

The intertwined history of the silk-cotton and baobab

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Abstract

Both the silk-cotton (*Ceiba pentandra*) and the baobab (*Adansonia digitata*) are widely associated with human settlement in West Africa and neither species is part of the 'natural' vegetation but owe their distribution to human activity. The paper reviews the ethnobotany of both species and the evidence for their dispersal in both prehistoric and historical times. The vernacular names seem to have been exchanged between species to another in areas where the trees co-exist. The paper analyses the biogeographical and linguistic evidence and suggests that the accepted models are at best problematic.

Quand elles ne sont pas méconnues, les fonctions de l'arbre dans les civilisations africaines sont généralement sous-estimées.

Pélissier, Paul (1980)

1. Introduction

How natural the vegetation of West-Central Africa is can be a matter for debate, but there is little doubt that human beings have been manipulating the distribution of various species of economic or ritual importance for some considerable time. Among the species whose Africa-wide distribution is very striking are the baobab (*Adansonia digitata*) and the silk-cotton (*Ceiba pentandra*). Neither are truly native to the continent; the baobab probably originated in Madagascar where all its relatives occur, while *Ceiba* apparently originated in the Americas. Both trees have economic uses, but it is unlikely that this is the primary reason for their spread; both are large, impressive and somewhat oddly-shaped and have been incorporated into ritual systems almost everywhere they occur.

This paper¹ explores the history and ethnobotany of the baobab and the silk-cotton and in particular looks at a phenomenon that might be called 'conceptual crossover'. Put simply, the silk-cotton apparently spread across the continent from West to East and the baobab the other way. At some highly speculative point in prehistory, the two trees must have 'met' one another, as they diffused in opposite directions. At this juncture, populations using them seem to have confused or at least conceptualised the two as similar, because both names and ideas about the trees are exchanged between species. The paper looks at the origin and spread of these species and then tabulates a sample of vernacular names in diverse African languages, to exemplify this process.

Photo 1. Baobab in the Nuba mountains

2. Origins and distribution

2.1 Baobab

Baobabs are members of the Bombacaceae, a pantropical family containing a number of well-known economically important plants like kapok, balsa and durian (Baum 1995a; Baum, Small and Wendel 1998). Six of the eight species of baobabs are restricted to western and southern Madagascar, a seventh is endemic to northwestern Australia, and the eighth is widespread in sub-Saharan Africa but now introduced by humans throughout the warm tropics (Armstrong 1983; Bowman 1997). The African baobab is the best known of the eight species. All baobabs are deciduous trees ranging in height from five to 30 meters with leaves with segments that radiate somewhat like the fingers of a hand, showy flowers, and large, many-seeded gourdlike fruits covered with a velvety thatch of hairs. The baobab is the subject of several popular



¹ This paper was first given at the 4th International Workshop for African Archaeobotany Groningen, 30 June - 2 July 2003 and has since been substantially revised. I would like to thank participants at the workshop for their comments, and particular thanks to René Cappers, Dorian Fuller, Stephanie Kahlheber and Katharina Neumann for additional unpublished materials. Gerald Wickens is publishing a book on the baobab and has kindly commented at length on the present text. I have also made use of unpublished linguistic data kindly supplied by Richard Gravina, Russell Schuh, Valentin Vydrine, Kay Williamson and Guillaume Segerer to whom my thanks are due.

reviews in addition to technical monographs (e.g. Codjia et al. 2001; Sidibe & Williams 2002; Bash 2002; Pakenham 2004). Photograph 1 shows a characteristic baobab in the Nuba mountains in Southern Kordofan.

In height, trunk shape, and girth, there is no such thing as a typical baobab, but the tremendous size of some African baobabs suggests that individual trees may be several thousand years old. Like many large tropical trees, the baobab has no reliable tree rings, and size does not necessarily indicate age because variation in water content of the trunk can cause large fluctuations. Adanson (1771), who first attempted age calculations, estimated that two trees on an island off Cape Verde were 5150 years old. Swart (1963) who radiocarbon-dated a tree 4.5 meters in diameter being cut down for the Kariba dam obtained a date of 1010 ± 100 BP and clearly trees can be older still (Von Breitenbach 1985). Exactly how long the baobab has been spreading in Africa remains to be confirmed by archaeobotany, but some living examples may be several thousand years old. Kahlheber (p.c.) has found records of baobab in Senegal, Mali and Benin, with the oldest probably at the site of Arondo on the Senegal River 400-1000 AD. Germer (1985) records baobab fruits in the Turin museum and in the Louvre in Paris of Egyptian provenance, but with no location or date. Cappers (p.c.) has found baobab seeds at Berenike on the Red Sea coast of Egypt, dated to the 4-5th century AD; these are likely to be imports, although whether from Yemen or further south in Africa is difficult to say.

The first recorded literary reference is by the Arab traveller Ibn Baṭṭūṭa in West Africa in 1352 AD, who mentions the water-storage capacity of its massive trunk (Hamdun & King 1975:30, 71). Leo Africanus also noted its presence². The earliest description in the European literature is Scaliger in 1557, although the tree is recognisable in hindsight from some of the descriptions of fifteenth century navigators (Wickens 1982:175). The name baobab derives from the Arabic *bu hibab*, 'fruit with many seeds', and it is first referred to directly by Alpini (1591) who encountered its fruits for sale in Egypt. Alpini gives the name as *ba hobab*, hence the vowels of the common English name. Linnaeus gave the baobab its scientific name, *Adansonia*, in 1759, to honour the celebrated French botanist Michel Adanson (1727-1806), who lived in Senegal and who provided the first technical description and illustration of the tree.

The distribution of the baobab throughout the dry parts of Africa reflects both human activity and the depredations of elephants (Adam 1962). Its medical and fibre uses make it essential to many communities and its shape carries numerous magico-religious associations (Owen 1970). Its fruits represent a convenient source of food that is naturally conserved by the hard outer shell and pastoralists, in particular, often carry fruits with them. As they crack the shell and eat the seeds, trees spring up along former cattle-trails. Assogbadjo et al. (2005, 2006) report that baobabs show considerable genetic diversity between ecological zones in West Africa, suggesting that this reflects the east-west nature of trade routes as well as natural ecological zonation. Jaouen (1988) in a study of the vegetation of Mauritania, reports dead baobabs far into the arid zone, presumably also seeded by travellers. On the other hand, elephants are responsible both for destroying seedlings and damaging mature trees (Owen 1974; Guy 1982). Barnes (1980) argued that predation by elephants was gradually destroying the baobab populations in the Ruaha National Park, Tanzania. The literature suggesting that baobabs are endangered is venerable; Chevalier (1906:486) considered it was disappearing³, while Perrier de la Bathie (1953:214) warned of the threat to the Malagasy baobabs. But a paradoxical consequence of the widespread elimination of wildlife, especially in West Africa, is that the baobab is spreading rapidly. Pullan (1974) noted that the baobab was a key species in the intensively farmed 'parkland' of West Africa. In the Hadejia-Nguru Wetlands in NE Nigeria, an area once rich in biodiversity but now stripped by predatory timber-cutting and poaching and starved of water by upstream extraction, the baobab has spread rapidly during the 1990s (Blench et al. 2003). Baobabs may thus indicate a depauperate fauna. More generally, as the indigenous forest is stripped away, and replaced by anthropic grassland, many dry-zone species, such as the tamarind and the fan-palm are moving further south. At present, the future of the Australian baobab seems secure. Survival of the African baobab and at least two Malagasy species (*A. rubrostipa* and *A. za*) also seems likely because of their comparatively widespread ranges and broad ecological tolerances. The long-term prognosis for the four Malagasy baobab species with

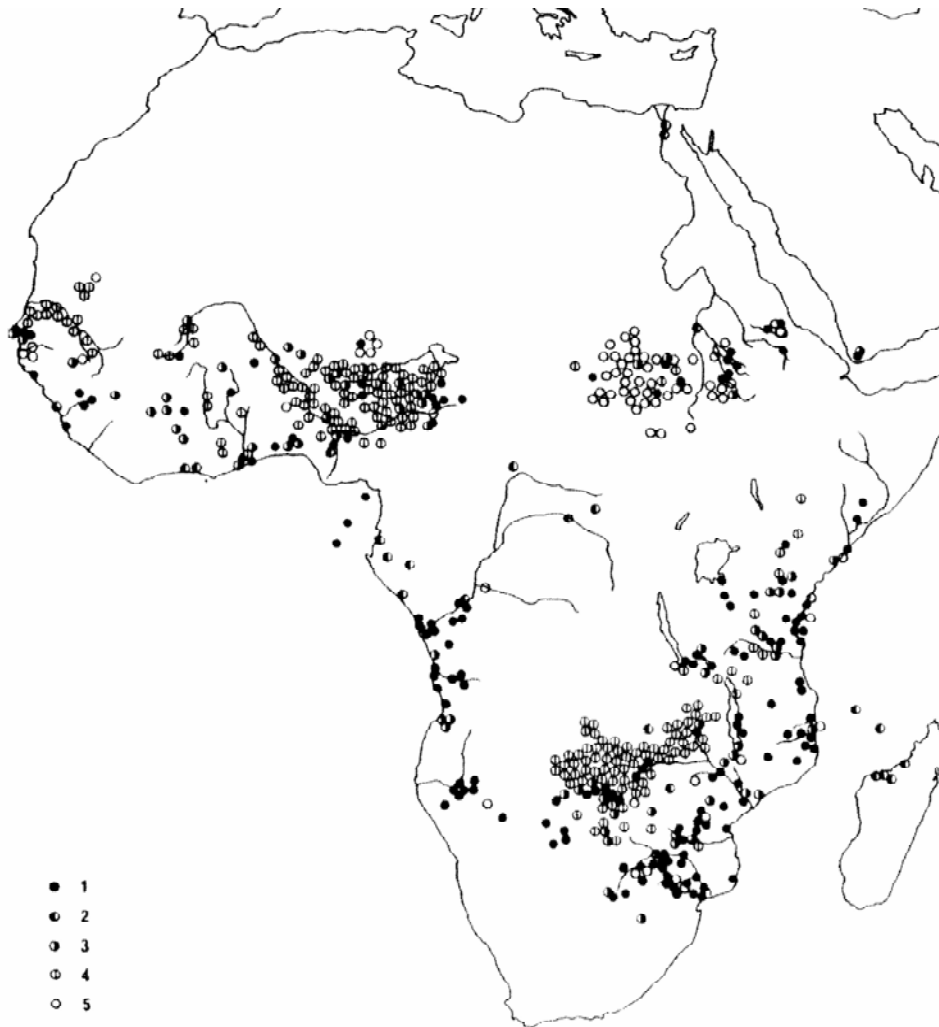
² At least, according to Wickens (1982:175). However, Dietrich Rauchenberger (p.c.), Leo's most recent editor, finds no such reference and this may be an error.

³ '*Quoi qu'il en soit, les Adansonia sont bien des arbres en voie de disparition*'

more restricted distributions is a matter of concern because of continuing habitat destruction that goes along with population growth.

Map 1. shows the African distribution of the baobab given by Wickens (1982). Wilson (1988:200) notes that the baobab is found at more locations and at higher altitudes than this map suggests. Some of the sites on the map may be rather misleading; for example, the baobab was introduced into Gabon from Senegal as an ornamental in colonial times and thus its occurrence is both late and ‘unnatural’ (Walker 1953; Raponda-Walker & Sillans 1961:104). Chevalier (1906:492) considered that the baobab was only spontaneous in coastal areas, and its presence in the interior was due to human action; and that Islam had played an important role in this redistribution in recent centuries. He explained its absence in the heart of the continent simply by chronology, that it had simply not been spread there. Its Africa-wide distribution is quite strongly associated with river-systems, although the baobab is by no means a riverine species. This is probably a secondary effect, whereby pastoralists grazing in river valleys have increased its incidence. Armstrong (1983: 144) presents maps of the Malagasy species, all of which are confined to the west coast of Madagascar.

Map 1. Africa-wide distribution of *Adansonia digitata*



Map Key

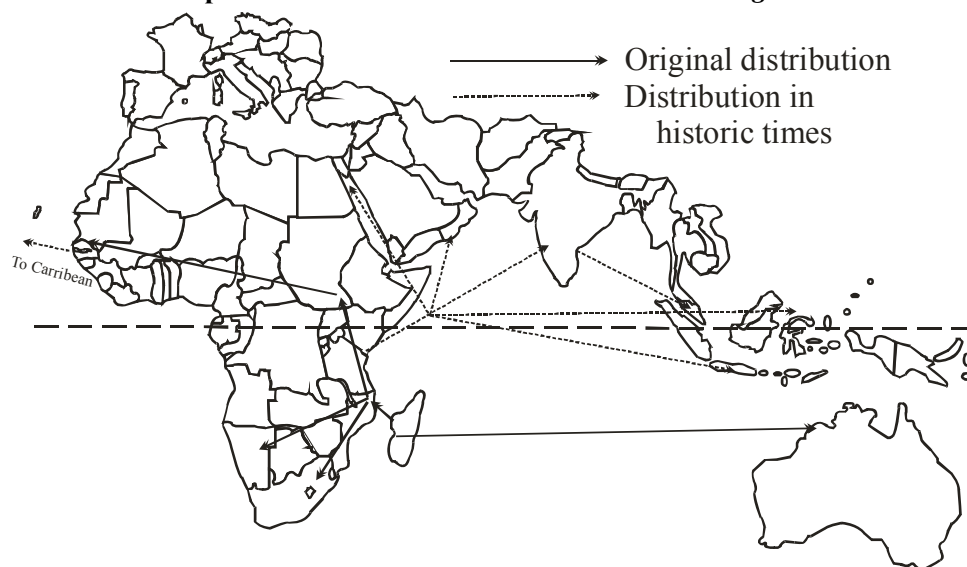
- 1 Herbarium and flora records
- 2 Cultivated or introduced
- 3 Information from photographs
- 4 Kew 'Baobab survey' data
- 5 Data from travel literature

Source: Adapted from Wickens (1982)

Burton-Page (1969) noted that the baobab was spread around the Indian Ocean by Arab traders, and associates its presence in India with the export of Habshis, or slaves from the Horn of Africa, who were brought to India in the early Middle Ages. The baobabs in Yemen, Oman, Zanzibar and Egypt may be attributed to the same source. Ironically, the African baobab has also been reintroduced in Madagascar, presumably its original centre of origin, by settlers from Zanzibar. In the twentieth century it was carried across the world as an ornamental. Armstrong (1983:146) notes that the baobab was also carried to Sri Lanka, Java and the Philippines as a result of Indian Ocean trade. It was also taken to the Caribbean in the 1890s as an ornamental (Rashford 1996). Wickens (1982:182) also discusses the distribution of baobabs in India. The tree has no Sanskrit name and appears to be associated with the area of Muslim influence; if so, then its introduction may be medieval. However, it is strongly associated with shrines and temples, which would suggest a greater antiquity.

Map 2. shows the primary and secondary distributions of *A. digitata*. The Australian species, *A. gibbosa* [formerly *A. gregorii*], known as a *boab*, is something of a mystery, and it has been explained as a relic of Gondwanaland with plate tectonics accounting for its disjunct distribution. However, Armstrong (1977, 1983) argues that the 'Gondwanic' hypothesis is inadequate⁴ and instead argues for a Tertiary era dispersal, presumably via floating seed-pods. Wickens (1982:201) also concludes 'There is still no satisfactory explanation for the presence of *A. gregorii* in Australia' and Bowman (1997:894) leaves the question open. It is notable however that *A. gibbosa* is part of the Malagasy section *Longitubae* which is pollinated by long-tongued hawkmoths (Baum 1995b). It has been speculated that the Australian boabs may have originated from seed pods carried for food carried either by coastal movements of early modern humans or even by Austronesian seafarers en route from Madagascar⁵.

Map 2. Worldwide distribution of *Adansonia digitata*



⁴ 'It is my view that to assume the persistence of *Adansonia* in sub-Saharan Africa, Madagascar and north-west Australia since before the fragmentation of the southern super-continent initiates more problems than it solves' (Armstrong 1983:143).

⁵ This not as bizarre as it might first appear. Linguistic and botanical evidence for contact between Austronesians and the north coast of Australia is quite abundant. Against this, *A. gregorii*, has a high chromosome number ($2n=96$) in contrast to the lower numbers found in the Malagasy *Adansonia* spp.

2.2 Silk-cotton [kapok] *Ceiba pentandra* (L.) Gaertn. var. *pentandra* (1791).

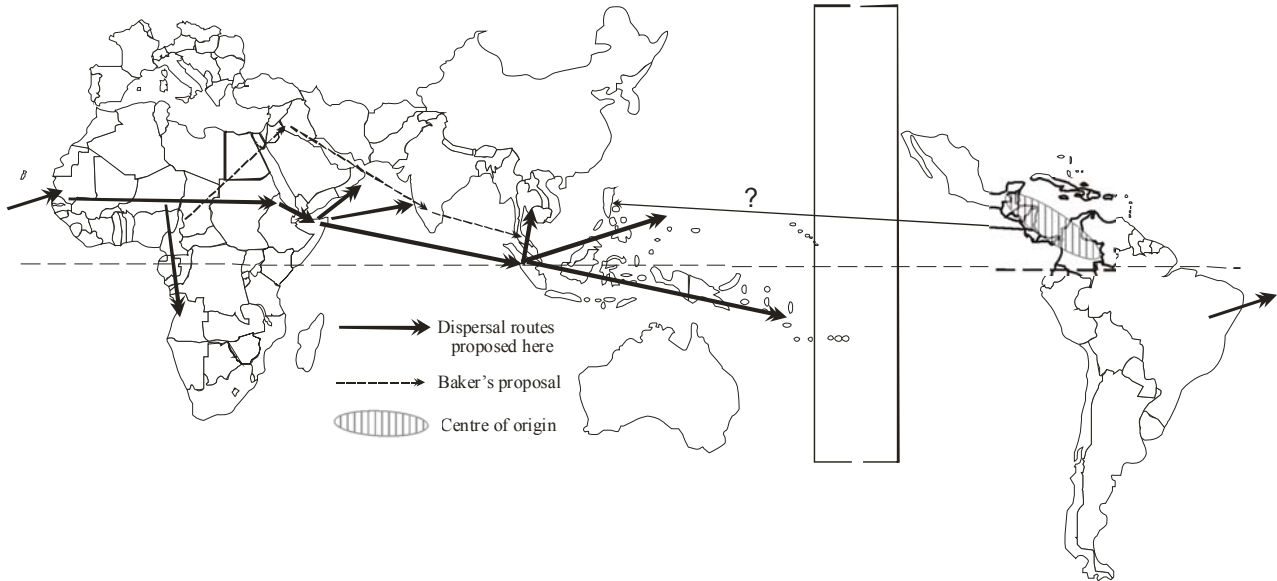
The silk-cotton is ‘a large or immense tree, the trunk with grey bark, buttressed, usually spiny, cylindrical and smooth far up, deciduous; branches in horizontal tiers; crown of leaves open; leaves of 5-9 leaflets palmately borne, each lanceolate, acuminate, glaucous beneath, entire or obscurely toothed, 7-18 cm long, 1-3.5 cm wide, distinctly petiolulate; petiole 7-20 long; flowers clustered on branchlets, cream-white or pale pink; 5 petals about 2.5 cm long; stamens in 5 bundles, anthers twisted; fruit oblong-ellipsoid, smooth, pendulous, 7-15 cm long, 5-celled, eventually dehiscent, the interior filled with soft long copious hairs ("kapok" or silk-cotton); seeds many, brown’ (Stone 1970). The silk-cotton is fire resistant and can sometimes become dominant in highly anthropic savannah landscapes (Swaine 1992; Swaine et al. 1992).

Chevalier (1931, 1937) was the first to point out that *Ceiba* is a Neotropical genus and the apparently ancient presence of *Ceiba* in Africa is anomalous. He counted nine species of *Ceiba*, eight of which are confined to the New World although the most recent revision suggests there are 17 species (Gibbs & Semir 2003). Chevalier thought that the seeds may have floated across the Atlantic attached to the floss, although this is apparently unlikely, because the seeds readily detach themselves from the floss (Burkill 1985:280). The distribution of the silk-cotton in the New World is highly anthropic (Gibbs & Semir 2003, Fig. 6) and it plays an important role in many indigenous cosmologies. The very similar associations in West Africa suggest that it was intentionally brought across the Atlantic. Irvine (1961:191) assumed that ‘it was probably introduced by the Portuguese’. There appear to be few archaeobotanical records for silk-cotton in sub-Saharan Africa, but Bedaux (1972) reports both *Ceiba* and the baobab on the Dogon escarpment between the 12th and 14th centuries, i.e. prior to any possible Portuguese introduction⁶. The antiquity of *Ceiba* in Africa would further seem to be confirmed by evidence for its presence further east in the Indian Ocean, for pictorial records may show that kapok had reached Java by 850 AD (Steinmann 1934; see also Toxopeus 1948). If so, then *Ceiba* would have had to travel across Africa from west to east and then spread around the Indian Ocean along the established maritime routes more than 1500 years ago. This also implies pre-Portuguese contacts between the east coast of South America and West Africa, a possibility usually scouted by prehistorians. However, Chevalier (1931) noted a number of species common to the east coast of South America and West Africa unlikely to have floated across on ocean currents. Indeed, there are some species that apparently went in the opposite direction; *Elaeis oleifera* is surprisingly close to the oil-palm, *Elaeis guineensis* (Henderson et al. 1995:165). Without more detailed distributional work, this must remain speculation.

The early presence of *Ceiba* in SE Asia via Indian Ocean dispersal is problematic in that *Ceiba* hardly occurs in the floras of East Africa. Although Heine & Legère (1995:221) note a Swahili name, *msufi*, they also observe that this tree was spread in Tanzania by the Germans. Noad & Birnie (1989:37) in their tree flora of Kenya treat *Ceiba* as an exotic introduced from Central America. The solution canvassed by Baker (1965) is that cultivated kapok was introduced from West Africa to south-western Asia by the Arabs. In some ways this would explain the distributional gap, but since *Ceiba* is almost unknown in SW Asia and none of the vernacular names in any way indicate dispersal by Arabic-speakers, this is not easy to accept. A significant possibility is that *Ceiba* was brought from Central America to Manila by the Spanish and spread to some parts of the Pacific from the Philippines, as some of the vernacular names rather suggest (Annex Table 3) and that Steinmann (1934) is simply wrong and has misidentified the species depicted, confusing it with one of the indigenous *Bombax* spp. In this case, the occurrences of *Ceiba* in SE Asia and the Pacific would all originate from the New World and thus be post-European contact. Map 3 shows the worldwide dispersal of *Ceiba* canvassed in this paper (which imagines dispersal from the Horn of Africa) with Baker’s alternative hypothesis marked separately;

⁶ Cappers (p.c.) has extracted references to *Ceiba* from his personal database giving dates for Nqoma am Tsodilo in Botswana at 9-1000 AD and Matlhapaneng in Botswana at 7-1000 AD which seem credible.

Map 3. Worldwide dispersal of *Ceiba pentandra*



3. Ethnobotany of the baobab and silk-cotton

Burkill (1985: 270-274 & 278-283) provides a useful summary of the conventional ethnobotany of these two species as well as being a major source for vernacular names. Simpson (1995) and Sidibe & Williams (2002) represent recent overviews of the ecology and economic potential of the baobab.

3.1 Baobab

The baobab has many uses, but the collection of pods as a food source must undoubtedly account for part of the anthropic distribution. Fibre from the bark is used to make rope, baskets, cloth, musical instrument strings, and waterproof hats. Stripping the bark from the lower trunk of most trees usually leads to their death, but baobabs not only survive, they regenerate new bark. Fresh baobab leaves provide an edible vegetable similar to spinach which is also used medicinally to treat kidney and bladder disease, asthma, insect bites, and several other maladies. The hollowed-out trunk of a living tree can be used to store water. The fruits and seeds of several species are collected, while pollen from the African and Australian baobabs is mixed with water to make glue. Hobley (1922) describes the co-association of baobabs and ruined towns on the East African coast and attributes it to the collection of the seeds as a shampoo base. Palgrave (1983:588) notes that the interior of old trees crumbles into a fibrous pulp and if they die suddenly, such as after a frost, the tree can burst spontaneously into flame.

The tag of an 'upside-down' tree features in a number of purported traditional stories. Wickens (1982) recounts one in which the Creator is said to have initially planted the baobab in the rainforests of the Congo Basin, but the tree complained that the dampness made its trunk swell. So the Creator moved it to the high slopes of the Ruwenzori range, the Mountains of the Moon. But the baobab continued to grumble about the humidity. Angered by the incessant wailing, the Creator took the swollen trunk and tossed it into a dry part of Africa. The tree landed upside down with its roots in the air.

Baobabs are often considered the abode of witches or spirits. Luxureau (1994 :73) depicts an enormous split baobab in Maradi, Niger where women place money in order for it to assist them to realise their wishes. The Dampo people of Western Ghana claim to have arisen from a horseman who emerged from a split baobab that is still alive a short walk from their settlement. Alternatively, baobabs may be emblematic of the coherence of a community. In the Volta Region of Ghana, the health of specific baobabs is associated with the community; should they die, the community may break up. Livingstone (1857) mentions a baobab near the Mozambique coast with a room-sized central cavity enough to shelter an entire family. In Australia, where the baobab is known as a 'boab', the tree had similar uses. In the early Kimberley pioneering days,

boabs were often temporarily used to contain prisoners. Grates were fitted to the openings, the prisoners put inside and the grate locked. Twenty kilometres from Wyndham is the Prison Tree, which still bears bolts and studs from its service as a prison.

3.2 Silk-cotton

The silk-cotton is only marginally a food-plant; its young leaves and seeds are eaten. But it has probably been spread by humans for the floss; used to stuff pillows, as tinder for fire-making and many other uses. In West Africa, there are two varieties an armed (thorny) and an unarmed cultivars. The armed *Ceiba* is commonly used for fences, as it keeps out goats and the young leaves can be regularly harvested. Raponda-Walker & Sillans (1961 :106) note that in Gabon the unarmed type is only found in the forest⁷. It has been brought into plantations in Java for the kapok, although this trade is in decline due to synthetics. In addition, its important spiritual associations make it a prime candidate to spread to new village sites. The growth of chieftaincy institutions in Northern Ghana, for example, encouraged the spread of the silk-cotton because the pillows for chiefs must be filled with kapok. Hauenstein (1997) describes the complex role played by the silk-cotton in the peoples of central Cote d'Ivoire. Irvine (1961:191) notes that it is 'one of the most sacred trees of West Africa', which would be very surprising if it had really been introduced by the Portuguese.

4. Conceptualisation and vernacular terminology of baobab and silk-cotton

4.1 Vernacular terminology in Africa

Both the baobab and the silk-cotton have conceptual twins. For the baobab it is the false baobab or desert rose, *Adenium obesum*, which it resembles at the level of the trunk, although *Adenium* is much shorter and has brilliant red flowers. For the silk-cotton, it is the red-flowered silk-cotton, *Bombax buonoponenze*, a similar tree with, as advertised, red flowers. The ecological ranges of these analogues largely coincide, although the false baobab is usually confined to more semi-arid regions. Table 1 shows the basic term for *Ceiba* in Iten, a language spoken SW of the Jos Plateau in Nigeria. The baobab does not grow in this area and is known only as a Hausa loan. However, both the red-flowering silk-cotton and the false baobab are treated as relatives of the silk-cotton;

Table 1. The silk cotton and its conceptual relatives in Iten

Singular	Plural		
ekum	nikum	silk-cotton tree	<i>Ceiba pentandra</i>
ekum ɛ̀daà	nikum ɛ̀daà	red-flowering silk-cotton tree	<i>Bombax buonoponenze</i>
nirèè	nirèè	lit. 'silk-cotton of the [neighbouring] Kwakwi people'	
ekum	nikum	false baobab	<i>Adenium obesum</i>
nè'warâng	nè'warâng		

The terminology for baobabs is highly ramified in many African languages, which is indicative of its ancient establishment in many parts of the continent. As an example, Table 2 shows the terminology for the baobab and its parts in Hausa, spoken in Nigeria and Niger;

⁷ The data is too sketchy to make a strong case, but it seems possible that the contrast between the two types may represent two different introductions; the unarmed ssp. being ancient and the armed, 'cultivated' types of Portuguese vintage.

Table 2. Baobab terminology in Hausa

Term	Dialect	Gloss	Comment
Bákkô		baobab	<Fulfulde?
Bambu		baobab	
Dunku		baobab	
Gààtsíikà	Kano	young baobab	
Gullutu	Kabi	baobab	
Gùntsúú		baobab seeds	
Gwàrgwámíí		baobab seeds	
Kubali	Katsina	baobab	
Kulambali	Katsina	baobab	
Kúmbàlíí	Katsina	baobab flower buds	
Kúúkà <i>pl.</i> kúúkóókíí		baobab	< Songhay?
Kwámè		baobab fruit	
Mùrnàà	Sokoto	baobab	

The origin of many of these terms is unknown.

4.2 Analysis of vernacular names

The vernacular names for silk-cotton and baobab in Africa are tabulated in Appendix Table 1 and Appendix Table 2. The data is arranged by language phylum and within that by family. For more detail on the internal classification and terminology of African language phyla, Heine & Nurse (2000) is a recent overview. I have assigned numbers to the widespread roots for silk-cotton in the column marked ‘R’, indicating lexemes that should probably be grouped together. Unnumbered roots seem to be local innovations. Sources are marked in the final column, although I have tried to use commonly available collections of terms rather than citing each individual document in order to keep the bibliography to a manageable length. Skinner (1996:151) discusses some etymologies for baobab. Rashford (1994) has a discussion of the association of monkeys with baobab names, but this is entirely confined to European-related languages; no African language makes this connection.

4.2.1 Baobab

Vernacular names for baobab are manifestly more diverse than those for *Ceiba*. If the distributional argument given in §2.1 is accepted, the interpretation is that the baobab only began to spread in Africa *after* the main outlines of its language phyla were established and it was diffusing east to west, i.e. against the direction of the expansion of Niger-Congo. As a consequence, when farming groups expanded eastwards they encountered the baobab as an unfamiliar tree and were forced to construct a name, perhaps borrowing it from resident hunter-gatherers or comparing it to a species they already knew. This is particularly the case in some names in the Plateau languages of Nigeria and further west in Mali and Cote d’Ivoire, where the terms are clearly borrowed from established names for *Ceiba*.

Despite a reconstructed Bantu form appearing in the Tervuren Lexical Reconstruction database⁸, the Bantu could not have carried the baobab with them as they expanded eastwards across the tropical forest, because it will not grow in the humid areas of Cameroun, Gabon and Congo where the Bantu are thought to have originated. They must have developed new terms once they encountered it, on emerging into the savanna. There are clearly two competing Bantu roots in Eastern and Southern Africa, #**mbuyu** and #**muramba** or similar. It seems possible the nearly identical forms in Swahili and Tonga might be loans rather than true genetic cognates. Nonetheless, the forms in South African Bantu languages are clearly cognate with #**mbuyu** and it is possible that the baobab was carried southwards with the Bantu expansion. An intriguing

⁸ This can be consulted on-line at http://linguistics.africamuseum.be/blr/BLR_Home.html

name is the Ovambo **omu-kura** which appears to resemble some West African forms. It is conceivable that the name was carried with the Bantu groups who expanded southwards along the coast of West Africa, although the humid forest that occurs there today no longer supports baobabs.

Newman (1977:22) reconstructed ‘baobab’ as ***kuka** for Proto-Chadic, and observed ‘Kanuri *kuwa* is undoubtedly a borrowing from Chadic’. In view of the widespread presence of this root in Nilo-Saharan, this is very unlikely and the direction of borrowing is more likely the reverse. The original source of Hausa **kúúkà** may have been a borrowing from the West Kainji languages, as there is considerable diversity of forms, pointing to an original **#kukpa** or **#kugba**. Alternatively, Hausa could have borrowed from Kanuri/Manga **kúwà**, since the tone-pattern is identical. But there is no doubt that roots of the **#kuka** form are widespread due to secondary borrowing from Hausa. The reason may be that the practice of drying the leaves, powdering them and selling them as soup ingredients has definitely been widely spread along the Hausa trade routes, even if they did not initiate this practice. In Nupe, for example, the baobab tree itself is **muci**, an old Nupoid root. However, the Nupe name for the leaves, **kúka**, is a relatively recent borrowing from Hausa. Forms such as Daffo are probably later borrowings from Hausa, but Gashua Bade and Bagirmi probably derive their forms directly from Kanuri/Kanembu. If this was an old Nilo-Saharan term then it was borrowed *into* proto-Kainji, perhaps from Songhay (Dendi is today a direct neighbour of West Kainji languages). Skinner (1996) gives some rather sparse Chadic lookalikes usually referring only to tree spp. The Tuareg names are very puzzling, as they are not obviously derived from other languages, and yet the baobab would not have been familiar in North Africa. Probably these are transferred from another tree species. The Malagasy names for *A. digitata* are almost all borrowed from the vernacular names for native *Adansonia* species, except in one case when Sakalava borrows from French.

4.2.2 Silk-cotton

Ceiba pentandra terms are more obviously patterned than those for baobab. The numbered roots all have interesting distributions, although II, **#kum-**, is by far the most widespread.

I. Derived from a proto-form something like ***bàntVŋ** for Central Mande languages, it also appears in a clutch of Atlantic languages, including Wolof and Ffulfulde. The extensive migrations of Fulbe pastoralists have given it currency much further east in West Africa, but it is probably most useful to think of it as characteristic of the western zone.

II. Derived from a proto-form something like **#kum-** and widespread across West Africa, also apparently spreading in to the Nilo-Saharan languages. This characteristic root suggests an early date for *Ceiba* and a link with the diffusion of Niger-Congo languages. Its widespread occurrence in Gabonese languages (see Raponda-Walker & Sillans 1961 :106 for a complete list) would seem to make it a candidate for Proto-Bantu, although the East Africanist bias of Bantu reconstructions has so far excluded it.

III. Confined to the East Mande languages and Atlantic languages that appear to have borrowed from them (although Baga Koba is hardly in contact with these languages today).

IV. Derived from a proto-form something like **#-nyãĩ-**, this root is confined to the Kwa languages, but is dispersed across the family, suggesting considerable time-depth (Kwa itself being very internally divided).

V. This root is the most complex, since it appears in Nilo-Saharan, Afroasiatic and Bantu. Probably originating either in West Chadic or Nilo-Saharan, it underwent a significant change of vowel from high front /i/ to high back /u/ and was then loaned into Arabic as **rûm** and perhaps thence into Somali as **dum**. Arabic may also be the source for various Central African languages, such as Gula **rum**.

VI. This root is entirely confined to the Ijoid languages spoken in the Niger Delta in Nigeria. Kay Williamson proposes that the forms can be reconstructed to proto-Ijò which would independently indicate considerable antiquity for the tree in this region.

The presence of a distinctive root in Senufic, #**fene**, which probably reconstructs to proto-Senufic, is good evidence for the antiquity of the silk-cotton in West Africa. The fact that it does not appear to be a loan and does not appear outside Senufic suggests some time-depth.

One of the complex etymologies yet to be fully understood is the name *pemba* or *pamba*, which occurs in NE Madagascar. This is an area under strong Swahili influence, but this is not the Swahili name, which is *msufi* and may derive from the island of Pemba. Boiteau et al. (1997) note that *Ceiba* on Madagascar, while an exotic, appears to be spontaneous all along the coast.

4.3 Conceptual crossover

Baobabs and silk-cotton trees may both have been introduced into the African continent by humans, and have certainly been spread by them. Both are tall, impressive trees with numerous ethnobotanical uses and both attract belief complexes. The silk-cotton appears to have spread in the same direction as the expansion of Niger-Congo languages (west to east across the continent) and for this reason, can be reconstructed to quite a high level in that phylum. The lexemes for silk-cotton are strongly associated with those for ‘death’ and ‘corpse’, and with various initiation cults. The terms for baobab are more diverse and fall less easily into patterns. This may be because the baobab spread across Africa from east to west, against the direction of flow of the expansion of Niger-Congo. At some place in Central Africa, perhaps between Nigeria and Cameroun, the two species began to co-occur, and in particular, the baobab began to take on names originally applied to the silk-cotton. Prost (1964:423), discussing the vernacular names in Gur languages observes ‘*Fromager n’est pas toujours distingué de kapokier*’. Throughout this whole region the names and attributes of the two species form a complex networks of borrowings.

5. Conclusion

The history of the baobab and the silk-cotton remain little-understood, despite their economic importance, and there are various reasons for thinking that the published hypotheses do not account for all the facts. Both trees have considerable economic and spiritual importance where they are linked to village communities and it is reasonable to assume they were translocated by human action, perhaps long prior to agriculture. Vernacular names for these species certainly suggest considerable antiquity in Africa; and indeed significant exchanges of associated ideas and terminology. Presumably further work on the genetics of specimens growing in widely separated locations could contribute to unravelling some of these problems.

Appendix Datasheets

Appendix Tables 1 and 2 compile vernacular names for baobab and silk-cotton in sub-Saharan Africa. I have tried to use the most linguistically accurate transcription possible. In a language group where the same root occurs many times I have cited representative forms rather than every recorded form as the intention is to uncover geographical and linguistic patterns. RMB in the source column indicates the data is from my own fieldwork. Existing summary compilations of vernacular names for baobab in Africa are Burkill (1985) and Sidibe & Williams (2002 :11).

Abbreviations

AA = Afroasiatic	NS = Nilo-Saharan
AN = Austronesian	P= Phylum
KS= Khoesan	R = Numbered root
NC = Niger-Congo	RMB = own data

Appendix Table 1. Vernacular names of the baobab *Adansonia digitata* in Africa

P	Family	Language	Attestation	R	Comment	Source
NC	Dogonic	Dogon Toro	óró	? I	and many other Dogon languages	Calame-Griaule (1968)
	Kordofanian	Heiban	kwor	I	and many other Nuba languages	Andrews (1953)
		Abri	kwugwor	I		Andrews (1953)
		Tira	θór	I		RMB
	Mande	Bambara	(n)sira	IV		Bailleul (1998)
		Soninke	kide			Burkill (1985)
		Susu	kiri			Burkill (1985)
		Kono	sela	IV		Burkill (1985)
		Mende	gbowulo	II		Burkill (1985)
		Bobo-Fing	pii	II	cf. Bobo-Fing <i>Ceiba</i>	Malgras (1994)
		Guro	bèlé	II	cf. root I for <i>Ceiba</i> esp. Nwan	Burkill (1985)
	Atlantic	Balanta	laté			Burkill (1985)
		Bassari	a-màk			Burkill (1985)
		Bedik	ga-mak			Burkill (1985)
		Diola Fogny	babaq			Burkill (1985)
		Fulfulde	bokki			Burkill (1985)
		Serer	bak			Burkill (1985)
		Konyagi	a-mbu	II		Burkill (1985)
		Mankanya	bedôal	II		Burkill (1985)
		Wolof	gui		cf. root I for <i>Ceiba</i> esp. Toura	Burkill (1985)
	Kru	Bijogo	u-áto			Burkill (1985)
		Guéré	go pl. gwê		cf. root I for <i>Ceiba</i> esp. Toura	Burkill (1985)
		Wobe	gblé-tu		cf. root I for <i>Ceiba</i> esp. Mwa	Burkill (1985)
	Gur	Bieri	tebu/tora			Manessy (1975)
		Tayari	ñor-ga/-əri			Manessy (1975)
		Nawdm	todde/tuura			Manessy (1975)
		Dagbane	tú-á/-hé			Manessy (1975)
		Moore	tɛɛga/teese			Manessy (1975)
		Dagara	twoo/tooru			Manessy (1975)
		Bwa	'iya			Malgras (1994)
	Senufic	Minyanka	zige	III		Burkill (1985)
		Senufo	zeŋe	III		Burkill (1985)
		Supyire	zhengè	III		Burkill (1985)
	Kwa	Ewe	àdidó			Rongier (1995)
		Ga	sààlò	IV		Irvine (1961)
		Dangme	salɛtɔ	IV		Burkill (1985)
		Baule	fromdo			Burkill (1985)
		Twi	ɔdadaɛ <i>and ɔtɔtɔwaa</i>			Irvine (1961) Irvine (1961)
		Guan	toto			Irvine (1961)
		Brong	kɛlau	I		Irvine (1961)
	WBC					
	Kainji	Lopa	kufwə	I	cf. Hausa	RMB
		cLela	k-kubu	I	cf. Hausa	RMB

P	Family	Language	Attestation	R	Comment	Source
		Ror	u-kuk	I	cf. Hausa	RMB
		sSaare	u-kup	I	cf. Hausa	RMB
		Rogo	u-ub	I	cf. Hausa	RMB
	Plateau	Kuki	upə	I	cf. root II ‘silk-cotton’	RMB
		Təsu	kúkúró	I		RMB
		Hasha	ikum		cf. root II ‘silk-cotton’	RMB
		Berom	kugul leng			RMB
		Jijili	ulici			RMB
	Bantu	PB	#bòjú			BLR3 ⁹
		PB	#dámbà			BLR3
		Kamba	mwamba			FAO (1988)
		Swahili	mbuyu			FAO (1988)
		Embu, Meru	muramba			Maundu et al. (1999)
		Taita	mlamba			Maundu et al. (1999)
		Chewa	mlambe			FAO (1988)
		Yao	mlonje			FAO (1988)
		Ndebele	umkhomo			FAO (1988)
		Tonga	mubuyu		cf. Swahili	FAO (1988)
		Hlengwa	muwu			FAO (1988)
		North Sotho	motsoo			cf. Website 2.
		Ovambo	omukura			cf. Website 2.
		Tsonga	ximuwu			cf. Website 2.
		Tswana	movana			cf. Website 2.
		Venda	muvhuyu			cf. Website 2.
		Zulu	isiMuku			cf. Website 2.
NS		Songhay	kò pl. kòà	I	cf. Hausa	Ducroz & Charles (1978)
		Dendi	kòð	I	cf. Hausa	Burkill (1985)
		Kanuri	kúwa	I	cf. Hausa	Burkill (1985)
		Maasai	ol-mesera			Maundu et al. (1999)
		Samburu	lamai			Maundu et al. (1999)
		Nuer	kusha			Andrews (1953)
		Dinka	dungwol			FAO (1988)
AA	Semitic	Chad Arabic	hamray pl. hamar			Julien de Pommerol (1999)
		Chad Arabic	kalakûkay pl. kalakûka	I	? <Hausa	Julien de Pommerol (1999)
		Chad Arabic	tabalday pl. tabaldî			Julien de Pommerol (1999)
		Amharic	bamba			FAO (1988)
		Tigre	duma		cf. Somali ‘silk-cotton’	FAO (1988)
	Cushitic	Orma	yak			Maundu et al. (1999)
		Somali	yag			Maundu et al. (1999)
		Goróa	dakaa'umó			Mous & Kießling (2004)
		Alagwa	dakaa'imoo			Mous & Kießling (2004)

⁹ The reconstructions are drawn from the Tervuren ‘Bantu Lexical Reconstructions 3’ website. As the citations show, evidence for these reconstructions is strictly confined to Eastern Africa.

P	Family	Language	Attestation	R	Comment	Source
		Burunge	daka'u			Mous & Kießling (2004)
	Berber	Tadghaq	tǎkudust			Kossmann (p.c.)
		Iwellemmed	tadyəmt			Kossmann (p.c.)
	C. Chadic	en				
		Bacama	kawtə	I		Newman (1977)
		Bana	kwǎkwǎ	I		Gravina (p.c.)
		Daba	kàkāw	I	name of fruit	Gravina (p.c.)
		Giziga	mbaatay			Gravina (p.c.)
		Hdi	ka'u	I		Gravina (p.c.)
		Logone	kuka		< Hausa	Gravina (p.c.)
		Kotoko				
		Mada	kokorbana			Gravina (p.c.)
		Makary	kalkuka	I	? < Hausa	Gravina (p.c.)
		Kotoko				
		Malgwə	kwakwa	I		Gravina (p.c.)
		Muyang	ǎkrām			Gravina (p.c.)
		Podoko	huhuwa	I		Gravina (p.c.)
		Tera	kukwa	I	? < Hausa	Newman (1977)
		Zulgo	mátàkwambúrzu			Gravina (p.c.)
			m			
	W. Chadic	Hausa	kúúká pl.	I	< Kanuri?	Abraham (1949)
			kúúkóókíí			
		Bole	dəmbər			Schuh (p.c.)
		Ngizim	kuku	I	< Kanuri?	Newman (1977)
		Karekare	kuci	I	< Kanuri?	Newman (1977)
		Gashua Bade	kukwáú pl.	I	? < Hausa	Schuh (p.c.)
			kùkun			
		Duwai	kuko	I	? < Hausa	Schuh (p.c.)
		Miya	kushi	I	< Kanuri?	Schuh (p.c.)
		Guruntum	kwàslà			Cosper (1999)
		Jimi	girum			Cosper (1999)
		Tal	bòkwo		? < Fulfulde	Cosper (1999)
		Boghom	mbùydi			Cosper (1999)
		Mangas	bokò		? < Fulfulde	Cosper (1999)
		Saya	dót			Cosper (1999)
		Jimi	girim			Cosper (1999)
		Polci	pót roon			Cosper (1999)
		Zul	bəlime			Cosper (1999)
		Buli	lùùn			Cosper (1999)
		Dot	róon			Cosper (1999)
		Geji	daahooli			Cosper (1999)
		Guus	duɓul			Cosper (1999)
AN		Sakalava	baobaba		< French	Boiteau et al. (1997)
			bontona, vontona		< name for <i>Andansonia madagascarensis</i>	Boiteau et al. (1997)
			boringy		< name for <i>A. fony</i>	Boiteau et al. (1997)
			sefo			Boiteau et al. (1997)
			za		< name for <i>A. za</i>	Boiteau et al. (1997)

Appendix Table 2. Vernacular names of the silk-cotton *Ceiba pentandra* in Africa

P	Family	Language	Attestation	R	Comment	Source
NC	Dogonic	Dogon Toro	jú			Calame-Griaule (1968)
	Ijoid	Kalabari	síkákáá	VI		Williamson (p.c.)
		Oiyakiri	asísayá	VI		Williamson (p.c.)
		Kolokuma	ìsàgháí	VI		Williamson (p.c.)
		Oruma	sìyáí	VI		Williamson (p.c.)
		proto-Ijoid	*ɪ-sìkákà, *a-sìsákà	VI		Williamson (p.c.)
	Mande	Bambara	bàna(n)	I		Bailleul (1998)
		Mandinka	bàntaŋ	I		Vydrine (p.c.)
		Xasonka	bàntiŋ	I		Vydrine (p.c.)
		Vai	ḡàndá	I		Vydrine (p.c.)
		Lele	bándà	I		Vydrine (p.c.)
		Koranko	bàndã	I		Vydrine (p.c.)
		Jogo	bṛá	I		Vydrine (p.c.)
		Nwan	bre	I		Prost (1953)
			*bàntVŋ	I		Vydrine (p.c.)
		Toura	gwéè	II		Vydrine (p.c.)
		Wan	kwēē	II		Vydrine (p.c.)
		Mende	ngúwò	II		Vydrine (p.c.)
		Loko	ŋguuhò	II		Vydrine (p.c.)
		Looma	gúò	II		Vydrine (p.c.)
		Kpelle	wuyε	II		Vydrine (p.c.)
		Dan	gwē	II		Vydrine (p.c.)
			*gwúwε	II		Vydrine (p.c.)
		Bisa	hor	III		Prost (1953)
		Mwa	gbure	II		Prost (1953)
		Beng	poro	III		Prost (1953)
		Yaure	ferε	III		Prost (1953)
		San	ko(no)		?	Prost (1953)
		Bobo-Fing	peda	III	?	Prost (1953)
		Bobo-Fing	pirii	III	cf. Bobo-Fing 'baobab'	Malgras (1994)
	Atlantic	Busa	gbe	II		Burkill (1985)
		Baga Koba	porō	III	<E Mande	Segerer (p.c.)
		Balanta	rumbum			Segerer (p.c.)
		Banyun	kidem			Segerer (p.c.)
		Basari	a-ndin			Segerer (p.c.)
		Bedik	gi-ndii			Segerer (p.c.)
		Biafada	bregwe	?II		Segerer (p.c.)
		Bijogo	cobbe			Segerer (p.c.)
		Diola Flup	bosanobo		= canoe	Segerer (p.c.)
		Diola Fogny	busanay			Segerer (p.c.)
		Diola Kwataay	étufay			Segerer (p.c.)
		Fulfulde	batigehi	I	cf. Xasonka	Segerer (p.c.)
		Senegal				
		Fulfulde	bantehi	I	cf. Xasonka	Segerer (p.c.)
		Gambia				
		Serer	m-buday	I		Segerer (p.c.)
		Wolof	betene, bentenki	I	cf. Xasonka	Segerer (p.c.)
		Mandyak	pentya	I		Segerer (p.c.)

P	Family	Language	Attestation	R	Comment	Source
		Mankanya	pentene	I		Segerer (p.c.)
		Pepel	mecene, ntene	I		Segerer (p.c.)
		Kissi	banda	I	cf. Mande	Segerer (p.c.)
		Konyagi	a-man			Segerer (p.c.)
		Non	len			Segerer (p.c.)
	Kru	Krao	jwe			Marchese (1983)
		Tepo	jù			Marchese (1983)
		Bete	gṣṣ	II		Marchese (1983)
		Neyo	vīdā			Marchese (1983)
		Godie	gbāḍā			Marchese (1983)
		Koyo	vādā			Marchese (1983)
	Gur	Bieri	hun-ga/-si	II		Manessy (1975)
		Tayari	ku-m/-na	II		Manessy (1975)
		Nawdm	gom-be/-ti	II		Manessy (1975)
		Dagbane	gu-ḡwa/-nse	II		Manessy (1975)
		Moore	gu-ḡga /-msi	II		Manessy (1975)
		Bwa	tyaa			Malgras (1994)
		Moba	gbang	II		Irvine (1961)
		Baatonun	guma	II		Burkill (1985)
	Senufic	Minyanka	ʃeŋe			Malgras (1994)
		Senufo	ʃiŋe			Malgras (1994)
		Supyire	siŋɛ̀			RMB
	Ubangian	Banda	kopu			Sillans (1958)
		Langbase	kepu			Sillans (1958)
		Gbaya	gela			Sillans (1958)
	Kwa	Ewe	vũtí			Rongier (1995)
		Ga	ònyāĩ	IV		Irvine (1961)
		Abbey	kpè, òbà			Hérault (1983)
		Abidji	lókpa			Hérault (1983)
		Abouré	èŋm̀	IV		Hérault (1983)
		Abron	jíná			Hérault (1983)
		Adyukru	lěkp			Hérault (1983)
		Alladian	ecó tè			Hérault (1983)
		Baule	ɲɲè	IV		Hérault (1983)
		Twi	onyāā	IV		Irvine (1961)
		Nzema	èŋĩ	IV		Hérault (1983)
		Brong	ekile			Irvine (1961)
			danta			Irvine (1961)
		Ega	òvè			Hérault (1983)
		Eotile	èpè	IV		Hérault (1983)
		Gonja	kàlèlè			Burkill (1985)
	WBC	Yoruba	ɛgún	II		Abraham (1958)
		<i>also</i>	àràbà			Abraham (1958)
		Yoruba Ife	vuti		< Ewe?	Burkill (1985)
		Igala	agwu	II		Burkill (1985)
		Išekiri	egungun	II		Burkill (1985)
		Isoko	ahe			Burkill (1985)
		Urhobo	óháhèn			Burkill (1985)
		Igbo	ákpū	II		Burkill (1985)
		Nupe	kúci	II		Burkill (1985)
		Yala	igu	II		Burkill (1985)
	EBC	Kulu	gù-kúúmú	II		RMB

P	Family	Language	Attestation	R	Comment	Source	
	Plateau	Berom	kugul	II		RMB	
		Iten	ɛkum pl. nikum	II		RMB	
		Cara	fum pl. akum	II		RMB	
		Izere	kâkúm	II		RMB	
		Hyam of Nok	cum	II		RMB	
		Ayu	íkúm	II		RMB	
		Ningye	kum	II		RMB	
		Toro	kumu	II		RMB	
		Təsu	kúmú	II		RMB	
		Ake	ifəŋ			RMB	
		Eggon	ebzi akum	II		RMB	
		Jijili	ukumu	II		RMB	
		Jili	kúkúmú	II		RMB	
		Cross River	Abua	ù-mùùm pl. àrù-úkúm	II		Burkill (1985)
		Ibibio	úkím	II		Burkill (1985)	
	Bendi	Bokyi	bokum	II		Burkill (1985)	
	Tivoid	Tiv	vàmbè			Burkill (1985)	
	Bantu	Duala, Kele	bǔma	II		Burkill (1985)	
		Isongo	buma	II		Sillans (1958)	
		Mpongwe cluster	oguma	II		Raponda-Walker & Sillans (1961)	
		Mpiemo	dumə		< Arabic?	Thornell (2004)	
		Fang	oduma			Raponda-Walker & Sillans (1961)	
			Vili	mukuma	II		Raponda-Walker & Sillans (1961)
			Eshira	mufuma	II		Raponda-Walker & Sillans (1961)
			Bolia	bo-həngó			Ngila (2000)
			Swahili	mbuyu			Maundu et al. (1999)
			Nyanja	mpilila			FAO (1988)
			Tumbuka	myali			FAO (1988)
			Chewa	usufu		< Swahili?	FAO (1988)
			Nkonde	mutunda			FAO (1988)
NS		Songhay	Songhay	bántàm	I	< Mande	Ducroz & Charles (1978)
	Zarma		fórgò	III?		Ducroz & Charles (1978)	
	Saharan	Dendi	bantan		? < Mandinka	Burkill (1985)	
		Kanuri	tôm	V		Burkill (1985)	
		Ngambay	kura	II?	cf. Songhay?	Le Mbaïndo & Fedry (1979)	
	E. Sudanic	Bejondo	kunœ	II?		Adami (1981)	
		Anywa	dhégò pl. dhék		? cf. Dinka 'baobab'	Reh (1999)	
		Bagirmi	tumu	V	? < Kanuri	De Colombel (1995)	
		Gula	rum	V	< Arabic?	Nougayrol (1999)	
AA	Semitic	Chad Arabic	rûm	V	? < Hausa	Julien de Pommerol (1999)	

P	Family	Language	Attestation	R	Comment	Source
	Cushitic	Somali	dum	V	? < Arabic	FAO (1988)
	W. Chadic	Hausa	ríímíí pl. ríímààyéé	V		Abraham (1949)
		Guus	mbərəán			Caron (p.c.)
		Gashua Bade	līmi pl. līmaksat	V	< Hausa	Schuh (p.c.)
		Duwai	rimi pl. rīmi	V	< Hausa	Schuh (p.c.)
	C. Chadic	Mora, Muktele etc.	təwme	V	?< Kanuri	De Colombel (1995)
		Uldeme	tiwme		?< Kanuri	Gravina (p.c.)
		Bana	tipə			Gravina (p.c.)
		Logone	laḃe			Gravina (p.c.)
		Kotoko				
		Mafa	kwərmbala			De Colombel (1995)
	E. Chadic	Lele	mànyà			Weibegué & Palayer (1982)
AN	Malagasy	Sakalava	hazomorengey			Boiteau et al. (1997)
		Sakalava	kaboaka		< French 'kapok'	Boiteau et al. (1997)
		Sakalava	landahazobe			Boiteau et al. (1997)
		Betsimisaraka	laoaty			Boiteau et al. (1997)
		Tankara	pamba, pamba		cf. Amharic [!] 'baobab' but possibly from the island of Pemba	Boiteau et al. (1997)

References and bibliography

- Abraham, R.C. 1949. *Dictionary of the Hausa language*. London: University of London Press.
- Abraham, Roy C. 1958. *Dictionary of Modern Yoruba*. London: University of London Press.
- Adam, J.G. 1962. Le baobab (*Adansonia digitata* L.). *Notes africaines*, 94:33-44.
- Adami, P. 1981. *Lexique Bediondo-Français*. Sarh : Collège Charles Lwanga.
- Adanson, M. 1771. Description d'un arbre d'un nouveau genre appelé Baobab observé au Sénégal. *Histoire Academie Royale Scientifique*, 1791: 77-85, 218-243.
- Alpini, Prosper 1591. *De medicina Aegyptiorum libri quatuor: in quibus multa cum de vario mittendi sanguinis vsu de q; inustionibus, & alijs chyrgicis operationibus, tum de quamplurimis medicamentis apud Aegyptios frequentioribus, elucescunt*. Venetiis: Apud Franciscum de Franciscis Senensem.
- Andrews, F.W. 1953. *Vernacular names of plants as described in "Flowering plants of the Anglo-Egyptian Sudan Vol. II"*. Sudan: McCorquodale & Co.
- Armstrong, P. 1977. Baobabs: remnant of Gondwanaland? *New Scientist*, 73 :212-213.
- Armstrong, P. 1983. The disjunct distribution of the genus *Adansonia*. *National Geographical Journal of India*, 29 :142-163.
- Assogbadjo, A.E., Sinsin, B., Codjia, C., T. Jean & P. Van Damme 2005. Ecological diversity and pulp, seed and kernel production of the baobab (*Adansonia digitata*) in Benin. *Belgian Journal of Botany*, 138, 1:47-56.
- Assogbadjo, A. E., Kyndt, T., Sinsin, B., Gheysen, G. and P. Van Damme 2006. Patterns of genetic and morphometric diversity in Baobab (*Adansonia digitata*) populations across different climatic zones of Benin (West Africa). *Annals of Botany*, 97,5: 819-830.
- Bailleul, Charles 1996. *Dictionnaire Bambara-Français*. Bamako: Donniya.
- Baker, H.G. 1965. The evolution of the cultivated Kapok tree: a probable West African product. In: D. Brokensha. (ed.) *Ecology and Economic Development in Tropical Africa*. 185-216. Berkeley: University of California Press.
- Barnes, R.F.W., Barnes, KL Kapela, *Economic Botany*, 1994. The long-term impact of elephant browsing on baobab trees at Msembe, Ruaha National Park, Tanzania. *African journal of ecology*, 32, 3:177-184.

- Barnes, R.F.W. 1980. The decline of the baobab tree in the Ruaha National Park, Tanzania. *African journal of Ecology*, 18:243-252.
- Bash, B. 2002. *Tree of Life: The World of the African Baobab*. New York: Gibbs Smith.
- Baum, D.A. 1995a. A systematic revision of *Adansonia* Bombacaceae. *Annals of the Missouri Botanical Gardens*, 82(3): 440-470.
- Baum, D.A. 1995b. The comparative pollination and floral biology of baobabs (*Adansonia*-Bombacaceae). *Annals of the Missouri Botanical Garden*, 82, 322–348.
- Baum, D.A., Small, R. L. and J.F. Wendel 1998. Biogeography and floral evolution of Baobabs (*Adansonia*, Bombacaceae) as inferred from multiple data sets. *Systematic Biology*, 47(2): 181-207.
- Bedaux, R.M.A. 1972. Tellem, reconnaissance archéologique d'une culture de l'ouest africain au moyen âge: Recherches architectoniques. *Journal de la Société des Africanistes*, 42 (2): 103-185.
- Blench, R.M. et al. 2003. *Access rights and conflict over common pool resources in the Hadejia-Nguru wetlands*. Unpublished report to the JEWEL project, Nigeria.
- Boiteau, P. et al. 1997. *Dictionnaire des noms Malgaches de végétaux*. [5 vols.] Grenoble: Éditions Alzieu.
- Bowman, D.M. 1997. Observations on the demography of the Australian boab (*Adansonia gibbosa*) in the north-west of the Northern Territory, Australia. *Australian Journal of Botany*, 45(5): 893-90.
- Burkill, H.M. 1985. *The Useful Plants of West Tropical Africa, Families A-D*, Kew, Royal Botanic Gardens.
- Burton-Page, J. 1969. The problem of the introduction of *Adansonia digitata* into Africa. In: *Domestication and exploitation of plants and animals*. P.J. Ucko & G.W. Dimbleby (eds.) 331-335. London: Duckworth.
- Calame-Griaule, G. 1968. *Dictionnaire Dogon — dialecte Tòrò — Langue et Civilisation*. Langues et Littératures de L'Afrique Noire. IV. Paris, France: Klincksieck.
- Chevalier, A. 1906. Les Baobabs (*Adansonia*) de l'Afrique continentale. *Bulletin de la Société Botanique de France*, 53:480-496.
- Chevalier, A. 1931. Le rôle de l'Homme dans la dispersion des plantes tropicales: échanges d'espèces entre l'Afrique tropicale et l'Amérique du Sud. *Revue Internationale d'Agriculture Tropicale et Botanique appliquée*, 120:631-650.
- Chevalier, A. 1937. Arbres à Kapok et Fromagers. *Revue Internationale d'Agriculture Tropicale et Botanique appliquée*, 188:245-268.
- Chevalier, A. 1949. Nouvelles observations sur les arbres à Kapok de l'Ouest Africain. *Revue Internationale d'Agriculture Tropicale et Botanique appliquée*, 321-2:377-385.
- Codjia, J.T.C., Fonton-Kiki, B., Assogbadjo, A.E. & M.R.M. Ekué 2001. *Le baobab (Adansonia digitata), une espèce à usage multiple au Bénin*. Cotonou, Bénin: CECODI/CBDD/Veco/SNV/FSA.
- Colombel, V. de 1995. Noms de plantes: classification, reconstruction et histoire à partir des noms de six cents plantes en dix langues tchadiques des monts du Mandara. In: *Studia Chadica et Hamitosemitica*. Ibrizimow, D. & R. Leger eds. 229-251. Köln: Rüdiger Köppe.
- Cosper, R. 1999. *A Wordlist of Eight South Bauchi (West Chadic) Languages: Boghom, Buli, Dott, Geji, Jimi, Polci, Sayanci and Zul*. Munich: Lincom Europa.
- Ducroz, Jean-Marie & M-C. Charles 1978. *Lexique Songey (Songay) Français*. Paris: Harmattan.
- Food and Agriculture Organisation [FAO] 1988. *Traditional food plants*. Rome: Food and Agriculture Organisation.
- Germer, R. 1985. *Flora des Pharaonischen Agypten*. Mainz am Rhein: Von Zabern.
- Gibbs, P. & J. Semir 2003. A taxonomic revision of the Genus *Ceiba* Mill. (Bombacaceae). *Anales del Jardín Botánico de Madrid*, 60(2): 259-300.
- Guy, G.L. 1982. Baobabs and elephants. *African Journal of Ecology*, 20:215-220.
- Hamdun, S. & N. King 1975. *Ibn Battuta in Black Africa*. London: Rex Collings.
- Hauenstein, A. 1997. La dendrolâtrie en Côte d'Ivoire (Dendrolatry in the Ivory Coast). *Ethnographie*, 93, 121:89-99.
- Heine, B. & K. Legère 1995. *Swahili plants*. Köln: Rüdiger Köppe.
- Heine, B. & D. Nurse eds. 2000. *African languages: an introduction*. Cambridge: Cambridge University Press.
- Henderson, A., G. Galeano & R. Bernal 1995. *Field guide to the palms of the Americas*. Princeton: Princeton University Press.
- Hérault, G. 1983. *Atlas des Langues Kwa de Côte d'Ivoire, Tôme 2*. Abidjan: ACCT and ILA.

- Hobley, C.W. 1922. On baobabs and ruins. *Journal of the East African and Uganda Natural history society*, 17:75-77.
- Irvine, F.R. 1961. *Woody Plants of Ghana with special reference to their uses*. London: Oxford University Press.
- Jaouen, X. 1988. *Arbres, arbustes et buissons de Mauritanie*. Nouakchott : Centre Culturel Français.
- Julien de Pommerol, P. 1999. *Dictionnaire arabe tchadien*. Paris: Karthala.
- Le Mbaindo, D.M. & J. Fedry 1979. *Lexique ngàmby-Français, Français-ngàmby*. Sarh : Collège Charles Lwanga.
- Livingstone, D. 1857. *Missionary travels and researches in South Africa*. London: John Murray.
- Luxureau, A. 1994. Usages, représentations, évolutions de la biodiversité végétale chez les Haoussa du Niger. *JATBA*, 36(2) :67-85.
- Malgras, Denis 1994. *Arbres et arbustes guérisseurs des savanes maliennes*. Paris: ACCT-Karthala.
- Manessy, Gabriel 1975. *Les langues Oti-Volta*. Paris: SELAF.
- Marchese, Lynell 1983. *Atlas Linguistique Kru*. Abidjan: ACCT and ILA.
- Maundu, P.M., Ngugi, G.W. & C.H.S. Kabuye 1999. *Traditional food plants of Kenya*. Nairobi : National Museums of Kenya.
- Mous, M. and Kießling, R. 2004. *Reconstruction of proto-West Rift*, Köln: Rüdiger Köppe
- Newman, P. 1977. *Chadic Classification and Reconstructions*. *Afroasiatic Linguistics*, 5/1.
- Ngila, B. 2000. *Expérience végétale bolia*. Köln: Rüdiger Köppe Verlag.
- Noad, T. & A. Birnie 1989. *Trees of Kenya*. Nairobi: Noad & Birnie.
- Nougayrol, P. 1999. *Les parlers gula, Centrafrique, Soudan, Tchad. Grammaire et lexique*. Paris: Éditions CNRS.
- Owen, J. 1970. The medico-social and cultural significance of *Adansonia digitata* (baobab) in African communities. *African Notes*, 6, 24-36.
- Owen, J. 1974. A contribution to the ecology of the African baobab. *Savanna*, 3:1-12.
- Pakenham, Thomas 2004. *The Remarkable Baobab*. London: Weidenfeld & Nicolson
- Palgrave, K.C. 1983. *Trees of Southern Africa*. Cape Town: Struik Publishers.
- Pélissier, Paul 1980a. L'arbre en l'Afrique tropicale: la fonction et la signe. *Cahiers ORSTOM, séries Science Humaine*. 13 (1):127-130.
- Perrier de la Bathie, H. 1953. Les *Adansonia* de Madagascar et leur utilisation. *Revue Internationale d'Agriculture Tropicale et Botanique appliquée*, 367-8:211-214.
- Prost, R.P.A. 1953. *Les langues Mandé-Sud du groupe Mana-Busa*. Dakar: IFAN.
- Prost, R.P.A. 1964. *Contribution à l'étude des langues voltaïques*. Dakar: IFAN.
- Pullan, R.A. 1974. Farmed parkland in West Africa. *Savanna*, 3 :119-151.
- Raponda-Walker A. & R. Sillans 1961. *Les plantes utiles du Gabon*. Paris : Le Chevalier.
- Rashford, J. 1994. Africa's Baobab tree: Why monkey names? *Journal of Ethnobiology*, 14, 173-183.
- Rashford J. 1996. Distribution, history and use of the African Baobab in Barbados. *Proceedings of the Thirty-first Annual Meeting of the Caribbean Food Crops Society, St Michael, Barbados, 10-14 July 1995*. 50-61. Kingshill, St Croix, US Virgin Islands: CFCS.
- Reh, Mechthild. 1999. *Anywa-English and English-Anywa Dictionary*. Köln: Rüdiger Köppe.
- Rongier, Jacques 1995. *Dictionnaire français-éwé*. Paris: ACCT-Karthala.
- Sidibe, M. & J.T. Williams 2002. *Baobab : Adansonia digitata L. Fruits for the Future*, 4. Southampton: International Centre for Under-Utilised Crops.
- Sillans, R. 1958. *Les savanes de L'Afrique centrale*. Paris: Paul Lechevalier.
- Simpson, M. 1995. *The ecology of the baobab (Adansonia digitata L.) –a literature review*. Dissertation, School of Agricultural and forest sciences, University of Wales, Bangor, UK.
- Skinner, N.A. 1996. *Hausa comparative dictionary*. Köln: Rüdiger Köppe Verlag.
- Steinmann, A. 1934. The oldest pictures of the kapok tree in Java. *Tropisch Natuur*, 23:110-113.
- Stone, B. 1970. The flora of Guam. *Micronesica* 6:418.
- Swaine, M. D. 1992. Characteristics of Dry Forest in West Africa and the Influence of Fire. *Journal of Vegetation Science*, 3, 3:365-374.
- Swaine, M.D., W. D. Hawthorne & T. K. Orgle 1992. The Effects of Fire Exclusion on Savanna Vegetation at Kpong, Ghana. *Biotropica*, 24, 2:166-172.
- Swart, E.R. 1963. Age of the baobab tree. *Nature*, 198:708-9.
- Thornell, C. 2004. Wild plant names in the Mpiemo language. *Africa & Asia*, 4:57-80.

- Toxopeus, H.J. 1948. On the origin of the kapok tree, *Ceiba pentandra*. *Nederlandse Alg. Proefstat Landbouw*, 56:19.
- Von Breitenbach, F. 1985. Aantekeninge oor die groeitempo van aangeplante kremetartbome (*Adansonia digitata*) en opmerkinge ten opsigte van lewenstyd, groeifases en genetiese variasie van die spesie. *Journal of Dendrology*, 5:1–21.
- Walker, A. 1953. Le Baobab au Gabon. *Revue Internationale d'Agriculture Tropicale et Botanique appliquée*, 365-6:174-175.
- Weibegué, C. & P. Palayer 1982. *Lexique Lele-Français*. Sarh : Collège Charles Lwanga.
- Wickens, G.E. 1982. The baobab –Africa’s upside-down tree. *Kew Bulletin*, 37:172-209.
- Wild, Hiram 1972. [2nd ed.] *A Rhodesian Botanical dictionary of African and English Plant names*. Salisbury: Government Printer.
- Wilson, R.T. 1988. Vital statistics of the baobab (*Adansonia digitata*). *African journal of ecology*, 26:197-206.

Websites

Baobab

Websites for baobab are numerous and often repeat the same information so I have selected the two most informative ones.

1. <http://www.icuc-iwmi.org/resources.htm>
2. http://www.museums.org.za/bio/plants/malvaceae/adansonia_digitata.htm
3. http://florawww.eeb.uconn.edu/acc_num/200100525.html

Silk-cotton

- http://florawww.eeb.uconn.edu/acc_num/198500310.html
- http://www.hear.org/pier/species/ceiba_pentandra.htm
- <http://www.uog.edu/cals/site/POG/ceiba.html>
- <http://www.tropilab.com/ceiba-pen.html>
- http://www.tis-gdv.de/tis_e/ware/fasern/kapok/kapok.htm#informationen

Annex Table 3. Indo-Pacific names for *Ceiba pentandra*

Place/language	Vernacular name	Comment
Lao	<i>ngiou² ban²</i>	
Vietnamese	<i>gòn</i>	
American Samoa, Samoa, Niue,	<i>vavae</i>	
Tonga		
Chuuk	<i>koton</i>	< English
Northern Mariana Islands, Guam	<i>algodon de Manila, atgodon di Manila, algidon, atgidon de Manila</i> [i.e. cotton of Manila]	< Spanish
French Polynesia	<i>vavai</i>	
Cook Islands Mangaia, Aitutaki?	<i>vavai mama‘u, vavai maori</i>	
Fiji	<i>vauvau ni vavalangi, semar</i>	
Kosrae	<i>kuhtin, cutin</i>	< English
Marshall Islands	<i>koatoa, atagodon, bulik, kotin</i>	< English
Belau	<i>kalngebard, kalngébárd, kerrekar ngebard</i>	
Pohnpei	<i>cottin, koatun, koatoa</i>	< English
Saipan	<i>arughuschel</i>	
Yap	<i>batte ni gan‘ ken</i>	