African crop history from the perspective of linguistics

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Background

- Understanding African agrarian history is the task of linking the present with the past; explaining how the crops in the current ethnographic record came to be there, in terms of;
  - ❖Process
  - ❖Chronology
  - ❖Species
- No one discipline can achieve all this. We can combine;
  - ❖Archaeobotany
  - ❖Linguistics
  - ❖Palaeclimatology
  - ❖Genetics
  - ❖Historical records

To tell the story

Background

- The last decade has seen a massive expansion in archaeobotanical records for Africa, as well as a parallel expansion of linguistic data.
- The paper analyses the methods available to link dates for crops with results from historical linguistics, and presents some recent results for both field crops and managed tree species.
- Examples are given for the millets, and tree species such as the shea and locust bean.
- It uses these results to sketch a broader dynamic, whereby early domestications of now marginal crops are hidden following the subsequent expansion of newer domesticates, a process which happened repeatedly within Africa, as well as following the arrival of New World species. This allows us to question the Vavilovian narrative of agricultural centres fixed on the map.

African crop history: the big picture

- Africa has two broad areas of plant domestication, the Ethiopian Plateau and the West African region (probably both Sahel and forest)
- However, it is possible that there was scattered arboriculture and vegeculture well before agriculture proper
- Recent archaeobotany has tended to regard agriculture as recent (ca. 4~3000 BP) with older dates being discounted.
- The SE Asian cultigen repertoire (Musaceae, taro) must arrive as early as 2500 BP and makes a huge impact on forest exploitation strategies
- Asian crops arrive on the East African coast ? 6th century onwards
- Maghreb domesticates arrive across the desert, ? 2000 BP onwards (certainly domestic animals)
- European crops from sixteenth century onwards
- And modern agronomic species in the twentieth century

African crop history: techniques

- Only a very small proportion of these are recorded in the archaeobotanical record, either for reasons of preservation or evolving techniques.
- Systematic flotation has changed the picture, but the analysis of starch grains is still only incipient
- If techniques evolved in the Pacific were in use, our image would probably be very different.
- mtDNA has been applied patchily to some cereals but has yet to produce a major revelation
- Linguistics has a problem of disagreement between researchers
- Importance of evidence-based approaches

Some examples: *Parkia biglobosa*

❖The locust-bean tree, *Parkia biglobosa*, is one of the most important trees of the West African savanna

❖ The seeds, flour and pods are all eaten or used in construction

❖ Yet it barely features in the archaeobotanical record

❖ However, a common root, something like #-rona has developed between Burkina Faso and Central Nigeria

❖ This points to an expansion of usage of locust bean products, after the major language families are established ? 2-3000 years ago

A common root for *Parkia biglobosa*

Phylum	Family	Subgroup	Language	Form
Afroasiatic	Chadic	West	Hausa	ɗòòrowàà
Afroasiatic	Chadic	Central	Bura	nônà
Niger-Congo	Gur	Oti-Volta	Tamari	nuã
Niger-Congo	Adamawa		Ɓəna	rwoo
Niger-Congo	Volta-Niger	Yoruboid	Yoruba	iru
Niger-Congo	Volta-Niger	Nupoid	Nupe	elo
Niger-Congo	EBC	Kainji	Reshe	u-lo /tsu-
Niger-Congo	EBC	Plateau	Ake	ìrɔ̃
Niger-Congo	Bantoid	Dakoid	Samba Daka	loom
Niger-Congo	Bantoid	Tivoid	Tiv	nune

Parkia biglobosa: #rona root

Aerial yam, *Dioscorea bulbifera*

❖The aerial yam, *Dioscorea bulbifera*, is cultivated for the bulbils that develop at the leaf axils. Known in Nigerian English as the 'up-yam'. In Africa, aerial yams are spread from Senegambia to Kefa in Southwest Ethiopia. There are wild forms in both Africa and India, and Burkill (1911) and Chevalier (1936) argued that it was domesticated independently on both continents.

❖The major morphological distinction between the quadrangular African forms and the ovoidal Indian types strongly suggest this. Chevalier claims that the Indian subspecies, *D. bulbifera* var. *birmanica*, were brought to the East African coast by the Arabs and to the West African coast by the Portuguese.

#-tom root for aerial yam

Family	Subgroup	Language	Attestation
Ijoid	P-Ịjọ		ɔtʊmʊ̃
WBC	Edoid	Bini	udin
Volta-Niger	Nupoid	Nupe	èdu
Volta-Niger	Igboid	P-Igboid	*-dʊ̃
EBC	Kainji	tHun	rodiŋ tom
EBC	Plateau	Berom	tòm
EBC	Plateau	Eggon	àdom
EBC	Plateau	Pe	atom
EBC	Lower Cross	Efik	édòmò
EBC	Central Delta	Abuan	ediom
Bantoid	Mambiloid	Gembu	tūār
Bantoid	Grassfields	Yamba	ntə́ntóŋ
Bantu	C10	Aka	tombo

#-tom root for aerial yam

Bananas and plantains, *Musaceae*

- The only indigenous Musa spp. In Africa which have been domesticated, and those only in Ethiopia. However, ensets grow wild across much of the montane areas of West Africa and the seeds are eaten as a famine food
- So the bananas and plantains that are important staples today all came across the Indian Ocean

- However, when and how this happened remains a matter of much controversy
- Reported Musa phytoliths (in Cameroun and Uganda) which point to considerable antiquity are not believed by everyone

Bananas and plantains, *Musaceae*

- The sweet diploids (AA) i.e. resembling modern eating bananas, seem to have been brought to the East Coast rather earlier and by a different route (probably from India) than the triploid plantains, used as a starchy staple in much of humid West Africa.
- Triploids in West Africa are usually AAB, although the large cooking bananas in Uganda are AAA
- West African triploids are extremely diverse and since they reproduce vegetatively, this must have taken a long time to reach this situation.
- The names of the plantain seem to derive from the original names of the wild enset #kom which becomes #konde in Bantu
- cultural and linguistic evidence points to great antiquity for the triploids, which remains difficult to explain although it would chime with the phytolith evidence
- Bananas in West Africa were probably brought by the Portuguese from East Africa by sea.

Distribution of plantain-stem xylophone

Pearl millet, *Pennisetum glaucum*

❖Pearl millet is an important and ancient West African domesticate, which was first domesticated on the margins of the Sahel more than 3000 years ago (Tostain 1998; D'Andrea et al. 2001).

❖One of the emblematic sites of Nigeria, the Nok region, has produced a very large amount of millet dated to 800-450 cal BC (Kahlheber et al. 2009). Perhaps even more surprising is the fact that millet was also cultivated in areas much further in regions that are now rainforest (Höhn et al. 2007).

❖Millet is still grown as a ritual crop in the sandy, semi-arid areas of the eastern parts of coastal Ghana though it has been completely displaced by maize as a staple.

❖The polysemy of 'millet' and 'food' in a coastal language like Ga is a striking indication of the former importance of millet in this region which has now almost entirely switched to growing maize as a staple.

Roots for pearl millet

❖At least three major roots for pearl millet have been identified, one in the Bantu area, studied by Koen Bostoen, one in Central Nigeria and one in the Central Chadic-speaking region in Northern Cameroun

❖ However, pearl millet appears also to have been transmitted to the Berber at an early period, since a single root appears all across Berber

❖The absence of salient roots in the proposed area of the Sahel where domestication took place

❖ The table shows a root something like #mar(d)- found across Central Nigeria

❖The salience of the Central Nigerian root ties up neatly with extensive finds of millet at the Nok sites, showing its ritual importance

Pearl millet, *Pennisetum glaucum*

Ph	Family	Subgroup	Language	Attestation
AA	Chadic	West	Hausa	maiwa
AA	Chadic	West	Bole	mòrɗo
AA	Chadic	West	Sirzakwai	marɗay
NC	Adamawa	Yendang	Yoti	múri
NC	Kwa		Ga	ŋmɑ̃ɑ̃
NC	Kwa		Adyukru	máy`
NC	Volta-Niger	Nupoid	Nupe	mɑ̃yì
NC	EBC	Plateau	Sur	mər
NC	Bantu	Jarawan	Mbat	máár

Global spread of pearl millet

❖Domesticated pearl millet reaches East Africa, we don't know when, but we do know it reaches western India by around 4000 bp, and that it was carried along the 'Sabaean Lane' south of the Arabian peninsula.

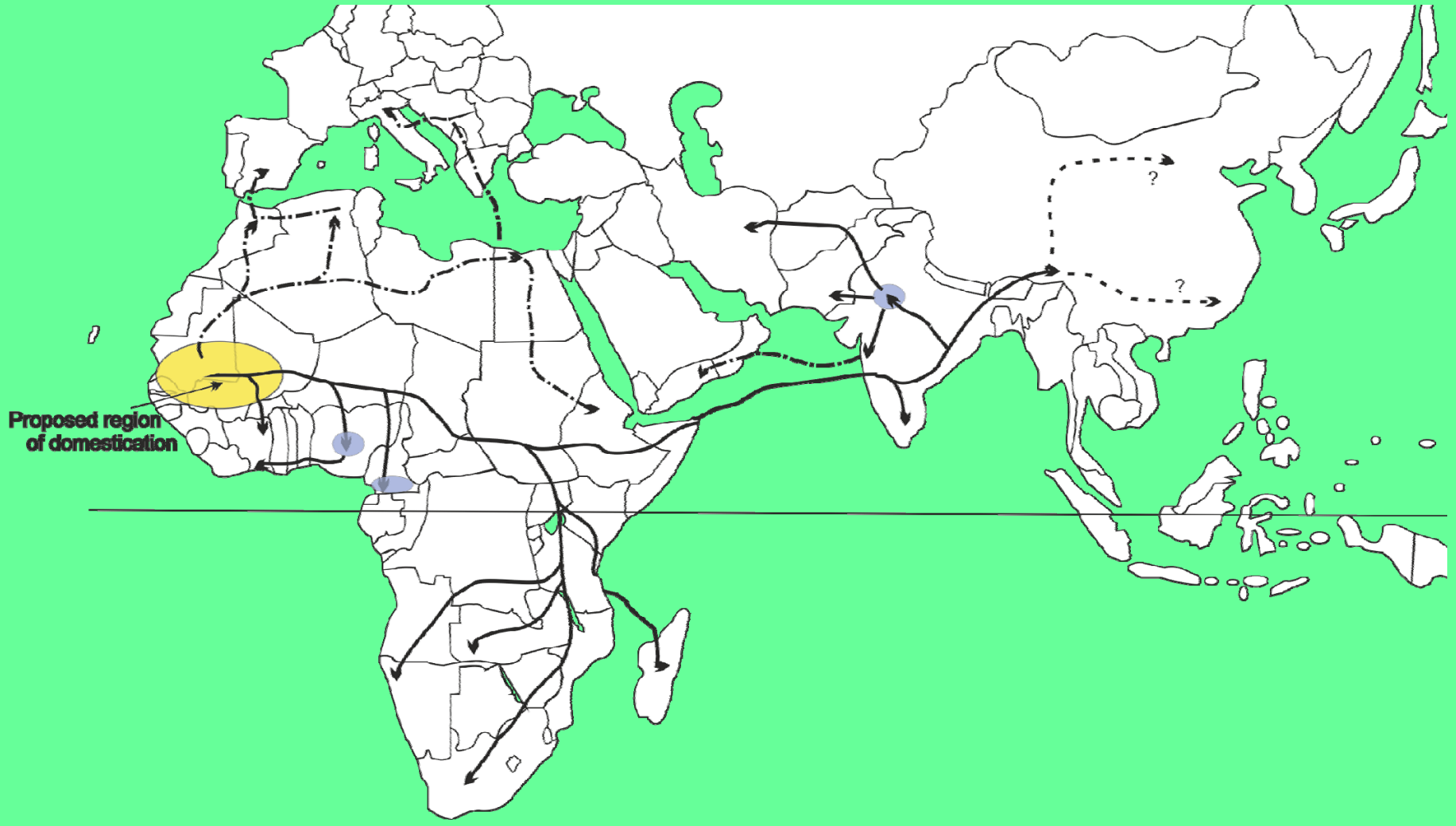
❖ No resemblances between Indian and African names have been identified but then (strangely) pearl millet is of little or no importance in the Horn of Africa today.

❖ There is a westward spread of pearl millet form an Indian nucleus back towards Iran and into Cetnral Asia

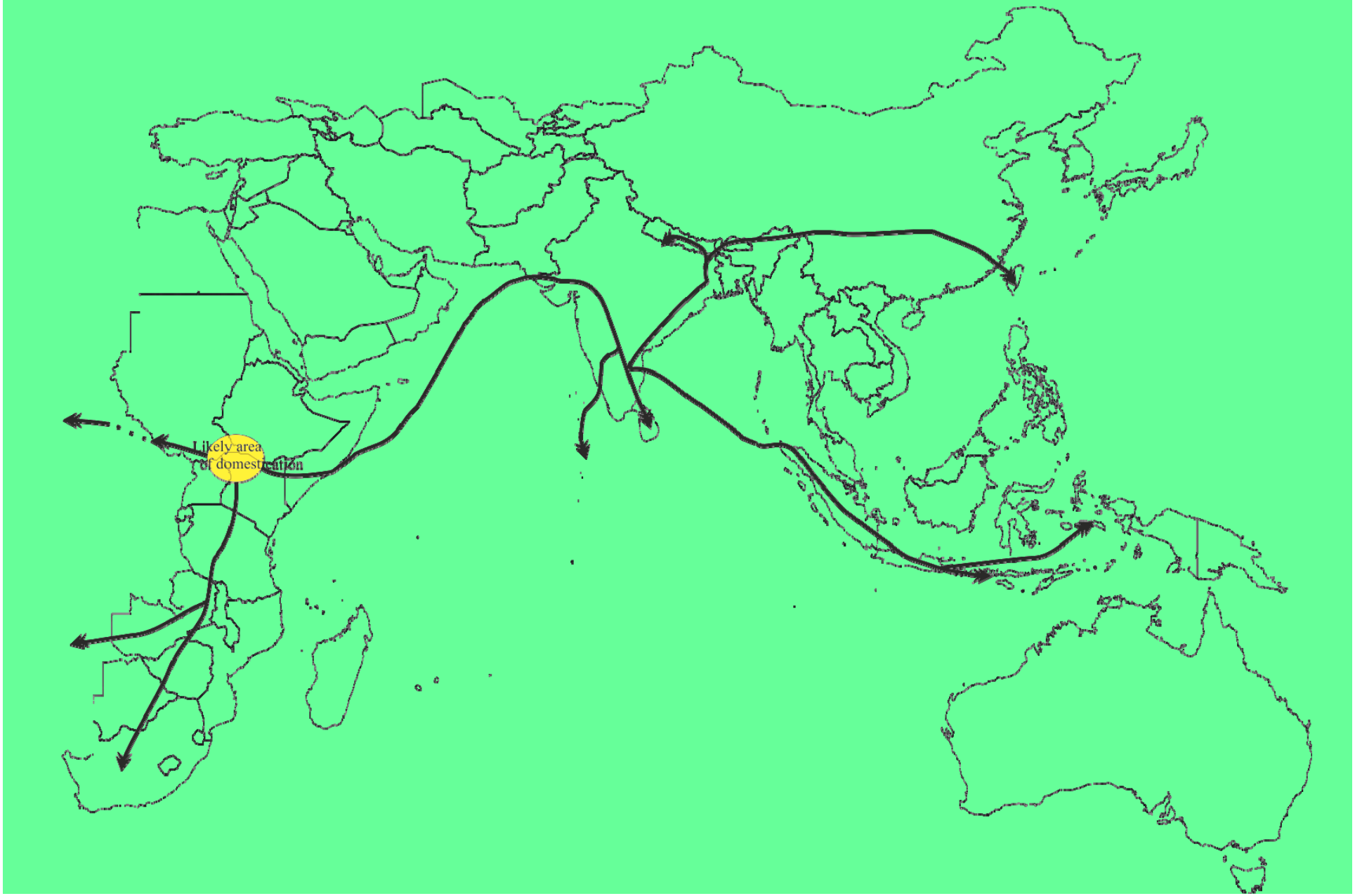
❖ And pearl millet makes some impression on Southern Europe at the end of the Roman era and into the Middle Ages

❖ Finger millet has a comprable history but spreads significantly further into East Asia

Pearl millet, *Pennisetum glaucum*



Finger millet, *Pennisetum glaucum*



General observations

❖Roots (or common terms) for crops do not generally reconstruct to proto-languages. This is the opposite conclusion to views generally promoted by Christopher Ehret

❖ They are rather regional and prone to occur across language family boundaries

❖ This is entirely in line with the archaeobotany, where it exists, which points to relatively late and sporadic, opportunistic agriculture in Sub-Saharan Africa

❖ The geographically based roots reflect not the initial domestication of introduction of a crop but rather its transition into salience, which may be a move towards becoming a dominant staple or the introduction of a new cultivar or technology (such as oil extraction). The extraction of trees for timber by Europeans caused the spread of common names from the sixteenth century onwards

General observations II

- Despite the significant impact of African crops in India and beyond, there is no obvious link between vernacular terms on the two continents, which almost certainly reflects the late impact of the Bantu expansion on the ethnolinguistic pattern of East Africa
- Archaeobotany in Africa is making slow progress, and particularly slow in the area of vegetatively reproduced plants
- Linguistics has the potential to create hypotheses and to make suggestions for many species to fill the gaps
- But it has to be combined with a sensible reading of the ethnographic data on agronomic practice.

THANKS

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