

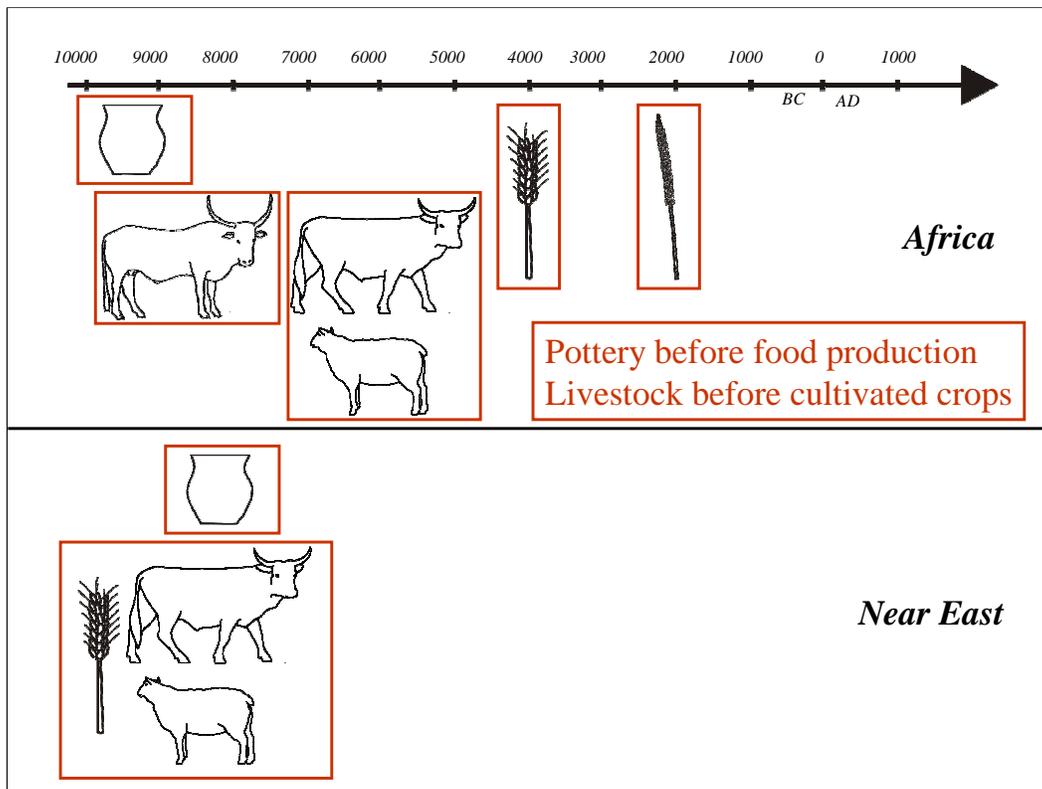
The origins of nomadic pastoralism in West Africa



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I have recently finished a doctoral study on faunal remains from about 30 archaeological sites in the West African Sahel, dating roughly between 2000 BC and the present. One of my research topics was early food production. Questions thereby arose on the origins of nomadic pastoralism in Africa, and in West Africa in particular. In what follows I will give a diachronic overview of the stages in the development of food production in sub-Saharan West Africa. I will especially pay attention to factors that may have influenced the emergence of nomadic pastoralism in the region. Because differences in that process in comparison with the Near East are often highlighted, I will add comparative data from the Near East.



In the Near East, the first cultivated crops and the first domestic animals appeared almost simultaneously among sedentary groups during the 8th millennium BC.

The first pottery followed slightly later.

The oldest possible evidence for food production on the entire African continent comes from the meanwhile well-known sites Bir Kiseiba and Nabta Playa in the Egyptian Western desert. At those sites, some large bovid remains were identified as domestic cattle. The oldest bones may date as far back as the ninth millennium BC. The remains are part of the arguments used in favour of a local African domestication of cattle.

Before this earliest form of food production on the African continent, pottery was already known.

More unequivocal evidence for the presence of domestic animals in Africa dates to the 7th millennium BC. At that time, domestic ovicaprines arrived from the Near East and Near Eastern cattle probably also came with them.

By the 4th millennium BC, Near Eastern crops were grown in the Egyptian Nile Valley. This was possible thanks to the application of an irrigation system, but ecological circumstances did not allow growing the crops in other parts of Africa.

Apparently, it took until the 2nd millennium BC before local African plants were being cultivated.

The first African food production is thus in two ways different from that in the Near East. Firstly, pottery was already known when it emerged, and secondly, livestock keeping was done long before the first crops were being cultivated.

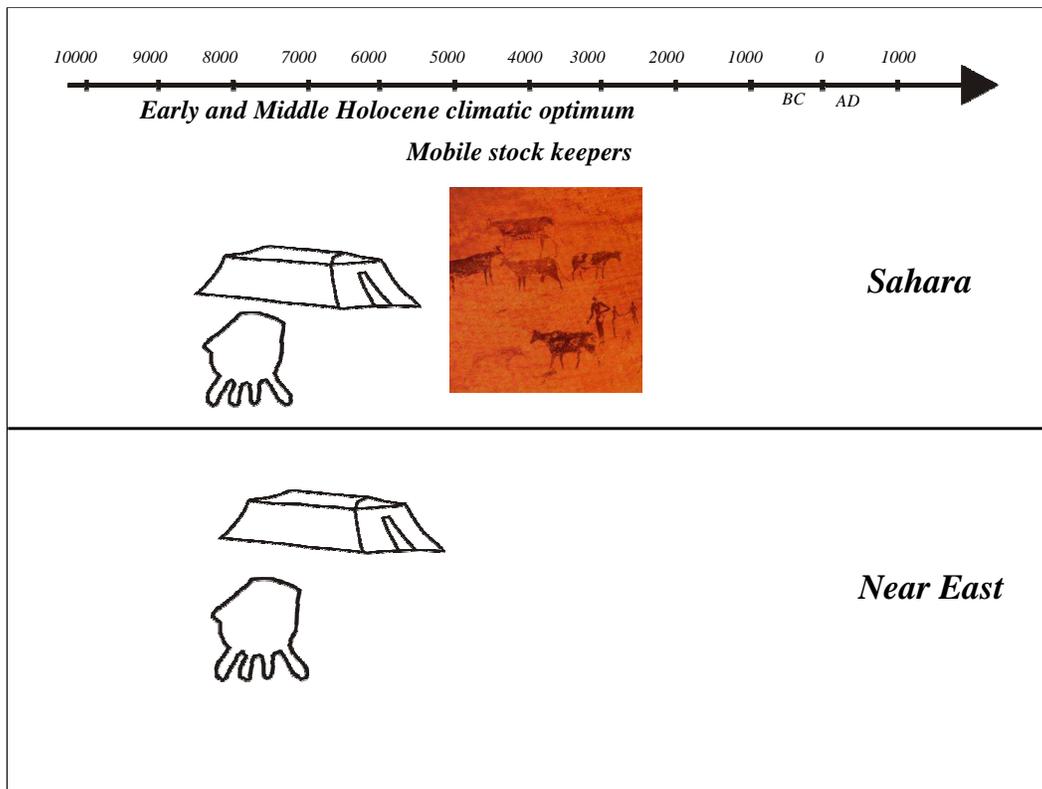
		<i>Place domestication</i>	<i>Date domestication</i>
<i>Cat</i>		Northeast Africa and Near East?	2 nd mill. BC
<i>Dog</i>		East Asia	13000 BC
<i>Horse</i>		Ukraine	3500 BC
<i>Donkey</i>		Northeast Africa	3500 BC
<i>Pig</i>		Near East	7 th mill. BC
<i>One-humped camel</i>		Arabian Peninsula	3000 BC
<i>Goat and sheep</i>		Near East	8 th mill. BC
<i>Cattle (unhumped)</i>		Near East and Northeast Africa?	8 th mill. BC
<i>Cattle (humped)</i>		Indian subcontinent	8 th mill. BC

There are two domestic animals with more certain African origins than cattle. These are the cat and the donkey. For both the domestication centre is placed in the Northeast of the continent, but the species are not important food providers.

No large wild animals of sub-Saharan Africa domesticated
Species not suited



None of the Sub-Saharan African larger wild animals was ever domesticated. Unfortunately for the humans of that region, all species apparently had one or more characters preventing domestication. Gazelles can for example not be domesticated because they tend to panic when put in enclosures.



Because of a climatic optimum during the Early and Middle Holocene, the Sahara had more lush vegetation at that time than today.

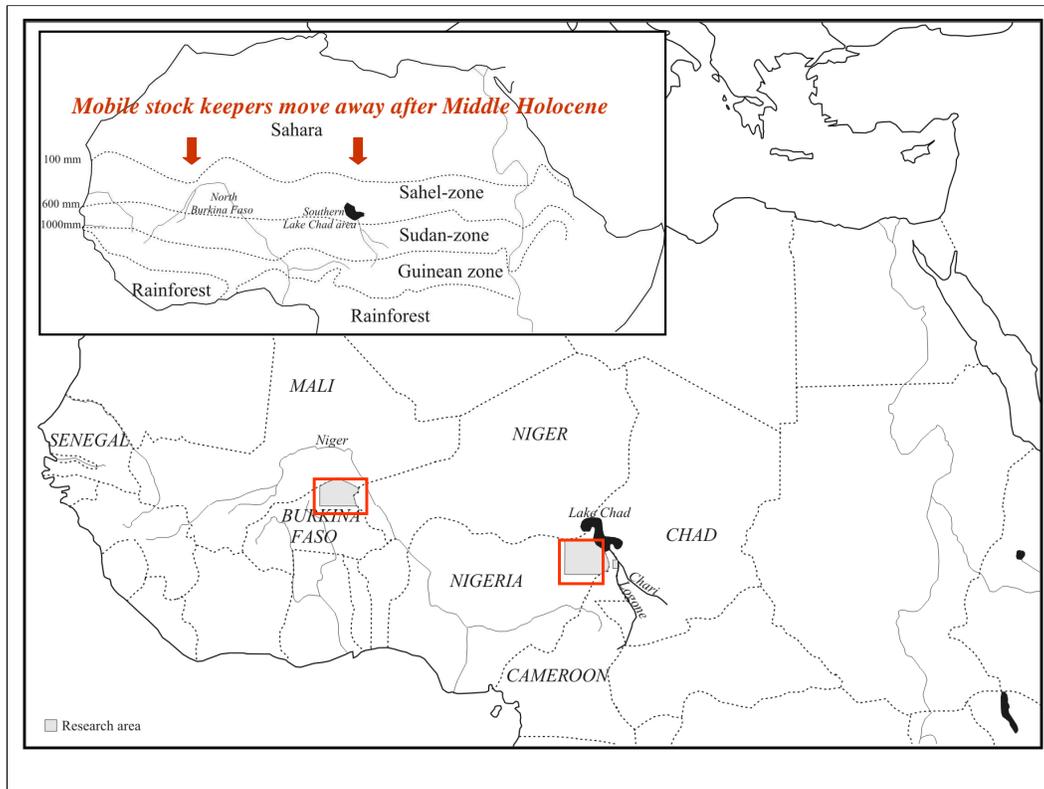
Early stock keepers were able to roam the area. They seem to have had a mobile lifestyle, and left archaeological traces in the form of hearths, bones of their animals and rock art.

That rock art testifies that they milked their animals. Milking was possibly done in Africa from the presence of the earliest livestock onwards.

For the early Saharan herders, domestic stock keeping seems to have been only one of many ways of getting food. It was added to a hunter-gatherer way of life to increase the predictive availability of resources.

In the Near East, the earliest livestock keeping is thought to have been practised by sedentary groups who only used the animals for their meat. In a later stage they would also have started using milk and other secondary products, like wool. The timing of this process is not well-known, but milking seems to have been done by the time the earliest Near Eastern livestock reached Europe.

Also in a later phase after initial animal domestication, the first traces of camps of mobile groups, tending livestock, have been found. A hypothesis is that they are seasonal camps of part of a village population that took the fallow herds away. The productive herds would then have been left near the settlements.



After the end of the climatic optimum of the Early and Middle Holocene, herders could no longer survive in the Sahara and they moved away. There are good archaeological indications that they migrated southwards and reached the present Sahel zone of Western Africa by the second millennium BC. For periods before 2000 BC, archaeological evidence in sub-Saharan West Africa is sparse.

The faunal remains I studied were excavated in that Sahel zone of West Africa and more precisely in northern Burkina Faso and in north-eastern Nigeria near the shores of Lake Chad. The excavations were done by archaeologists from Frankfurt, under supervision of Peter Breunig. I had the luck that I could compare my faunal data with archaeobotanical findings gathered by Katharina Neumann and her team.

Final Late Stone Age

Burkina Faso
2200-1000 BC



Nigeria
Gajiganna I (1800-1400 BC)



Gajiganna II (1500-800 BC)



West Africa

Earliest food production - regional variation

First agriculture:

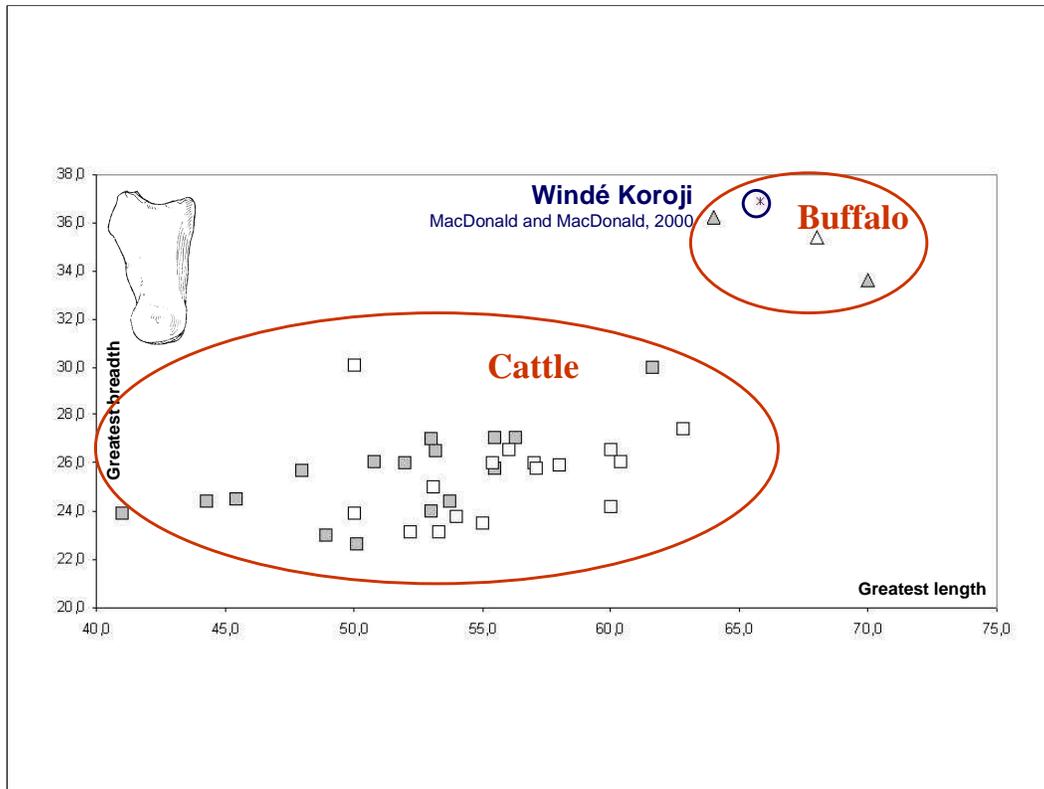
- only pearl millet grown
- sedentary lifestyle not necessary

1. In northern Burkina Faso the Late Stone Age occupation only left traces in the form of small and shallow sites. Archaeobotanical evidence indicates that pearl millet was grown there at the latest by the end of the period. But, on the other hand, no domestic species could be found among the faunal remains.

In Nigeria, new ground became available for human settlement in the early second millennium BC because Lake Chad had begun shrinking. The first occupation there was by people of the so-called Gajiganna Culture. Their sites are larger than those of Late Stone Age Burkina Faso and often take the shape of settlement mounds. Domestic cattle and ovicaprids are present from the beginning. In most samples cattle bones are more numerous than ovicaprids bones. Evidence for cultivated pearl millet only appears during Gajiganna phase II.

2. The two areas that I have studied illustrate that there has probably been considerable variation within western Africa during the earliest phases of food production.

Agriculture during the West African Late Stone Age seems to have been limited to pearl millet cultivation. Archaeological evidence indicates that it did not require a fully sedentary lifestyle.



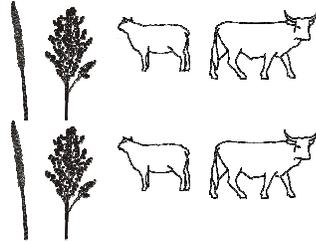
It is possible that the absence of domestic stock in faunal assemblages of Late Stone Age Burkina Faso is only a consequence of small sample size. Domestic cattle and ovicaprines have for example been identified in small numbers at a contemporary site in a neighbouring part of Mali. But the few measurements that could be taken on the bones, raise some suspicion concerning the correctness of the identifications.

Measurements on a bovine first phalanx, for example, fall in the range I obtained for buffalo instead of cattle. Cattle and buffalo bones can easily be confused.

Iron Age

Burkina Faso

0-AD 1400



Nigeria

0-AD 1600

Already during Gajiganna phase III (600-400 BC) agricultural intensification

West Africa

New crops and new agricultural systems

Full farming required full sedentism

Arrival full farmers: beginning specialisation

Around the beginning of our era, the West African Iron Age set in. New crops, like sorghum, and new farming systems appeared. The archaeobotanists have marked it as the beginning of full farming, which now also required full sedentism. The first domestic animals had apparently also reached northern Burkina Faso by that time. In the faunal samples of Iron Age sites in both Burkina Faso and Nigeria, ovicaprines are usually the most abundant domestic species.

It seems that the arrival of full farmers also allowed the beginning of economic specialisation.

Specialised production is the production of
surpluses for exchange.



By contrast, **generalised production** is oriented
toward **self-sufficiency.**

Alchian and Allen, 1969

An economically specialised group concentrates on the production of particular goods, so that it produces more of these, and less of others, than it consumes itself. Specialised production is thus the production of surpluses for exchange, as opposed to generalised production, that is oriented toward self-sufficiency.

Crucial role farmers in development specialisation?



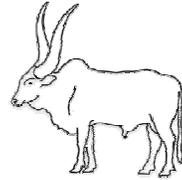
Fig. 2. Fishermen in the
photo: A. Bouchon, 1933-1934; Album de la collection R. et P. Hervey-Billé

Cf. contemporary specialist groups
(herders, fishers) dependent on
farming neighbours

During the Late Stone Age, food producing economies seem to have been general. Even though farming did not require full sedentism, it must have limited the degree of mobility. The arrival of communities of full farmers allowed herders to concentrate on livestock keeping and increase their mobility because they could now obtain crops by exchanging them against animal products. In other words, they became more specialised. Such changes in pastoral economies are also documented ethnographically. Keeping large herds of domestic stock, and especially cattle requires mobility because suitable pasture, water and mineral licks are not available year round near the same spot. Also to avoid the seasonal presence of diseases herders have to move with their flocks.

The crucial role of farming in economic specialisation is illustrated by the fact that contemporary specialised herders as well as fishers, are all dependent on farming neighbours to obtain crops. Cooperation and exchange between different groups made specialisation possible, but increasing specialisation resulted in a higher interdependence between those groups.

Other stimulus for development specialised nomadic pastoralism



Gradual introgression of zebu cattle from first millennium AD



Bifurcated thoracic spine
Probably of zebu
Galaga, Nigeria (19th cent. AD)

The gradual introgression of zebu cattle in West Africa, in the course of the first millennium AD, probably also influenced the development of specialised nomadic pastoralism. This type of cattle is better suited for arid environments and long-distance movements than other cattle types.

Its presence is very difficult to prove from archaeozoological remains. The only possible evidence for zebu I found is a bifid neural spine of a thoracic vertebra from a subrecent site in Nigeria.

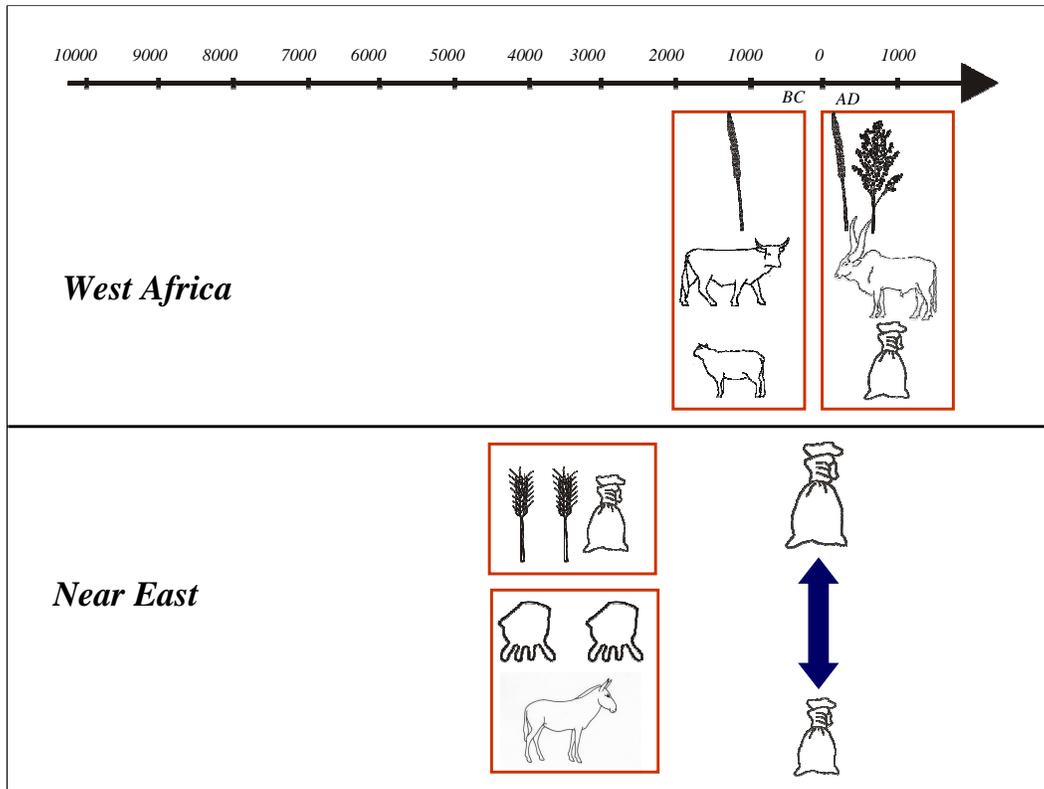


Even though economic specialisation may have started around the beginning of the Iron Age, the archaeological record from that period onwards seems to be largely dominated by the remains of farmers. Their sedentary lifestyle and the large populations farming can sustain, probably resulted in high archaeological visibility, as opposed to mobile herders.

I show here two pictures of Iron Age sites in Burkina Faso to illustrate their prominence in the landscape.

In the fauna, the occupation of the sites by settled farmers is reflected in the predominance of ovicaprines over cattle. Sheep and goat are less demanding concerning pasture and watering areas than cattle and can be kept near the homesteads year round. They are therefore more often associated with sedentary farmers.

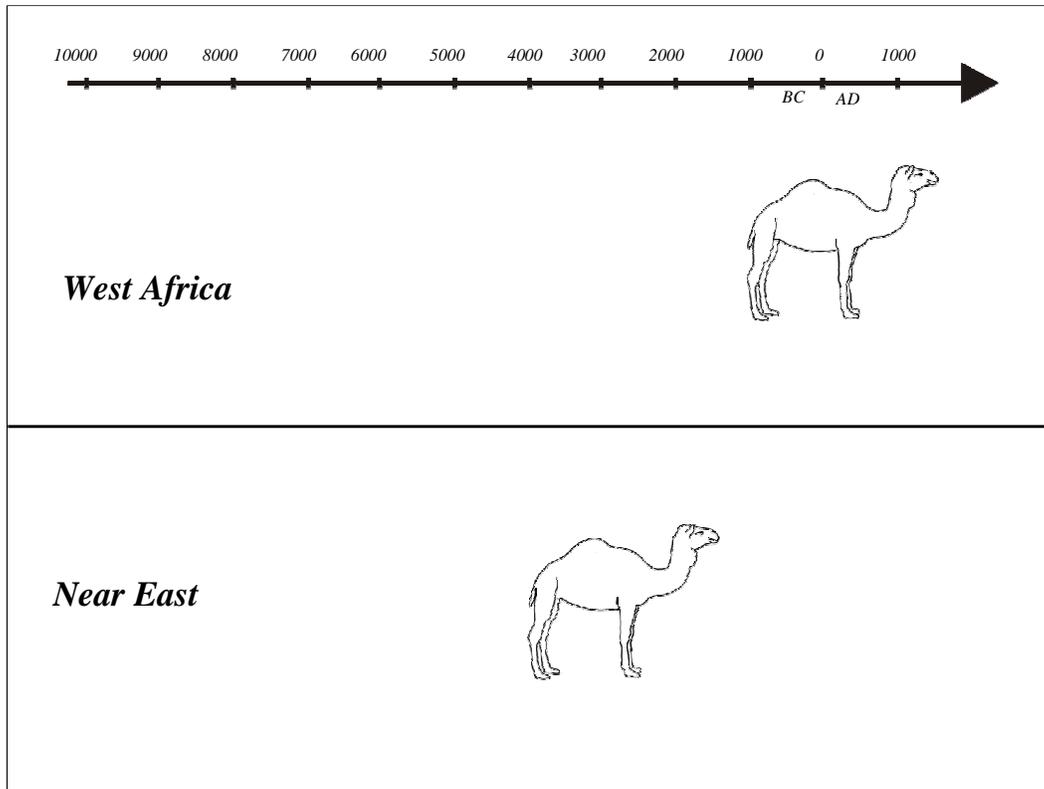
That there were indeed pastoral nomadic groups in Sahelian West Africa during the first millennium AD and later periods is confirmed by historical sources. At some archaeological sites two size groups of cattle or ovicaprines were found. Judging from modern parallels, the smaller animals were probably kept by the sedentary groups themselves, while the larger ones were obtained from pastoral nomadic groups.



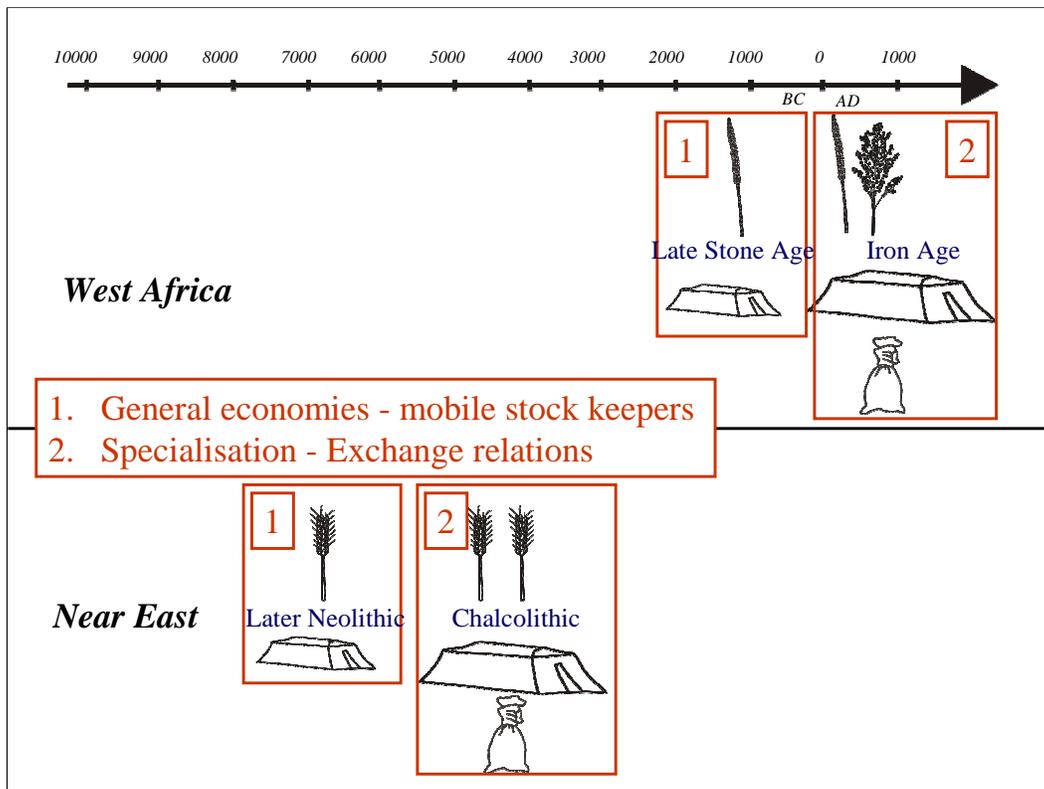
In the Near East, specialised economies probably appeared at the end of the fifth millennium BC, during the Chalcolithic. They emerged in association with urbanism and trade. Agricultural activities intensified at that time, amongst others because of the invention of irrigation farming. The seasonal movements carried out by members of sedentary populations with part of the herds had probably gradually evolved into independent groups of mobile stock keepers. Pastoralism must have been crucial to sustain increasing populations in areas where agriculture had reached its maximal potential.

From the Chalcolithic, domestic animals would also have been used on a larger scale for secondary products. With the domestication of the donkey around 3500 BC, the use of animals for power probably became important, especially in contexts of trade and exchange. Presumably, milk products had also gradually become a more substantial part of the diet.

Pastoral production in the Near East was and is more oriented on an outside market than in Africa. Commercial activities of pastoral nomads probably rose and declined together with cities and states.



By the end of the fourth millennium BC, the one-humped camel was domesticated on the Arabian Peninsula. Bone remains testify that it had found its way to Western Africa by the early second millennium AD. The animal allowed pastoral nomads to exploit more arid environments.



Summarising, there thus seem to have been two phases in the development of pastoral economies in West Africa as well as in the Near East. In the first phase mobile stock keeping groups were already present, but economies were general. During the second phase specialised economies emerged, under the influence of an intensification of farming activities. Exchange relations in the second phase allowed the stock keepers to increase mobility. Anthropologists would rather reserve the term nomadic pastoralism for the second phase, while archaeologists use it already for the first stage.

Characteristics of contemporary pastoral groups

High degree of dependence on livestock

In environments unsuited for farming based subsistence

High degree of mobility

Milk products important part of animal food consumed

Diet composed mainly of cultivated crops

- > Often obtained through exchange with farmers
- > Relationships with farming neighbours necessary?

**Do not project present forms of pastoralism
uncritically into the past**

1. For recent periods, nomadic pastoralism thus usually refers to specialist groups. They all depend much on livestock, but the animal species they keep are variable according to the region. In Africa, pastoralists are mainly associated with zebu or humped cattle, while in the Near East, they typically keep sheep and goat.

Pastoralists can usually be found in marginal environments, where an agriculture based subsistence is not possible. Their high dependence on livestock usually results in high mobility.

Ethnographical data indicate that pastoralists consume the yields of their herds, mainly milk, rather than the animals themselves. Milk productivity is in the first place dependent on rainfall. This is usually low in West Africa and the region has moreover only one yearly rainy season. Eastern Africa, on the other hand, has two rainy seasons, resulting in much higher milk yields. Such differences can help to explain the large variability of pastoral economies.

Ethnographic sources also indicate that a high dependence on livestock does not equal a high dietary importance of animal food. On the contrary, plant food is quantitatively usually the most important element of pastoral diets. Pastoralists generally obtain that plant food through exchange/trade with farmers. In most literature on pastoralists, the necessity of exchange relations between pastoralists and their settled neighbours is regarded as a fundamental element.

In my talk I have mainly emphasised the economic sides of nomadic pastoralism, but the high cultural value often attached to pastoralism is striking. A human group may still consider itself pastoral, even though it had to turn to other economic activities out of necessity.

2. The present form of nomadic pastoralism is probably the end-result of gradual specialisation thanks to factors that appeared in the course of time. It can therefore not be projected into the past uncritically. When calling early Saharan stock keepers pastoral, for example, it should be remembered that they did not have zebu type cattle, nor did they have farming neighbours to exchange products with.