Sorghum in Africa and onwards around the world: the contribution of linguistics to understanding its spread

London, 23rd June, 2014
Institute of Archaeology

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Introduction to sorghum I

- Sorghum, *Sorghum bicolor* (Linn.) Moench, is one the most widely cultivated crops in the world after major staples such as maize, wheat and rice.
- Originating in subtropical Africa, it spread as far east as Taiwan in prehistory, and was carried to the New World as a fodder crop.
- Divided into a highly complex array of races, its diverse cultivars are maintained in many parts of Africa to address niches in particular micro-environments.
- Races have been bred specifically as livestock fodder, to brew beer, to dye clothes and to be grown under irrigation in decrue systems.
- Sorghum is resistant to drought, and can be grown in a wide variety of rainfall and soil regimes.
Sorghum in Africa is divided into a number of races, following the classification of Harlan & Stemler (1976). From the initial *bicolor*, the following develop:

- Guinea
- Caudatum
- Kafir
- Dura

At this period there was virtually no archaeobotany of sorghum and they were forced to place guestimate dates on their proposed movements. We can now do a bit better.
Introduction to sorghum III

- Sorghum has an enormous variety of secondary uses, but beer and food are the most important.
- Beer correlates with sorghum almost everywhere, although it is being driven out by modern alcohol.
- The primary food use is as a stiff porridge, but thin gruels have also developed in the West African Sahel, as well a gritty dough-like balls mixed with milk by herders.
- In Ethiopia/Sudan sorghum is used for large pancakes like crepes and modelled on the injira.
- In West Africa, red sorghums are bred for the epidermis which provides an important dyestuff for fabrics and mats.
Introduction to sorghum IV

Despite all this, its history and even its role in current agrarian systems remains poorly known.

Its place and date of domestication is disputed, and crucial archaeobotanical evidence that would attest to its history in many regions of Africa and Asia is lacking.

A tool that has remained very underused is comparative linguistics; the use of vernacular names to detect its diffusion within regions of Africa and beyond.

This is a preliminary survey of this evidence and an attempt to tie it to the evidence, archaeobotanical and documentary, for the spread of sorghum.
Sorghum in Africa today
Sorghum beer and other drinks in Africa today
How do we use linguistic evidence?

- Any crop will have a large number of vernacular names in the area where it is grown. Accounting for ecology, we might estimate that, of as many of Africa’s 2000 languages, 1000-1200 will have a name for sorghum.

- This doesn’t mean we have these names. Linguists are often bad botanists, and the French ‘grand mil’ and ‘petit mil’ distinction often adds to confusion.

- Botanists are also bad linguists, transcribing names incomprehensible and mixing generic names with cultivars.

- Nonetheless, it would probably be possible to compile 5-600 vernacular names with enough searching.

- Compilation doesn’t help in itself, because we are seeking patterns, areas where there is a common root (i.e. a nexus of related terms).
How do we use linguistic evidence 2?

- If we find a common root, then this suggests that sorghum underwent a primary or secondary expansion from this area.
- That is, it may reflect the initial spread, or the diffusion of a new variety or cultivar.
- One example is the flood-retreat sorghum which seems to be developed outside Africa, but which spreads from the Nile Valley to Lake Chad, presumably quite recently, as it is everywhere known as *muskuwari*.
- Which probably reflects the ethnonym of the Musgu, fishing and farming people south of Lake Chad.
- Similar the nuclear areas of some of the races identified by H & S seem to reflect clusters of vernacular names.
How do we use linguistic evidence 3?

- One of the pitfalls or problems of linguistic evidence is semantic shifting, the application of a name to another crop or wild plant.
- Sorghum names in Africa were probably originally adopted from its wild relatives including the sweet sorghums.
- However, where another cereal is present in the same region, the names can get turned around.
- In Eastern and Southern Africa, there is an old root for pearl millet, *-bede*, which occurs from the Great Lakes to the southeast of South Africa.
- In some languages along the eastern edge of this region, *-bede* has switched from ‘millet’ to ‘sorghum’, suggesting that sorghum came after millet.
How do we use linguistic evidence 4?

- Similarly, when maize came in with the Portuguese, the sorghum names, typically *-pemba, were then switched to maize.

- So to untangle the linguistic history of a crop you need to also look at the names of species that might be locally considered analogous or related (not necessarily whether they are related botanically).
Linguistic evidence for sorghum I

- Sorghum remains the dominant cereal in the semi-arid zone of West Africa. It has never been replaced by maize in the same way eastern and southern Africa.
- The only study of sorghum names in West Africa is in my 2006 book, expended in Blench (2014a,b).
- The main sources of data are the vernacular names given in Burkhill (2000) retrieved from the ReFlex database (Accessed 19/6/14) and the Central Chadic database maintained by Richard Gravina.
Sorghum in West Africa II

There is one widespread root in West Africa, something of the form #-ko/uCi which occurs across many language families and clearly spreads after they are established.

This is strongly correlated with the core area of the ‘guinea’ sorghums of Nigeria, which are densely recorded on Haraln & Stemlers’ (1976) map.

Map 1. The guineas and half-guineas of Africa

Key: Solid circles: guinea
Open circles: guinea-kafir
Solid bottoms: guinea-caudatum
Solid tops: guinea-durra
A sorghum root in Nigeria and Cameroun
Sorghum in West Africa II

- There is a secondary spread of #koko which is the Hausa term for ‘gruel’ a finely ground porridge made of sorghum eaten in the mornings together with beancakes.
- The word looks like a reduplication of the first element of the #-ko/uCi root.
- And the practice feels like it is of North African origin, though I don’t have any proof of this.
- A feature of sorghum names further west is that they do not show any strong patterning although they should all be guinea sorghums.
Dura sorghum in West Africa

- The dura sorghums suitable for flood-retreat or dry-season agriculture seem to have been developed outside Africa (though where?)
- They are recorded in the Nile Valley and clearly spread from there to Ethiopia
- However, the other zone is Lake Chad and the Sahel and it is possible they were carried directly there rather than spreading across Africa
- H & S put a data of 2000 BP on this dispersal, although on what basis I do not know

Map 3. The durras and half-durras of Africa

Key: Solid circles: durma
      Open circles: dura-caudatum
      Solid bottoms: dura-guinea
Sorghum in the Bantu world I

- Obviously sorghum does not grow in much of the core Bantu area, from the dense humid forests of the northwest to southern DRC.
- But outside, east and south, it was probably the dominant cereal until the coming of maize.
- No link has been uncovered between vernacular terms east and south of the equatorial forest and those in West Africa.
- Which argues that sorghum cultivation spread both east and west of its proposed locale of domestication.
- The major study of sorghum (and indeed cereal names) in Bantu is Philippson & Bahuchet (1996).
- The most widespread root in the Bantu world is *-bede, which occurs from north of Lake Victoria to the coast of South Africa, but this was probably a millet name which switched to sorghum and then occasionally to maize.
Sorghum names in the Bantu world I
Sorghum in the Bantu world II

- A common root between Mozambique and western Zambia is *-pila*. This was probably innovated on the coast and spread inland along the trade routes from Sofala.
- The other term with a smaller extension is *-tama*, which looks like it is spreading along the Tana river basin.
- In Kenya and spreading west and south, the dominant root is *-pemba*, which is now usually applied to maize, but was clearly originally sorghum.
- There is some speculation that this was originally named for Pemba island just off the coast.
- However, it also correlates extremely well with the distribution of the caudatum sorghums of eastern Africa.
- Apart from spreading inland, it is the main name for sorghum on Madagascar, whence it was presumably carried as a part of the Indian Ocean trade (but when? With the earliest Bantu?).
Map 2. The caudatum and half-caudatums of Africa

Key:  
Solid circles: caudatum  
Open circles: durra-caudatum  
Solid bottoms: guinea-caudatum  
Solid tops: kafir-caudatum
A third highly important landrace in the Bantu world is the unfortunately named kafir race, which is dominant in the southern parts of SE Africa. It is almost certainly a later development from caudatum and never occurs near the centre of evolution of sorghums. But it is clearly carried from what is now Tanzania to the remainder of southern Africa, perhaps later, since there is no obvious linguistic correlate for it.
Sorghum in Madagascar

- Definitive information on sorghum in Madagascar is difficult to find, but sources seem to agree that it was widely cultivated in the semi-arid southern areas.
- Sorghum disappeared as a main food crop in the mid-1990s, when both crops and seeds were eaten in famine years.
- It is now being re-introduced by international development agencies so the opportunity to collected older landraces is largely lost.
- Under the name *Sorghum caffrorum*, the vernacular names all appear to be cognate with East African coastal roots, #pemba and the like
- Interestingly, *Sorghum halepense*, Johnson grass, a weedy species of Mediterranean origin, has borrowed the name from domestic sorghum, suggesting it came subsequently
Sorghum across the world
Outside Africa I

- Burkill (1937:118) first clearly stated that African sorghum reached India in prehistory. Sorghum is widely grown in India today and races guinea and caudatum are all present, suggesting strongly both early and repeated introductions.
- Despite some scepticism, the re-evaluation of Fuller (2003) suggests that some sorghum was reaching India as early as 4000 bp and apparently China shortly after that.
- No link has ever been proposed between the Indian names for sorghum, *-jowar* etc. and those in Africa, which suggests that the transfer was indeed ancient.
- It is very unclear how sorghum reached China. With the exception of one example in Yunnan, all finds are in the drier northeast, which is more suggestive of a sea route than an overland spread.
The Chinese *kaoliang* sorghums appear to arise from a crossing of the wild *S. propinquum* and *durra* sorghums. Sorghum is typical of semi-arid climates, but is a valuable crop in hilly areas and can be adapted to more humid environments.

Smith & Frederiksen (2000:65) review reports of archaeological sorghum in China, but unfortunately these range from as early as 5000 BP, which is highly unlikely. These are repeated in recent publications but probably derive from incorrect identifications of wild sorghums.
Sorghum in China

• The book *Qi Min Yao Shu*), in a section on exotic plants, quotes the late 3rd century manuscript *Guang Ji* which describes a cereal called *da he* or great millet, very similar to sorghum and introduced probably from Sogdiana, located in the Zaravshan and Kashka Daryâ River Valleys and including the oases of Samarkand and Bukhara.

• Although sorghum is obviously also grown as food, its conversion into alcohol, *gau liang*, was the most significant thing to happen to it.

  ❖ Borrowings from Sinitic *gau liang* are found in many neighbouring Sino-Tibetan languages.
Sorghum in Taiwan and ISEA

- Sorghum reaches Taiwan at an unknown period and is a core crop among highland Austronesians.
- There are a few examples of its cultivation in Luzon, when it may have been carried by the Austronesians, or brought by Chinese traders across from the mainland.
- It is also recorded in the Indonesian archipelago from Sumatra to Timor.
- This was probably an Arab introduction, but further spread by the Iberians and even the Dutch colonial administration. We have few vernacular names to go with the records.
Botanical and linguistic record of cultivation *Setaria, Sorghum* (and edible *Coix*)
Sorghum among Taiwan Austronesians

- Astonishingly, sorghum names among highland Austronesians have nothing to do with each other and do not resemble either Sinitic languages or represent borrowings from names for sorghum alcohol.
- This argues for a very ancient introduction and a slow internal diffusion not carried by a trade-like mechanism.
- Another case for possibly maritime introduction (together with finger-millet).
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<th>Ethnic group</th>
<th>Sorghum names</th>
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<tr>
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<td>banan, nabanan kaiton</td>
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<td>Rukai</td>
<td>rumagai</td>
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<td>voarasan</td>
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<td>Tsou</td>
<td>chanchum batal</td>
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Where next?

- The role of sorghum in African cropping systems is still poorly defined. The spread of maize caused it into permanent decline in some regions (esp. high humidity) but in semi-arid regions it is making a comeback due to its tolerance of moisture stress and low fertiliser demands.
- Collection of landraces remains weak in many countries, including those we’d like to know most about, including Sudan and Ethiopia.
- Vernacular names are also poorly collected and we would like to have much more sophisticated information about cultivars.
THANKS

- To Dorian Fuller, Koen Bostoen, the Reflex team and Richard Gravina for data and discussions

- To Kay Williamson Educational Foundation for supporting the fieldwork