thus questionable.

As the hunters appear to have been selective about what they took out of the environment, and thus were probably in control of their food resources, we might ask why they would have assumed the additional responsibility of keeping stock. What pressures on the society brought about involvement in food production? Would the minor environmental fluctuations outlined in Wendorf and Schild (Wendorf and Schild 1984, fig. 2.33) have been sufficient stressors, or would the long-term aridity that affected all of North Africa after 8000 B.P. have been required (Servant and Servant-Vildary 1980, Williams 1984)? The question is not an arbitrary one, because it is only after 7700 BP that ovicaprids begin to show up in a North African context, including both at Nabta Playa and Fayum. Only one wild ovine is found in Africa—the Barbary sheep (*Ammotragus lervia*)—an animal eliminated as a source of genetic material for African domesticates (Manwell and Baker 1975); thus animals found in Africa likely originated in the Levant.

Potential connections between Africa and the Near East can be found in sites along the Mediterranean coast south of Tel Aviv (Epstein 1984, Yeivin and Olami 1979). These sites have produced stone knives with an invasive retouch "characteristic of arrowheads and knives at Fayum" (Yeivin and Olami 1979:131). Other artefacts that have analogs in Africa are the flaked axes with polished tips (Epstein 1984 fig. 4:14, Yeivin and Olami 1979 fig. 15:3), and a human figurine of a type unknown elsewhere in Israel, but found in Egypt (Mozel 1979). One such site, Nizzanim, produced a radiocarbon date of  $6740 \pm 90$  BP (Hv-8509); an unpublished date of 7th millennium BP in association with cattle and small stock has also come from Qatif, a similar site in the Gaza area (I. Gilead, pers. comm.).

Another argument in favour of a later date for the introduction of domestic cattle lies in the size of the animals. Gauthier (1987:180) has argued that the size differences between, on the one hand, the larger cattle of the Mediterranean sites, Fayum, and the Nile Valley, and, on the other, the smaller Saharan variety were due to the poor grazing in the Sahara. The larger cattle are in no way distinguishable from the Pleistocene cattle found in the Nile Valley (Chrcher 1972) or from Europe (Degerbol and Fredskild 1970, see Smith 1992 for discussion). The Saharan cattle are all later than those from the so-called "Early Neolithic" at Nabta Playa and Bir Kiseiba, and would fall within the date of the later sites (with ovicaprids) from those two areas.

Gauthier would like to believe that because they are due to ecological conditions, size differences in the earliest phases of the domestication process would be insignificant. However, experience of farmers with wild game, such as eland, have shown that it takes very few generations for an appreciable difference in size to manifest itself in animals constrained by humans, unless wild genetic material is introduced continuously. When the gene pool is restricted, succeeding generations of animals become rapidly smaller.

## The grassland ecological niche in the Sahara: c. 7500–4500 BP

Clearly identifiable domestic stock in the form of ovicaprids first appeared in the African continent after 7700 BP (Wendorf and Schild 1984). Their bones have been found at the Haua Fteah in Cyrenaica c. 6800 BP (Higgs 1967, Kleon and Scott 1986) and the Fayum c. 6400 BP (Brewer 1989, Hassan 1986, Kozłowski and Ginter 1989). All this coincided with the opening up of a grassland niche in the Sahara which was increasingly occupied by pastoral people—e.g. Tin-Torha (Libya) between 7400–5300 BP, Uan Muhuggiag (Acacus Mountains, Libya) c. 6000 BP, Adrar Bous (Tenere Desert, Niger) c. 5800 BP, Meniet (Hoggar Mountains, Algeria) c. 5400 BP, Erg d'Admer (Algeria) c. 5400 BP, Arlit (Niger) c. 5200 BP (Figure 1).

The gradual movement southwestwards which can be discerned in the radiocarbon dates supports the idea of a Near Eastern connection. Our real problem in understanding this relationship lies in the crucial area of the Nile Delta, where continuous siltation has buried Neolithic sites beyond the recovery by modern archaeological methods. The closest source of information is Merimde beni-Salame on the eastern edge of the Delta where settled villagers kept cattle, ovicaprids, and pigs. The dates of occupation and cultural material are similar to those of Fayum (Hassan 1985). One piece of information that may have relevance for a considerably wider area of North Africa is the burial pattern of Merimde. Cemeteries, as found in the Badarian of Upper Egypt do not occur in this period. Also significantly different is the fact that the Merimde graves lack the profusion of grave goods associated with the Badarian skeletons. The Merimde grave goods are limited to a few personal possessions, such as a bead, an amulet or a reed mat (Hoffman 1980:174). As we shall see below, this pattern is repeated among prehistoric pastoralists in the southern Sahara and Sahel.

During this period rock paintings depicting domestic stock and their keepers appear in the Sahara (the "bovidien period"; Lhote 1958, 1976). Art from the Tassil n' Ajjer has been dated by means of small fragments of the painted panels that exfoliated and were buried by subsequent occupational debris. At one such site, Uan Muhuggiag, a stone fragment with two oxen on it had fallen in. The deposits overlying the painted stone were dated to 4730 BP (indicating the paintings were older). At another site, Uan Telocat, the dating was obtained from deposits that had built up sufficiently in the cave to conceal painted figures on the wall. The cultural material from the deposit was similar to that of Uan Muhuggiag, but the date of 6754 BP adds strength to the idea of pastoral occupation of the area around 7000 BP (Mori 1965).

The paintings offer more than just pictures of domestic stock. Cultural information is also encoded that indicates two quite separate groups: a dark-skinned group whose activities resemble those of modern Fulani, and a light-skinned, long-haired group with Ancient Libyan affinities (Kuper 1978, see also Smith 1992 for discussion).

Excavation of graves at Adrar Bous (Smith 1974a) showed the skeletons to be tightly flexed, and grave goods were limited to a single bead around the neck and the remains of a skin garment worn by the corpse.

The cultural material of these pastoral people in the Central Sahara can be separated on the basis of projectile points and other stone tools. This has allowed a spatial distribution of cultural groupings (Smith 1980) perhaps analogous to the various Tuareg sub-groups found in Niger, Mali, and Algeria today. The southern limits of these sites is clearly a line across the 18°N parallel (Figure 1). Annual rainfall in the southern Sahara during this period has been estimated at less than 500mm, which, because the tsetse fly requires at least 500 mm of annual rainfall for breeding (Nash 1969), would support the hypothesis that southward movement of domestic stock was



restricted by tsetse infestation (Smith 1979, 1984).

Owing to the perennial waters of the river itself, which offered conditions conducive to agriculture, in the Nile Valley at this time food production was much more varied than found in the Sahara to the west. Communities could rely on grain production and were able to make use of the more marginal environment away from the river as a pasture zone (Haaland 1987). Esh Shaheinab was the first of the so-called Khartoum "Neolithic" sites to be described (Arkell 1953). It produced a particular flaked stone adze with polished tip and edges, found in the central Sahara at places like Adrar Bous, suggesting some cultural connection at this time.

More recent work at other Khartoum "Neolithic" sites, such as Kadero (Krzyszaniak 1984) and surrounding areas, has allowed modelling of seasonal activities and exploitation of the resource base of people along the river and away from it (Haaland 1987). The development and integration of herding societies into more complex social organisations along the Nile is comprehensively treated by Sadr (Sadr 1991). His thesis is that as far as northeast Africa is concerned, all nomadic groups developed on the edges of state level societies. He bases this hypothesis on his work in the Atbai area of Sudan where he is confident that the mixed economy, like that described above for the Kadero area, developed into agro-pastoralism before specialization took place either towards fully fledged agriculture or pastoralism.

### The spread of African pastoralism

Around 4500 BP a major climatic shift caused increasing aridity in the Central Sahara, resulting in conditions similar to today's (Munson 1974, Neumann 1989, Servant and Servant-Vildary 1980). At this time the weather systems appear to have been influenced by the Intertropical Convergence Zone which moved southwards. As the rain

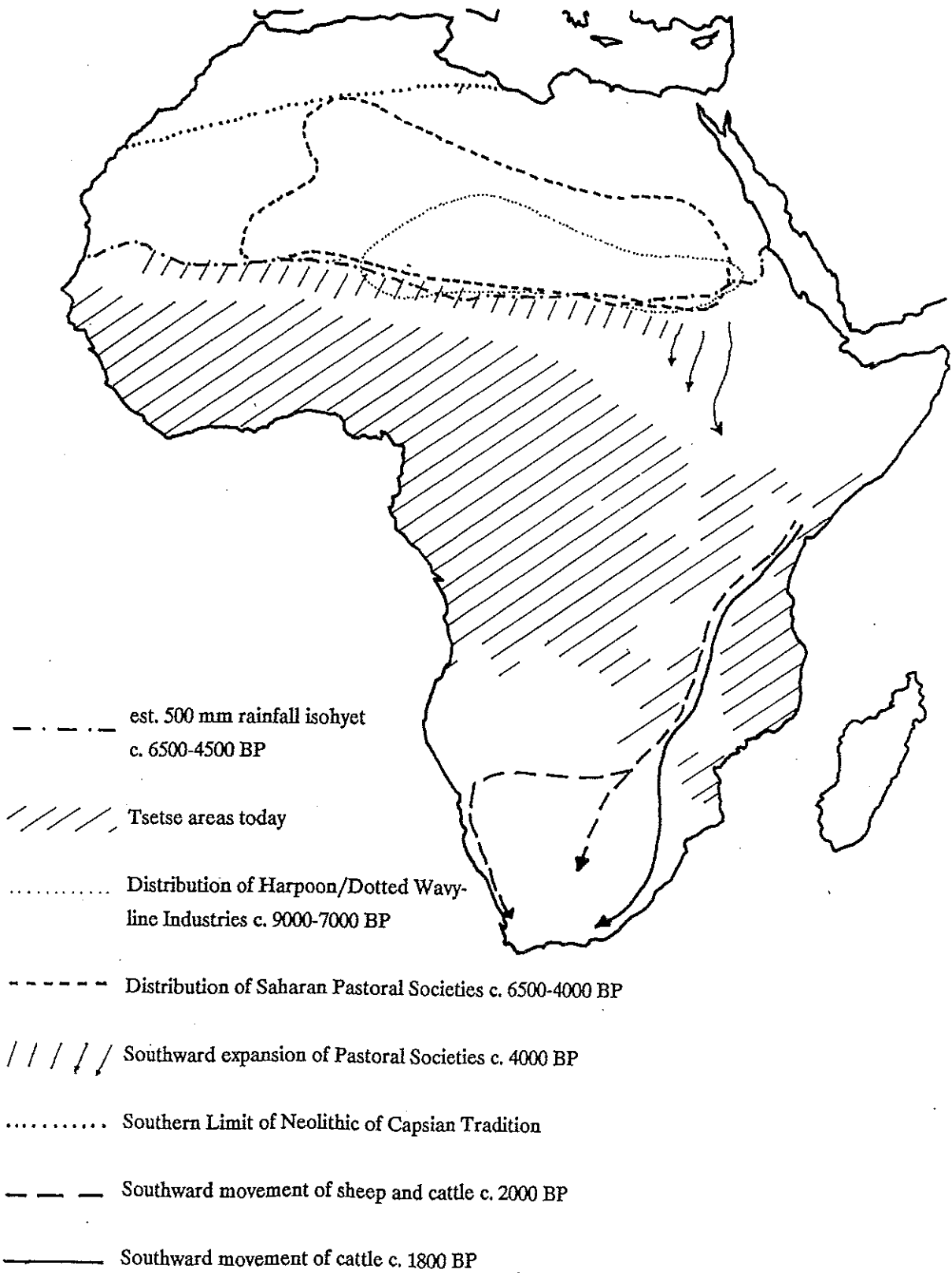
belt retreated, so did the tsetse, thus allowing occupation of areas hitherto closed to pastoralists (Raimbault and Dutour 1990, Smith 1979).

The first pastoral occupation of the present Sahel occurred around 4000 BP. At this time seasonal fishing camps were occupied by herders at Karkarichinkat in the Tilemsi Valley, Mali, north of Gao. The cultural equipment, while stylistically different from what has been found earlier in the southern Sahara, nonetheless shows affinities with the pastoral societies of the north. This can be seen in the large numbers of projectile points, flaked stone axes, and globular pots. It is also apparent in the flexed burials with a single bead around the neck (Gausson and Gausson 1962, Smith 1974a, 1974b, 1975).

Evidence for a similar southward occupation of the Sahel by people with domestic stock comes from Kobadi, near Namapala to the west of the Central Niger Delta, Mali (Raimbault and Dutour 1990), and Chin Tafidet, west of Tegidda n Tesemt, Niger (Paris 1984). The brief descriptions indicate that the sites overlap with the end of the occupation at Karkarichinkat (c. 3300 BP), but the two groups had different funerary practices. Cemeteries with large numbers of individuals were found in both places, but while the Kobadi skeletons had no grave goods, the Chin Tafidet burials had pots in association.

On the eastern side of the continent movement of stock-keepers had a pattern similar to that seen in the West African Sahel. Occupation of the area lying between the Upper White Nile (Kleppe 1984) and Kenya (Barthelme 1984) did not occur until c. 4000 BP. In the Lakes Province of Sudan, high lake levels during the mid-Holocene would have flooded the toich, and prevented occupation of much of the area by pastoral people prior to 4000 BP (Robertshaw 1987, Robertshaw and Siiriäinen 1985). Even today, tsetse are concentrated on the ironstone substrate, so during the wet season cattle are kept on the toich away from the homesteads, some 13–20 km distant (*ibid.* 144). Further south in

Figure 1. *Spread of pastoralism throughout Africa*



Sudan, the sites that have been excavated and dated to this period in Eastern Equatoria Province all appear to have been occupied by Later Stone Age hunters of the Lokabulo ceramic tradition, with domestic stock coming in much later (David *et al.* 1981, Robertshaw and Mawson 1981).

The same explanation for the spread of pastoralism can be invoked for what happened further west, in this case a southwesterly retreat of the 500 mm rainfall isohyet, taking with it tsetse infestation. A tsetse-free corridor to the east along the foothills of the Ethiopian highlands (Figure 1) would have allowed pastoral expansion into East Africa and possibly even into the highlands of Ethiopia (Brandt 1984, Clark 1976).

### Early pastoralism in East Africa

The earliest dates for pastoralism in East Africa come from Lake Turkana in northern Kenya. At the site of Gaji4 Barthelme (1977, 1984, 1985) excavated the bones of both cattle and ovicaprids in association with ceramics, and at another site, at Ileret, he found similar material, with the addition of fish bones and stone bowls. Both these sites were dated to c. 4000 BP. This industry, called the Lowland Savanna Pastoral Neolithic (Ambrose 1984), is earlier by about 1000 years than a similar cultural expression found further south in the Central Rift Valley and named the Highland Savanna Pastoral Neolithic (see Robbins 1984 for later sites in the Turkana area).

These names, however, have proved to be too general, since the sequence is complex and varies from area to area in Kenya. In the Central Rift Valley Later Stone Age hunters (Eburran Phase 5) interfaced with Olmalenge herders, while up on the Mau escarpment resided Elmenteitan herders. On the border with Tanzania, in the Loita-Mara area, the Elmenteitan is dated between c. 2400 and 1400 BP (Robertshaw 1990)

Attempts have been made to reconstruct linguistic history of pastoral societies in East

Africa (see Robertshaw 1982 for discussion). The people living on both sides of the Nile in the southern Sudan are assumed to have been agro-pastoral Central Sudanic speakers prior to 4000 years ago. Around 4000 B.P. Southern Cushites moved out from Ethiopia into Equatoria Province and southwards to northern Kenya, and later into the Central Highlands (Ambrose 1982, Ehret 1982). A later movement of Southern Nilotes, suggested as represented by the Elmenteitan industry, penetrated from the Sudan, displacing many of the Cushitic-speakers. All this assumes a period of contact between Central Sudanic and Cushitic-speakers to allow the transfer of stock. Since the archaeology of pastoralism in Ethiopia is at best weak, and an inferred date of c. 4000 BP for the entry of stock from the Upper Nile is given by Clark (1976:75), it would appear that there was not much time for new economies based on herding to have developed in Ethiopia before the opening up of tsetse-free zones. More work needs to be done in southwestern Ethiopia to show that cultural contact with the southern Sudan, as well as northern Kenya did indeed occur.

At Prolonged Drift in the Central Rift Valley, 81% of the animals by Minimum Number of Individuals (MNI) were wild (Gifford *et al.* 1980, Gifford-Gonzalez 1984), while at Ngamuriak and other sites in the Loita-Mara area only 0.5% of the animals were wild (Robertshaw 1990). This raises questions about the economy of prehistoric herders in Kenya. Among the Gabbra Boran of northern Kenya today, no wild meat is taken back to a camp for fear of disease among the domestic stock (Hussein Isack, personal communication), so virtually no wild animal bones would be found at settlements of herders. In contrast, Wak hunters, who live on the periphery of herding society, take their game catches back to camp, and occasionally they are given a cow or small stock in payment for services rendered. Thus their camps would have a mixture of wild and domestic animal bones, with more of the former. Robertshaw (1990),



in his interpretation of the Prolonged Drift samples, would see them as "poor pastoralists" trying to re-establish their herds after loss. Such an interpretation is at odds with his later assertion that the relations of production of hunting ought to be considered separately from herding. In theoretical terms, a herder need not fall back on hunting for survival, but can gain access to breeding stock by calling debts or obligations from bond friends.

Ngamuriak also produced ceramic vessels with lugs and spouts—attributes that seem to have been common among East African pastoralists (see Leakey 1945).

We have no evidence that the early pastoral people in East Africa used grain. This does not mean that the herders did not practise some cultivation, but their sites are located on the savanna grasslands of Kenya, rather than the richer, more fertile soils of the eastern Highlands (Robertsaw 1989). Pastoral societies existed in East Africa for about 1500 years before iron-using agriculturalists penetrated from the west and settled in the highlands. This incursion appears to have occurred at the time when East African weather patterns changed to a dual rainfall system that allowed the development of a more specialized pastoral subsistence based on higher milk yields and improved herd fecundity (Marshall 1990). The results were clusters of semi-permanent house structures and kraals, as found among the Maasai today. At Ngumuriak a single horizon extending over some 8000 square metres was identified (Robertshaw 1990). This site showed a culling pattern of small stock consistent with the practises of modern pastoral people who are relatively un-

stressed. Of the small stock faunal remains 45% were of mature animals (Table 1). Marshall (1990:878) suggests this is a strategy of herders "who are able to feed surplus animals until they reach an age when growth has slowed and maximum culling gain can be obtained". She also noted differences in fragmentation patterns between cattle and small stock. Cattle bones were more broken up, indicating "intensive use of within bone nutrients" (*ibid.* 879) from animals whose condition was good enough for such nutrient extraction to be attractive.

Since grain could now be traded (or stolen) from the agriculturalists, herding could become a full-time occupation. The relations between the different economic groups have yet to be determined archaeologically. We can surmise, however, that the pastoralists would have put constant pressure on agricultural societies, at one level, while interacting and trading with them at another. It is probable that domestic stock were transferred into agricultural economies, with the farmers storing their wealth in the form of cattle (see Haaland 1972).

### Stock movement into Southern Africa

When Iron Age agriculturalists modified the landscape by means of their superior technology, they may have opened up a greater pastoral environment by removing woody vegetation. Thus pastoralists may have pressured farmers not only for the product of their fields, but also for the fields themselves. We know little about why ag-

Table 1. Mortality rates of small stock (MNI's)

	0-14 mos.	14-28 mos.	>28 mos.	Total
Ngamuriak	24 (35%)	14 (20%)	31 (45%)	69
Kasteelberg "A"	20 (43%)	6 (13%)	20 (43%)	46
Kasteelberg "B"	40 (63%)	13 (21%)	10 (16%)	63
Die Kelders	25 (83%)	3 (10%)	2 (7%)	30

cultures spread southward of in Africa. We know only that about 2000 years ago iron-using people arrived in Southern Africa (Huffman 1982). The coastal group, or Matola tradition, coming through Mozambique to Natal, may not have had any domestic stock, but the people coming down through Zambia (Huffman's Lydenburg or Bambata tradition) certainly had (Huffman 1990). At the site of Salumano in Zambia, dated to c. 2400 BP (Phillipson 1989), both cattle and ovicaprids were identified (Plug and Voigt 1985). Another reference point for early domestic stock is the site of Bambata in Zimbabwe, where sheep remains were dated to c. 2100 BP. At this site the sheep bones were associated with pottery (one vessel of which had a spout) and stone tools, indicating a probable interface with hunting groups.

Contact between the agro-pastoralists and the aboriginal hunting people of Southern Africa, the San, had important ramifications for the continued spread of pastoralism into the rest of Southern Africa. The transfer of stock and ceramics from agro-pastoralists to hunters presumably resulted in the development of Khoikhoi society, which was to colonise the western and southern coasts of Namibia and South Africa (Smith 1990).

Where the transfer took place is as yet unknown. Current archaeological knowledge suggests it was somewhere in southeastern Angola or southwestern Zambia. Two models of the spread of Khoi pastoralism have been proposed. The first, by Stow (1905) and Cooke (1965), hypothesized that stock-keepers came across northern Namibia and down the Atlantic coast to the Cape. The second, by Elphick (1977), suggested, on the basis of similarity between the Khoi spoken by Bushmen of northern Botswana and the language spoken by the Khoi at the Cape, that pastoralism spread down through the Kalahari in Botswana to the Orange River, then either downriver to the Atlantic from whence it spread both north and south, or southwards to the coast of South Africa,

following one of the major valleys (e.g. of the Seekoe River), whence it spread east and west.

Archaeological research in the Seekoe River Valley, to the south of the Orange River (Hart 1989, Sampson 1988), indicates that pastoral occupation of the area did not take place until the 14th century A.D. The Namibian connection, however, is more hopeful. Dates of 2100 BP for ceramics have come from Falls Rock in the Brandberg (Kinahan 1989), and ceramics and possibly sheep were recovered from levels dating to c. 2000 BP at Geduld (Jacobson 1987; L. Jacobson, personal communication). Further south in Namaqualand, L. Webley (personal communication) dates sheep and ceramics to 1900 BP at Spoegrivier; at Kasteelberg on the Cape west coast the earliest dates for sheep are at least c. 1400 BP but may be as old as 1800 BP (Smith 1987, Smith *et al.* 1991).

Thus a gradual Atlantic Coast connection seems at first glance to be the best scenario, but it has to be admitted that the archaeological evidence for the earliest herders at the Cape needs to be more firmly fixed. Uncertainty is due partially to the small samples of sheep bones so far recovered from the period 1900 to 1600 BP at such sites as Die Kelders and Hawston, and partially to the uncertain dating controls within the stratigraphy. If indeed sheep were introduced at this time, the density of population was apparently low and a significant presence did not make itself felt in the Cape landscape until after 1600 BP. So far no cattle bones have been identified unequivocally from this early period. The earliest cattle probably appear just before 1300 BP, when they were to be found at Kasteelberg. Again the density of large stock is low in the beginning (10 sheep to one cow), but increases by around 1000 BP to 4.7 sheep to one cow (Smith 1987), a ratio closer to that which existed by trade between the Khoikhoi at the Cape by the first European colonists in the 17th century (Deacon 1984:353).

The original source of the large stock has yet to be identified. A connection is possible with the Eastern Cape, where the summer and winter rainfall areas overlap; this was the eastern extent of Iron Age adaptation. In this area hunters performed important tasks for agro-pastoralists (e.g. rain-making), so cattle from this source could have come west along the south coast.

The mortality profiles of small stock from Kasteelberg (Klein and Kruz-Urbe 1989) (Table 1) may be compared with those from Ngamuriak in East Africa. The older site (KBA), dated to at least c. 1400 BP, shows a bimodal distribution of young and mature animals. This contrasts with the upper part of KBB, dated between 1000 and 800 BP, where there are more juveniles than mature animals. As can be seen in Table 1, this pattern is exaggerated at the South Coast site of Die Kelders (*ibid.*).

### Hunters and herders in the Cape landscape

The identities of various aboriginal economies in the southwestern Cape are currently controversial. The argument has anthropological, historical and archaeological components. First, how permeable was the social boundary between hunters and herders, and second, how easy is it for groups to change relations of production, in this case for hunters to become pastoralists? Using historical records Elphick (1977) surmised that the difference between the two economic groups was one of degree rather than kind. When a person had stock he was a herder; when he lost the animals through theft, disease or drought he could fall back on hunting for a livelihood.

Would sites with these different economic emphases have a similar cultural identity? Schrire and Deacon (1989) found the indigenous cultural material from a small 17th century Dutch redoubt to be no different from what has been found on many prehistoric sites in the Cape. Since the Khoikhoi were known to have interacted

with the Dutch when the site was occupied by colonists, these must be Khoi artefacts. Here, the authors suggested, was proof that hunters and herders had similar archaeological signatures.

The counter-argument is based on evidence from various sites dating to the last 3000 years in the region of the Dutch redoubt. The largest site in the area is Kasteelberg, some 4 km from the coast (Smith 1987). Analysis of the faunal remains has shown it to have been a sealing camp of ceramic-using herders (Klein and Kruz-Urbe 1989), although a pre-ceramic/pre-herder occupation, dated to 2150 BP has also been identified. Of importance to the issue now before us is the frequency of small bovids (*Raphicerus* spp.)—79% in the preherder deposit, compared with 3.8–8.6% (depending on depth) in the herder deposit. Seals make up only 6% of faunal remains in the pre-herder levels but 36–70% of those in the herder levels. Formally retouched stone tools constitute 2% of the total tools in the pre-herder levels compared with only 0.2% in the herder deposit. (In addition because in these later levels the tools are made from material not generally selected for other uses, they are likely intrusive from the earlier period.)

At Witklip, a small rock shelter coeval with Kasteelberg, some 10 km to the south and 9 km from the coast, small bovids constitute 53% of the fauna in the pre-2000 BP levels, and 55–63% in the upper levels; seals make up 4.5% of the fauna below, and 0–0.4% above (Smith *et al.* 1991). It might be argued that distance from the coast would correlate with the presence of seals at site, but at Heuningklip, a herder site 13 km from the sea, faunal percentages are similar to Kasteelberg's. The low frequency of sheep at Witklip (<8% of faunal remains in the post-2000 BP levels) suggests that not herders but hunters of small antelope occupied this site, who had access to small stock from theft or payment for services. The formally retouched stone artefacts constitute 5% of the total.

The Witklip and pre-herder Kasteelberg pattern of stone tool frequencies is repeated at small limited-occupation sites in the hills directly above the Dutch redoubt examined by Schrire and Deacon (Schrire and Deacon 1989). These tools, similar in form and predominantly in the same raw material as those from the redoubt, suggest that we are dealing with hunters who are distinct from herders. Thus the artefacts in the redoubt were made not by Khoi herders but by coastal foragers, or "soaqua", who existed even up to the colonial period on the fringes of herding society (Parington 1984).

If indeed two distinct economic and cultural groups occupied the area, how did they maintain their cultural separateness? Since the hunters were presumably derived from the aboriginal population at the Cape they and the colonizing herders would have spoken different languages. More important would have been the difficulties of changing the relations of production from those of an egalitarian foraging society, where people would come for their share, to those of a society based on private or corporate ownership, where the individual "Shares his food with others because he has the right to dispose of it, not because they have an equally legitimate claim to it" (Schapera 1930:321). Smith (1990) thinks that herders would not have wished to have additional competition for grazing, so would have denied hunters access to the means of production, especially when cattle became symbols of wealth and prestige.

There is good evidence, however, that such social and cultural distinctions broke down under pressure from the expanding Dutch colony at the Cape by the beginning of the 18th century. The Khoi gradually lost their stock through non-productive exchange (for metals, tobacco, liquor, etc), theft by the Dutch, as well as interference in raiding between Khoi groups by the colonists and loss of some of their best pasture lands (see Smith 1983 for discussion). The final blow appears to have been a devastating smallpox epidemic in 1713, plus a series of drought and stock

disease episodes up to 1720 (Elphick 1977). At this time the surviving Khoi had the choice of becoming stock-keepers for the Dutch, or moving away from the Cape into the hinterland where they relied upon hunting for survival, and joined forces with local hunting/foraging populations.

## Conclusions

Studies of pre-colonial pastoralist societies which began in the 1970s in West Africa (Servant and Servant-Vildary 1980, Smith 1974a, 1974b), continued in Northeast Africa (Roset 1983, Wendorf and Schild 1980) and in East Africa (Marshall 1990, Robertshaw 1987). They are now coming to fruition in Southern Africa (Kinahan 1989, Klein and Kruz-Urbe 1989, Smith 1987, Smith *et al.* 1991). This essay has brought these disparate regions together as a whole, while being aware that many questions still remain to be answered in the intervening, archaeologically poorly understood areas. Ethiopia, Tanzania and Angola remain terra incognita in this research.

Attempts have also been made by anthropologists (Rigby 1985, 1987) and historians (Elphick 1977) to project their data back in time to understand how the early colonial period changed traditional social and economic patterns. The development and spread of African pastoralism does not end with the colonial period, but continues even today, with San hunters shifting to herding (Smith 1990).

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