

A history of animal traction in Africa: origins and modern trends

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Overview

- Animal traction is the use of animals to assist human beings in work, especially agricultural.
- It has a long history in Eurasia, as well as Egypt, the Maghreb and Ethiopia. In the remainder of Sub-Saharan Africa it is strongly associated with the history of European contact.
- The presentation reviews the history and current status of work animals in Africa, beginning with the earliest evidence from the Nile Delta, Ploughing, carting, sledges, water-raising and animal mills are all described.
- A brief historical review of the introduction of traction is given, a summary of the current status of animal traction and a discussion of the prospects for animal traction in the twenty-first century.
- The optimistic projections given in the 1990s have been toned down in the light of massive social and economic change, and some of the constraints on the continuing spread of animal traction are identified.

Ancient ploughs

- The earliest evidence for ploughs is from Mesopotamia where they are first depicted at the end of the fourth millennium BC on clay tablets from Uruk. The image shows a beam-ard pulled by oxen, which scratches a furrow without turning the soil. Seed ploughs, with a funnel through which seed was dropped into the furrow, are shown on seals from 2300 BC onwards. Animal power in Africa begins with the first drawings of oxen and ard ploughs in the Egypt of the III Dynasty [2778 – 2723 BC] (Haudricourt and Delamarre 1955).
- Animal traction has been an integral part of farming and transportation systems in North Africa for over 2000 years, and a wide range of species and technologies are now used. Ethnographic evidence suggests that animal traction technology spread from ancient Egypt both southwards into Sudan and westwards into the Maghreb. The technology was probably widespread along the coast of North Africa by 500 BC
- Initially all ploughing was with cattle, but once camels were introduced around 0 AD, they were rapidly adopted. Camels are herded for meat, used for riding and pack transport and may be part of tillage operations or irrigation equipment.

The concept of integrated prehistory I



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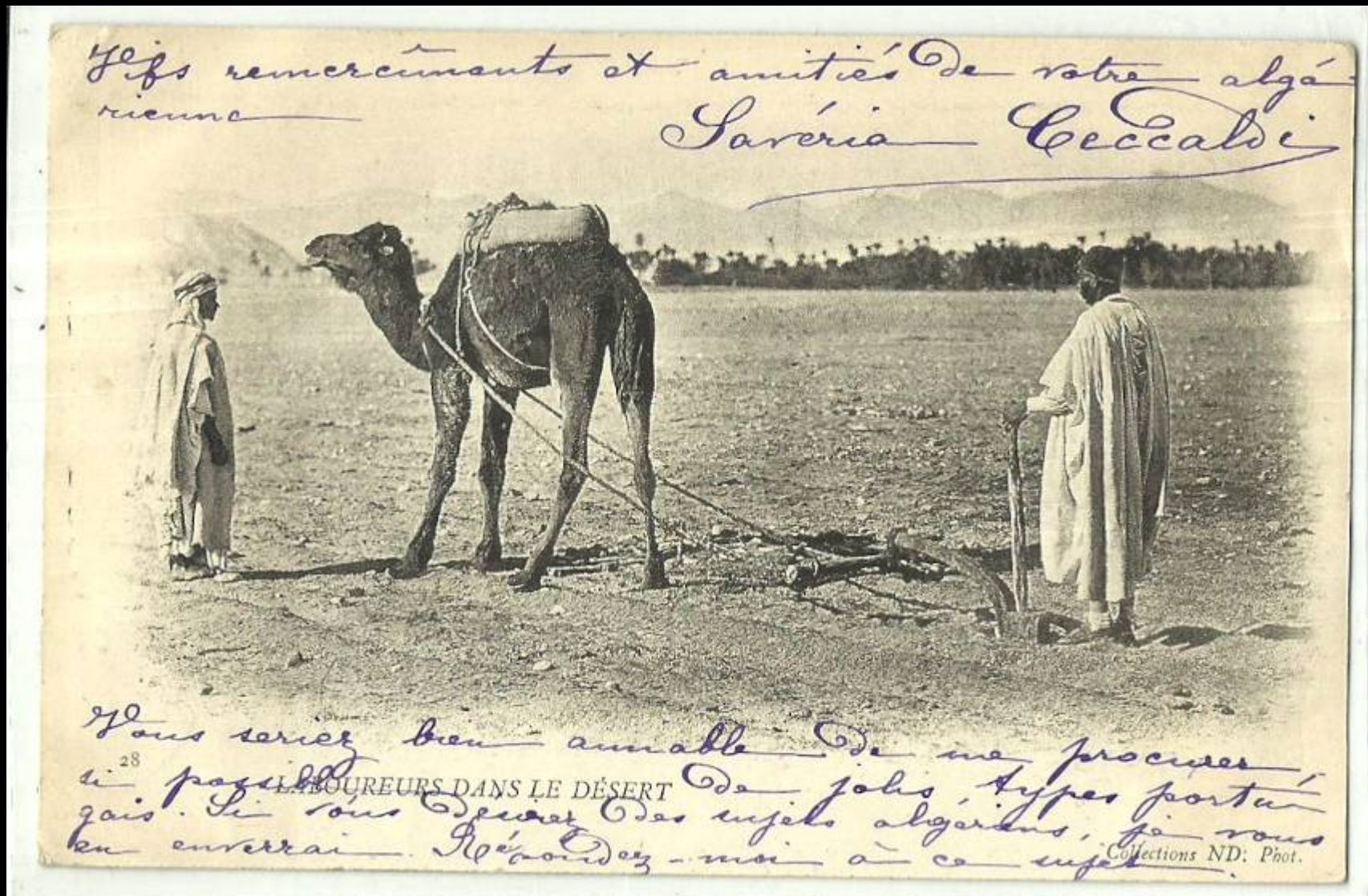
Ethiopian ards

- The single-handled Ethiopian scratch plough is very different in design from the two-handled plough used in Egypt. The *maresha* is more like a spear, pulled through the soil using a long beam
- Drew (1954) reproduces rock paintings from Eritrea that clearly show a *maresha* plough, but their dating is uncertain.
- The Ethiopian *maresha* is not only old, it is highly persistent. To the present day, it is almost universally used by smallholder farmers for the cultivation of the *tef* grain crop.
- Although development programmes have attempted to introduce short-beamed steel ploughs since the 1950s, there has been almost no adoption of these.
- The ploughing animals are generally oxen, yoked in pairs with withers yokes, and controlled by a single person. Where oxen are in short supply, horses, donkeys or cows may be used, but oxen are the work animals of choice.

Ploughing in Ethiopia



Camel ploughing Maghreb



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Turning wheels

- In Egypt there has been a long history of using work animals to raise water for irrigation (Nicholls 1918).
- The ingenious *sakia* (ساقية, *sāqīya*), irrigation wheel first appears in a Hellenistic tomb painting in Ptolemaic Egypt from the 2nd century BC (Stead 1986).
- It shows a pair of yoked oxen driving a compartmented waterwheel, also depicted for the first time. Traditional *sakia* wheels have internal spirals, allowing them to efficiently raise water that is within two metres of the surface. They remain in occasional use in present-day Egypt and may be turned by cows, buffaloes or donkeys or less commonly, horses or camel.
- Animals may also be used to pull water from wells. In North Africa, mote systems are employed, where an animal walks down a slope and pulls on the rope attached to a leather water bag (Löwe 1986). Some motes have self-emptying systems.
- Elsewhere, notably in circum-Saharan Africa and the Horn of Africa, animals are also used to draw water from simple wells. Such systems are most common in pastoral areas, where large numbers of animals must be watered at the same time. Pulleys to ease the workload have only been introduced in recent times and remain susceptible to poor maintenance.

Donkey-powered water-wheel



Donkey-powered olive mill, High Atlas



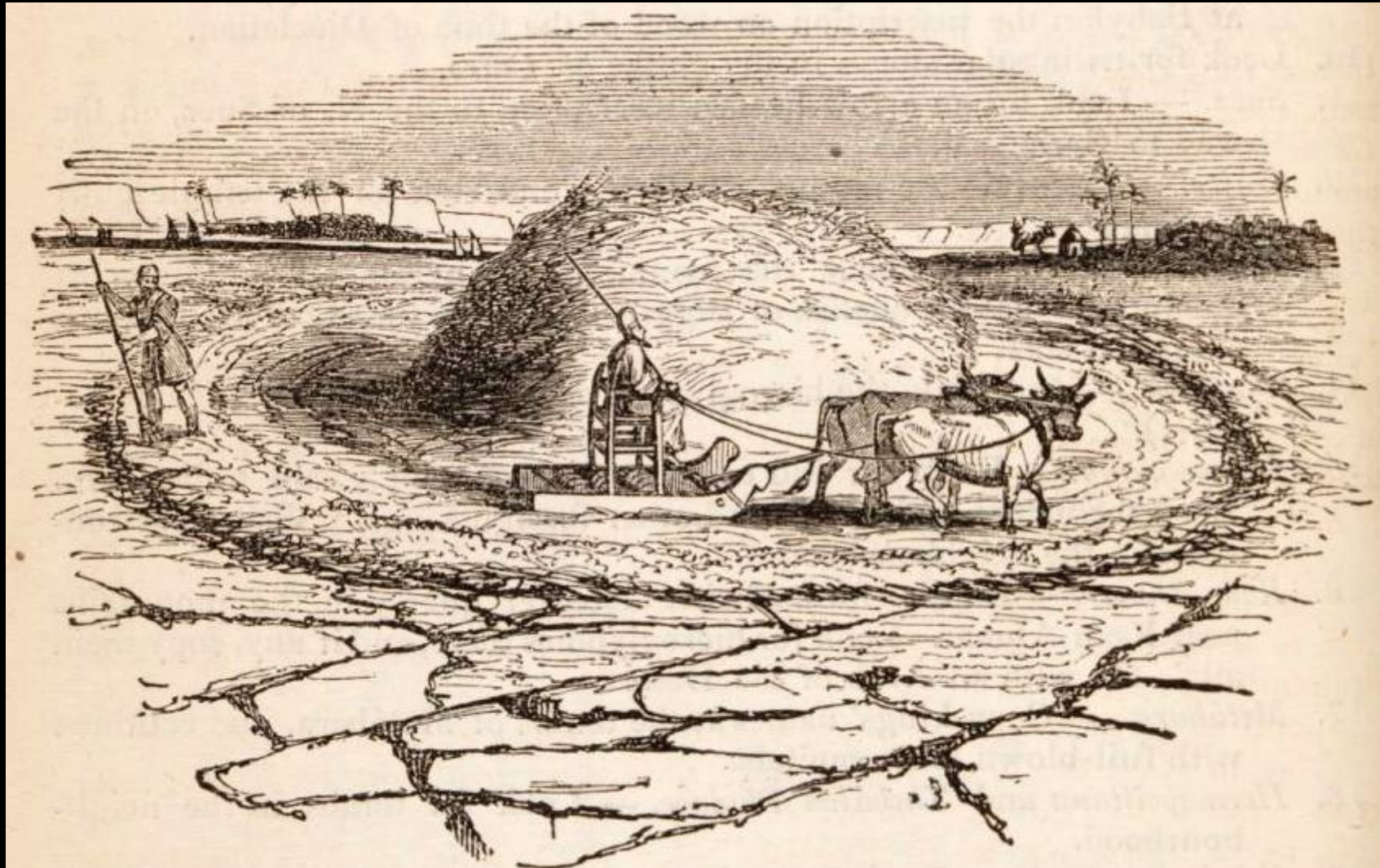
Threshing with animals

- Lagercrantz (1950) has reviewed the use of animals in Egypt, North Africa and Ethiopia and Northern Somalia for threshing. In this operation, the animals walk round in circles over beans or cereals, separating the husks from the grain. There is a strong geographical distinction between systems using a central tethering post and those which simply make use of random trampling movements. In Egypt, a special threshing sledge, *nōrag*, may be pulled by the animals to accelerate the process. Pigs were used for work in Ancient Egypt, both treading and threshing seed in the eighteenth Dynasty, as Herodotos noted (Zeuner 1963:262). The first iconographic evidence for animal threshing is in the Old Kingdom (i.e. prior to 2300 BC) and this use of animal power has continued in Egypt up to the present. The frontispiece shows the Egyptian threshing sledge, the *nōrēg*, which is confined to the Nile Delta and parts of modern Tunisia.

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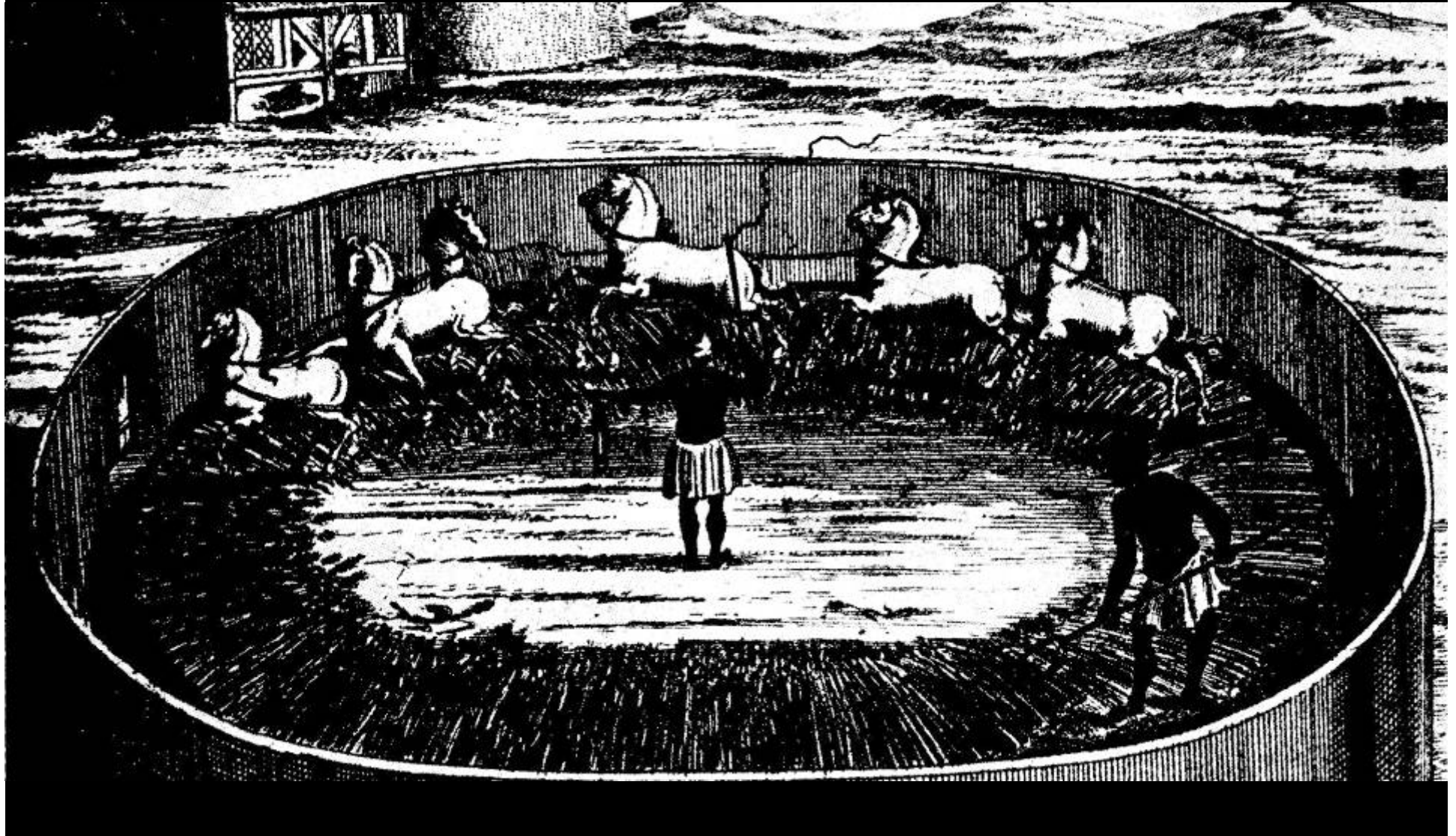


Egyptian threshing sledge



The Norek, a machine used by the modern Egyptians for threshing corn.

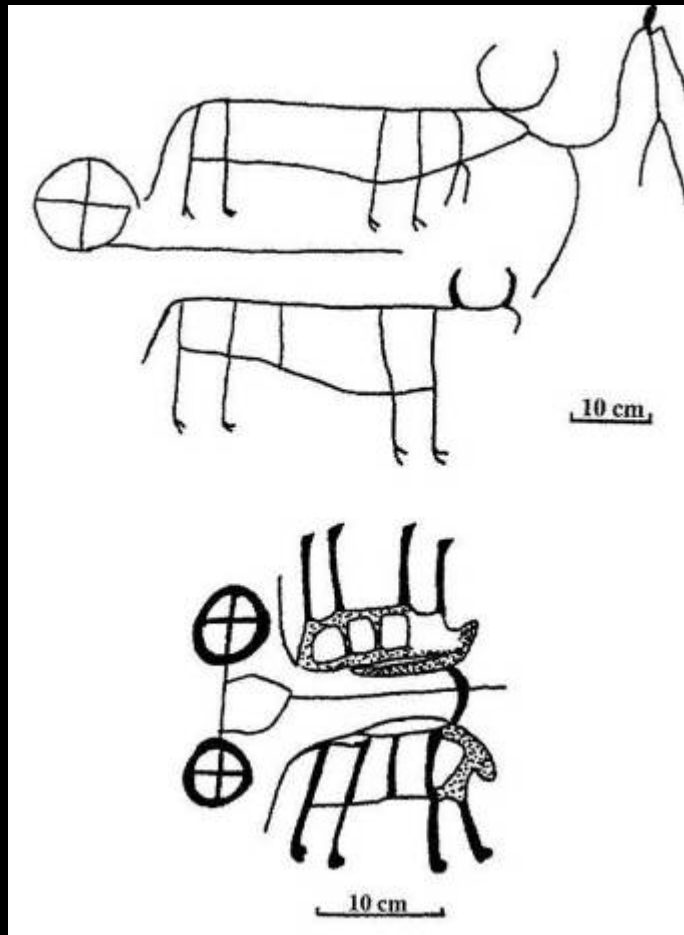
Threshing with horses



Carts

- Traders and colonial powers had contact with Africa's offshore islands and ports, before the hinterland was colonised. In most countries, the use of animal-powered wheeled transport was first introduced in coastal and river ports in the seventeenth, eighteenth or nineteenth centuries (Law 1980).
- In a few cases where social, economic and ecological conditions proved favourable, the use of animal-powered transport gradually spread from the coastal region, through the activities of traders, settlers, missionaries and the administering authorities. Animal-drawn cart technology spread inland in South Africa (and neighbouring territories), French West Africa (from Saint Louis) and in East Africa.
- However, with the notable exception of South Africa (and nearby countries), the introduction of animal power for agriculture was largely a twentieth century phenomenon.
- In present times, ox-carts have become a crucial element in rural transport across much of the Sahel, in part because of the availability of cheap iron and rubber tyres from the inevitably high numbers of crashed and scrapped vehicles.

Ox-carts at Dhar Tichitt



Ox-cart in Niger



Motor-cycle taxi in Liberia



Current situation and trends I

- In the early twenty-first century the prognosis for animal traction in Africa is highly uncertain. Starkey (2000) concluded his review with cautious optimism and in the 1990s it seemed likely that animal traction was the sort of sustainable solution to rural poverty that could and should expand. However, in the intervening decades, much has changed. The key elements can be summarised as follows;
- a) Mismanagement of rural development by 'experts' has led to dramatic increases in world food prices, which has had the paradoxical effect of increasing rural incomes
- b) The rise of China has made key technologies such as motorbikes and mobile phones comparatively cheap and thus accessible to rural populations
- c) Inefficient government sector management of agricultural training and supplies has resulted in its privatisation and collapse. This has paradoxically allowed farmers to realise a greater proportion of the monetary value of their crops

Current situation and trends II

- Rising insecurity in some parts of the continent has the consequence that traction animals are hard to protect from banditry; fat cows are easy to kill and sell
- The marked expansion of counter-season horticulture, at least in parts of West Africa, has meant that farmers invest less in rainfed cereals, a trend accelerated by cheap imports of staples
- Spiralling human populations accelerate the trend towards all types of intensive production and the area of extensive rainfed cultivation suited to animal traction is rapidly disappearing.
- Rising urban populations are increasingly out of sympathy with institutions such as rural credit, which frequently assisted farmers to buy animals and implements in the past
- Development agencies and NGOs are increasingly staffed by career-oriented bureaucrats whose knowledge of agriculture is minimal
- For all these reasons, animal traction may have peaked in the 1990s

Overview I

- Animal power for transport and cultivation has been used in Africa for over 5000 years. Animal traction has been an integral part of farming systems in North Africa and Ethiopia for at least two millennia.
- The use of animals for riding and pack transport has a long history in many parts of Africa, although details of its origins and spread are not well understood.
- Animal power for wheeled transport and soil tillage did not spread in sub-Saharan Africa prior to the colonial period. In the past five hundred years, the use of animal-power for wheeled transport spread slowly outwards from ports and colonial bases.
- The animal-drawn plough was introduced into South Africa by colonists in the seventeenth century, and it spread slowly to neighbouring territories. In most other sub-Saharan countries, it was introduced in the twentieth century by colonial authorities to increase agricultural production.

Overview II

- In most villages in Africa, animal-drawn ploughs were introduced in living memory. Many successful colonial and post-independence promotional schemes provided implements, training, credit and marketing channels. Where implements were readily available through private-sector traders, animal traction sometimes spread without additional promotion.
- Following the introduction of animal traction technology, many innovations were developed and spread through informal farmer-to-farmer processes. At the beginning of the twenty-first century, the use of animal traction has probably peaked in most of sub-Saharan Africa, and probably will not spread and develop further in the foreseeable future. It is possible powered tillage implements similar to those in SE Asia will make a significant impact on African farming systems, just as cheap motorbikes have impacted rural transport.

THANKS

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