Pearl millet in early Bantu speech communities in Central Africa: A reconsideration of the lexical evidence

by Koen Bostoen

Abstract: It has been commonly assumed that Bantu speakers first acquired pearl millet when the crop started to spread in the eastern part of Central Africa around the beginning of the first millennium AD. This cereal and the new type of grain agriculture associated with it would have been introduced to Bantu speakers from a single centre of origin in the same region through contact with non-Bantu speakers. In this paper, the lexical evidence underlying this widely held belief is critically reconsidered. It is concluded that Bantu speakers adopted pearl millet earlier than usually thought and that the cereal was independently introduced into the Bantu-speaking world at least twice. Its diffusion subsequently coincided with distinct phases of the early Bantu expansion.

1 Introduction[1]

Over the past few decennia, several scholars have approached the question of early food production in Central Africa from a linguistic point of view (Blench 1994/95, 2006, 2008; Bostoen 2005a, forthc.; Connell 1998; Ehret 1974, 1998; Maniacky 2005; Philippson & Bahuchet 1994/95; Vansina 1990, 2004). Since direct archaeological evidence of domesticates or iron agricultural tools are rarely preserved in the humid climes and acidic soils of the equatorial rainforest, comparative lexical studies have become an important, though not unproblematic, source of historical evidence of ancient sub-Saharan farming practices. Even if direct archaeological evidence for early agriculture in West-Central Africa is scarce, the capacity to produce food is usually considered as an important engine in the dispersal of the Bantu languages.[2] Scholars suggest that the subsistence system of early Bantu speakers was based on the cultivation of root crops (particularly yams) and bananas, supplemented with the exploitation of local wild resources, especially the oil palm. Some of these assumptions have been corroborated by archaeobotanical and/or linguistic data

(Blench 1994/95, 2006; Bostoen 2005a, forthc.; Maniacky 2005; Mbida & al. 2000, 2001; Philippson & Bahuchet 1994/95).

Cereal cultivation, by contrast, was never considered as one of the subsistence strategies of the earliest Bantu speech communities, in part because indigenous African cereals, such as pearl millet and sorghum, are not currently cultivated in those rainforest regions where the first Bantu expansions took place. Indeed, their cultivation is thought quite simply to be impossible within the environment of the Central-African rainforest. Using linguistic data, scholars concluded that Bantu speakers only integrated grain cultivation into their subsistence economy when they left the rainforest and spread into the savannahs of central and southern Africa because these scholars assumed that pearl millet was introduced into the Bantu-speaking world from a single centre of origin (Ehret 1974, 1998; Vansina 1990, 1994/95, 2004; Philippson & Bahuchet 1994/95). Nevertheless, the recent discovery of the first archaeobotanical evidence for the cultivation of domesticated pearl millet (*Pennisetum glaucum*) in the rainforest of southern Cameroon, dated between 400 and 200 BC, casts doubt on this widely held conviction (Eggert & al. 2006). Could it be that Bantu speakers acquired pearl millet much earlier than scholars usually assume?

In this paper, I reconsider the Bantu vocabulary for pearl millet to address this question. I argue that Bantu speakers adopted pearl millet far earlier than commonly thought and that the diffusion of this cereal coincided with early phases of the Bantu language dispersal. In fact, linguistic evidence suggests that pearl millet was not introduced only once among Bantu speakers. Yet, lexical evidence is not conclusive with respect to the relative time depth of the introduction of pearl millet to the Bantu-speaking world. The transfer of names from one cereal species to another, a rather common phenomenon, complicates the cultural historical interpretation of the available lexical data, requiring caution in the comparative study of cultural vocabularies for the reconstruction of early African agricultural histories.

2 Bantu pearl millet vocabulary as evidence for early agriculture

The comparative study of plant names may yield interesting insights on the early exploitation of food plants, especially in Central Africa where direct archaeological evidence for early plant food ex-

ploitation and production is particularly scarce. As Blench (2006: 190) argues, the low archaeological visibility of food plants is often in sharp contrast with their high linguistic salience, in that they often have names that are widely distributed across related and/or non-related languages. Starting from the basic premise that related vocabulary shared between speech communities is the outcome of shared history, the historical-comparative study of such widespread food crop vocabulary is valuable historical evidence of the subsistence economies of past societies.

Words for 'pearl millet' that are reconstructed to particular stages of Bantu language history are not only strong indications of the plant's past cultivation, but also of its human driven spread along with the language(s) spoken by its cultivators. Interestingly, there are currently no wild pearl millet varieties that could have been locally domesticated in the Bantu area. The centre of early domestication from whence the crop spread across the continent is commonly situated at the southern fringe of the Sahara in the vicinity of southern Mauritania, Senegal and eastern Mali (Brunken & al. 1977; Harlan 1971; Neumann 2003, 2005; Tostain 1998). This cereal homeland is far to the north-west of the hypothesized homeland of the Bantu languages: the border region between present-day Cameroon and Nigeria. In other words, if one succeeds in reconstructing Bantu terms meaning 'pearl millet', at any node in the Bantu classification, they almost certainly refer to a domesticated food crop as any pearl millet that spread from its centre of domestication to the Bantu area was already domesticated. Such early terms for pearl millet indicate very early plant food production. This is in contrast to other crop terms, such as the many yam species (*Dioscoreaceae*), which also have wild varieties in the Bantu area and whose domestication did not necessarily lead to the adoption of new names (cf. Blench 2006: 207).

Nevertheless, there are some problems with drawing conclusions about the history of pearl millet from lexical data, not the least of which is the fact that words for pearl millet often shift their meaning to designate other common cereals. In most languages, cereal names are easily transferred from one cereal to another (see Sagart 2003 for examples from East-Asian languages or Fuller 2003 for examples from Indian languages). A term which designates pearl millet in a given language or region may refer to another cereal in another language (area). Bantu pearl millet names are frequently associated with two other indigenous African cereals, sorghum (*Sorghum bicolor*)

and finger millet (*Eleusine coracana*), and with a more recently introduced foreign cereal, maize (*Zea mays*). It can be difficult to discern the cereal to which a particular name originally referred because early European sources did not distinguish between species. Glosses like 'millet' in English or 'Hirse' in German can not only refer to pearl millet ('Perlhirse') or finger millet ('Fingerhirse'), two clearly distinct species, but may even be used as terms for sorghum (*Sorghum bicolor*), fonio (*Digitaria exilis*), black fonio (*Digitaria iburua*) or guinea millet (*Brachiaria deflexa*) (Stemler & al. 1975: 164). Translations, such as 'milho fino' and 'milho grosso' in Portuguese, are no more straightforward. Yet, when a particular term is more often associated with one specific cereal across many Bantu languages, the word was probably originally linked to this cereal. The association of a word with the other indigenous grain crops in a particular language or language area is, then, the result of subsequent changes in meaning. With the introduction of maize to regions where pearl millet and/or sorghum were already farmed, the names of the old crops were often transferred to the newly introduced grain. Initially, older cereal names were combined with complements such as 'from Europe' or 'from the white man'. When maize gradually took over as the principal staple, these complements were omitted more and more frequently until the original meaning 'pearl millet' or 'sorghum' was replaced by 'maize' (Bostoen 2007). In regions where these older, indigenous cereals were not cultivated, farmers either invented new names for maize or borrowed names, which originally meant 'pearl millet' or 'sorghum', from areas familiar with these indigenous African grains. These overlapping meanings for indigenous and foreign crops can be seen on the map in Appendix 1.

3 Earlier lexical approaches to history of pearl millet in the Bantu area

All scholars who have tackled the history of pearl millet in the Bantu area using lexical evidence have concluded that the earliest Bantu speakers leaving the Nigerian-Cameroonian borderland were not familiar with this cereal. They agree on the fact that Bantu speakers first acquired pearl millet when the crop started to spread in the eastern part of Central Africa around the beginning of the first millennium AD (Ehret 1974, 1998; Vansina 1990, 1994/95, 2004; Philippson & Bahuchet 1994/95). They also agree that pearl millet – and

grain agriculture more generally – was introduced to Bantu speakers from a single centre of origin in the East. Thus, the diffusion of cereal agriculture occurred either with later periods of language dispersal, after an ancestral Bantu speech community had adopted the cereal (Philippson & Bahuchet 1994/95) or independently, from one Bantu group to the other, after Bantu languages had spread over large parts of their current distribution area (Ehret 1974).

These hypotheses rely on two 'pearl millet' terms that are very common among Bantu languages. They constitute two comparative series for which the lexical reconstructions **-bèdé* and **-cángó* have been proposed (see for instance Bastin & Schadeberg 2003; Ehret 1974; Guthrie 1967–1971; Homburger 1925; Philippson & Bahuchet 1994/1995; Vansina 1990, 1994/1995, 2004). As can be seen on the map in Appendix 1, these terms have a complementary geographic distribution. The term **-bèdé* is confined to the eastern part of the Bantu domain, while the term **-cángó* has an almost exclusively western distribution.

With respect to the antiquity of these two common Bantu pearl millet terms, neither is thought to have a distribution among Bantu subgroups that is representative of a Proto-Bantu reconstruction. This is in contrast with other food plants, such as yams, the cowpea (*Vigna unguiculata*), the Bambara groundnut (*Vigna subterranea*) and several wild tree species, such as the *Elaeis guineensis*, *Canarium schweinfurthii*, *Dacryodes edulis*, *Cola acuminata/nitida*, and *Parinari curatellifolia*, for which incontestable Proto-Bantu reconstructions have been proposed. For some of these plants, such as yams and the oil palm, cognate forms are even attested in related Benue-Congo languages, indicating that the terms are older than Proto-Bantu (Bostoen 2005a, forthc.; Connell 1998; Maniacky 2005; Philippson & Bahuchet 1994/95). These very ancient words tell us that the linguistic ancestors of current-day Bantu speakers were familiar with the exploitation of these food plants before Bantu languages started to spread across Central Africa, or even long before they reached the Nigerian-Cameroonian border region. The fact that scholars have not been able to reconstruct pearl millet terms or names of other domesticated cereals to Proto-Bantu has been taken to support the widely held idea that the farming traditions of the earliest Bantu speakers were not based on the cultivation of cereals, but rather on root crops supplemented with the exploitation of wild resources.

Yet, a careful reconsideration of the relevant lexical evidence does not necessarily lead to the conclusion that Bantu speakers did culti-

vate pearl millet before they left their homeland, though that conclusion cannot be excluded. The lexical data do, however, strongly suggest that western Bantu speakers adopted the cereal much earlier than scholars have commonly believed. Furthermore, this technology was not introduced to western Bantu speakers from the eastern portion of the Bantu area.

4 Reconsidering the Bantu pearl millet vocabulary

The unpublished database of 'Comparative Bantu Food Crop Vocabulary' contains numerous lexical entries for 'pearl millet'.[3] Apart from several terms which are limited to individual languages or to clusters of closely related languages, only two terms are widespread throughout Bantu, i.e. **-bèdé* and **-cángó*. Even though both lexical reconstructions have been discussed in previous studies (see for instance Ehret 1974; Philippson & Bahuchet 1994/95; Vansina 1990, 1994/95, 2004), it is necessary to reanalyze the primary lexical data that underpin the reconstructions.

Before doing this, it is important to say a word on Bantu classification. According to the principles of linguistic geography, the relative time-depth of a given term can be deduced from its distribution among the subgroups of a given language family. To do so, one thus needs a basic idea of the internal classification of the family. With respect to Bantu, no global proposal of internal classification – be it based on lexical or non-lexical data – has yet received unanimous approval (Schadeberg 2003). Not only the definition of clear-cut subgroups is a problem, but the internal relationships that exist between them are still a matter of debate. A detailed discussion of these conflicting theories is beyond the scope of this paper. I did this at length in Bostoen (2005b) and Bostoen & Grégoire (2007). To get an idea of different approaches and divergent conclusions, the reader is referred to Bastin & al. (1999), Ehret (2001), Nurse & Philippson (2003), and Vansina (1995), to cite only some of the most recent attempts in Bantu classification. In this paper, I will rely on the Bantu classification proposed by Vansina (1995) to assess the relative time depth of the vocabulary discussed. This classification actually is a summarizing preview of the lexicostatistical study of Bastin & al. (1999). I see this study as the hitherto most comprehensive attempt of Bantu classification. Unfortunately, it is difficult to apply in a study like this one, because it presents several genealogical trees based on different statisti-

cal calculation methods. That is why I prefer to use here Vansina's (1995) summary. An overview of the main subdivisions of Bantu with the groups they include according to Guthrie's (1971) referential classification is given in Table 1.

Table 1: Global classification of the Bantu languages as proposed by Vansina (1995) (his label 'North Zaire' is replaced by 'Congo Basin')

1	Lebonya	D12, D33, D35	
2	Boan	C42–C45, D32, D23	
3	Buneya	A31, A44, A60 (in some trees A50)	
4	North West	A minus preceding, B10–B30 (in some trees some B20 languages also appear in W4)	
5	West:	• Sangha	C10 (languages vary according to tree)
		• South West	K (except K40) and R, L10, L22, L50, H41
		• Congo Basin	C33–C35, C50–C80, B82 (Inner Basin) + C31, C32, C36, C37, C41, C42 and in some trees C11–CI2 (Rivers)
		• West Coastal	B40–80, H (except for H41)
6	East	D10 (except D12), D20 (except D23), E, F, G, J, K40, L (except L10), M, N, P, S	

The coding of Bantu languages in this paper follows Maho's (2003, 2008) update of Guthrie's (1967–71) referential classification.

4.1 **-bèdé*

The geographical distribution of the term **-bèdé* is confined to the eastern part of the Bantu domain. Its reflexes are attested in Guthrie's zones D, E, F, G, J, K, L, M, N, P and S[4]. As was already observed by Philippson & Bahuchet (1994/95), these reflexes are phonologically regular throughout this distribution area, a few exceptions notwithstanding. Reflexes of this root refer to pearl millet, finger millet, sorghum or maize. As can be seen on the map in Appendix 1, the meaning 'millet', more specifically 'pearl millet', is by far the most widespread. Taking into account the geographic distribution of

the **-bèdé* reflexes and their overall phonological regularity, it is plausible to reconstruct this term into the assumed common ancestor of the eastern Bantu languages, Proto-East-Bantu. Based on the predominance of the meaning 'pearl millet' among the current-day reflexes of this root, we can confidently assume that it originally referred to this specific cereal. If this assumption holds, the distribution of **-bèdé* is the outcome of the spread of pearl millet by means of the spread of the East-Bantu languages (Philippson & Bahuchet 1994/95). This dispersal must have started from the East African Great Lakes region, which is generally seen as the homeland of this sub-branch of Bantu (Nurse 1999).

This conclusion is debatable, however, if one takes into account the ultimate origin of **-bèdé*. Ehret (1973, 1974, 1998) has maintained that **-bèdé* is a Nilo-Saharan loanword into Bantu, its more precise origin having changed from Central Sudanic (Ehret 1973, 1974) to Sog (Eastern Sahelian) (Ehret 1998). Our research confirms this borrowing scenario, but has so far only allowed us to narrow down the donor language group to Nilotic (East-Sudanic, Nilo-Saharan), and probably West-Nilotic.

Table 2: West-Nilotic cereal terms similar to **-bèdé*[5]

Language	Term	Meaning	Source
Nuer	*bɛ́l*	'durra'	(Storch 2005: 203)
Luwo	*bɛ̂l-ɔ́*	'sorghum'	(Anne Storch pers. comm.)
Anywa	*bɛɛl/bɛ̀ɛ̀l-ò*	'durra'	(Storch 2005: 227)
Päri	*bèel-ó*	'sorghum'	(Anne Storch pers. comm.)
Shilluk	*bìɛ́l*	'sorghum'	(Anne Storch pers. comm.)
Belanda Bor	*bɛ́l*	'sorghum, durra'	(Storch 2005: 304)
Thuri	*bɛ̱́ɛ̱́l*	'durra'	(Storch 2005: 299)
Acholi	*bɛl*	'sorghum'	(Anne Storch pers. comm.)
Lango	*à-bîr*	'sorghum'	(Anne Storch pers. comm.)
Kumam	*bɛ́l*	'sorghum'	(Anne Storch pers. comm.)
Alur	*bɛ́l*	'sorgho'	(Ukoko & al. 1964: 28)
Labwor	*à-biir*	'sorghum'	(Anne Storch pers. comm.)
Chopi	*bɛl*	'sorghum'	(Anne Storch pers. comm.)
Adhola	*bɛ́ɛl-í*	'sorghum'	(Anne Storch pers. comm.)
Dholuo	*bél*	'sorghum'	(Tucker 1994: 495)
Dinka	*bel*	'durra-cane'	(Nebel 1979: 14)

Indeed, all languages in Table 2 are members of the latter subgroup. Similar cereal terms could not be identified in languages belonging to other Nilo-Saharan subgroups.[6] Given the morphological composition of the words in both language groups, the only plausible direction of borrowing is from West-Nilotic into Bantu. If the borrowing had occurred in the other direction, one would expect to find clear traces of the Bantu noun class prefixes in the West-Nilotic words. This evidence is absent. The transformation of a West-Nilotic loanword into a phonologically and morphologically canonical Bantu noun through the addition of a noun prefix and a final vowel identical to the stem vowel is more conceivable.

As the examples in Table 2 show, all present-day West-Nilotic terms similar to **-bèdé* designate sorghum. The term 'durra' is often used as a general label for sorghum and does not necessarily refer to sorghum of the durra variety (Stemler & al. 1975: 164). The Dinka translation refers to the culms or cane of sorghum.

As explained above, the transfer of a name from one common cereal to another is certainly not an unusual phenomenon. Several Bantu terms referring to 'pearl millet' in one language (group) may refer to 'sorghum' in another language (group). With **-bèdé*, the predominance of the meaning 'pearl millet' supports the conclusion that it must have originally referred to this cereal in Proto-East-Bantu, and not to sorghum. Linking this conclusion to the West-Nilotic origin of the term, it could easily be assumed that East-Bantu speakers acquired pearl millet through contact with West-Nilotic speakers before they spread the cereal southwards. However, the fact that phonologically similar terms in several present-day West-Nilotic languages are without exception words for 'sorghum' raises more questions. The divergence between the assumed Proto-East-Bantu meaning and the present-day West-Nilotic meaning complicates the cultural historical interpretation of the lexical data. Several possible scenarios could explain this difference.

One possible scenario is that the term has always designated sorghum in West-Nilotic, and that it was also originally used by Proto-East-Bantu speakers to refer to sorghum. This would mean that East-Bantu speakers actually adopted sorghum together with its name from West-Nilotic speakers. It was then only later, when East-Bantu speakers acquired pearl millet from a hitherto unknown source, that the latter cereal was talked about using the name originally applied to sorghum, except in those East-Bantu languages where **-bèdé* still refers to sorghum.

Another possibility is that the term originally designated pearl millet in West-Nilotic, but subsequently underwent a change in meaning to sorghum, when, for example, the latter cereal took over as the staple cereal. This semantic shift happened without leaving traces of the original meaning in the present-day West-Nilotic languages. In that case, Bantu speakers may effectively have adopted pearl millet through contact with Nilotic speakers. The loanword that was transmitted with the crop was integrated in the East-Bantu ancestor language and continued to be associated with pearl millet once East-Bantu speakers started to spread over central and southern East-Africa. The term eventually shifted its meaning to sorghum in certain East-Bantu languages, once their speakers adopted this cereal.

A third possibility would be that the term originally referred to a third indeterminate cereal or had a more general meaning like 'grain, cereal'. This original meaning subsequently underwent a divergent specialization in West-Nilotic and East-Bantu, as speakers of the two language groups came to see different species as the prototypical cereal. This scenario would be in line with Ehret's (1998: 83) assumption that **bel* is of Sog (Eastern Sahelian) origin and initially meant 'grain sp.'. Unfortunately, he does not present data to support the claims that prove that this form occurs beyond West-Nilotic and has a more general meaning than 'sorghum'.

In any event, the plausibility of any of these three scenarios, especially the former two, depends on the chronology of pearl millet and sorghum diffusion in eastern Africa and how these developments connect with the relative chronology of the expansion of the Bantu and the Nilotic languages in the same area. At present, none of these events is sufficiently well known to favor one of the lexically based scenarios above the others.

This problem that stems from the different glosses of **-bèdé* should, of course, be seen in relation with East-Bantu vocabulary for sorghum. As Philippson & Bahuchet (1994/95: 105-6) have shown, there is much more diversity in East-Bantu sorghum vocabulary than in pearl millet vocabulary. There is no sorghum term with an overall East-Bantu distribution, like **-bèdé* for pearl millet. Rather, several distinct terms have more limited, complementary distributions, including **-càká* in zones D, J, F, and M, **-támà* in zones E, G, N and P and **-pɪda* in zones F, H, K, L, M, N, P and S (Bastin & Schadeberg 2003; Philippson & Bahuchet 1994/95; personal database). This higher lexical heterogeneity suggests that sorghum was introduced among

East-Bantu speakers after the break-up of their common ancestor language, thus later than pearl millet. The fact that geographically complementary clusters of East-Bantu languages have different terms for sorghum indicates that the cereal was introduced independently at different times and in different places. The cross-linguistic nature of Bantu maize vocabulary is telling in this regard. As explained above, Europeans introduced this cereal of American origin several times along the Atlantic and Indian Ocean coasts from the late 15th century AD onwards (see for instance McCann 2005). This history is reflected in the fact that East-Bantu maize terms are even more diverse than sorghum terms and have a more locally bound distribution (Pasch 1983). Moreover, they are mainly phonologically irregular loanwords, which were diffused, together with the crop, across pre-established speech communities, once most of the East-Bantu language dispersals had taken place. Similarly, East-Bantu sorghum vocabulary is more diverse and phonologically irregular than pearl millet vocabulary, but less diverse and phonologically irregular than maize terminology. This supports a historical scenario according to which the introduction of sorghum in Bantu-speaking eastern Africa was intermediate between pearl millet and maize and happened at a time when East-Bantu languages had already partly split up, but long before they had achieved their current level of divergence. Given this historical scenario, it is even more plausible that **-bèdé* was the original East-Bantu term for pearl millet, which spread together with the cereal through the earliest dispersals of East-Bantu speech communities. Only after these first expansions, when sorghum was introduced in Bantu-speaking eastern Africa, did it shift its meaning to become the word for sorghum in certain East-Bantu languages.

4.2 **-cángó*

The second common Bantu 'pearl millet' term is **-cángó*. It has an almost exclusively western distribution. Its reflexes are attested in Guthrie's zones B, C, D, H, K, L, M (only in Ila [M63], see below), and R. Nearly all present-day **-cángó* reflexes meaning '(pearl) millet' are phonologically regular suggesting that they are inherited vocabulary rather than loanwords. This is in contrast to most of the reflexes meaning 'maize', which are mostly phonologically irregular and, thus, are unmistakably loanwords. On the map in Appendix 1,

most of these 'maize' reflexes occur in the more northerly western Bantu languages belonging to the West Coastal and Congo Basin Bantu subgroups. Some of these irregular reflexes are given in Table 3. Most of these reflexes are also cited in Pasch (1979).

Table 3: Phonologically irregular western Bantu **-cángó* reflexes for 'maize'

Language	Term	Meaning	Source
Kota (B25)	*isangu*	'maize'	(Johnston 1919/22: 569)
Bobangi (C32)	*lisangu*	'maize'	(Whitehead 1899: 388)
Ntomba (C35a)	*isángú*	'maïs'	(Mamet 1955: 127)
Bolia (C35b)	*ihángú*	'maïs'	(Mamet 1960: 244)
Linga (C502)	*-sángu*	'maïs'	(Stoop n. d.: 146)
Mongo (C61)	*lisángú*	'maïs'	(Hulstaert 1966: 83)

The form **-cángó* was reconstructed with a final 2nd degree back vowel. If it had been a 1st degree back vowel, one would have expected to observe reflexes with a spirantized final consonant, certainly in the 5-vowel languages. Nearly no Bantu language has undergone the 7- to 5-vowel merger without having undergone morpheme-internal spirantization (Schadeberg 1994/95). All languages in Table 3 are 7-vowel languages, which have /*o*/ as the regular reflex of the 2nd degree back vowel. Hence, their **-cángó* reflexes are phonologically irregular and can be considered to be loanwords having their origin in a 5-vowel language with /*u*/ as a regular reflex of **ʊ*. This is not surprising, if one considers that languages with borrowed reflexes are spoken in parts of the equatorial rainforest where pearl millet has probably never thrived. The presence of a term for 'maize' that designates 'pearl millet' elsewhere in the Bantu domain strongly indicates that maize was introduced there from regions where the former 'pearl millet' term was used to name this foreign cereal at the time of its first adoption. The most likely point of origin is the Atlantic Coast, perhaps in the neighbourhood of the Congo River estuary. In this area, one not only finds 5-vowel Bantu languages with regular **-cángó* reflexes meaning both 'pearl millet' and 'maize', but it is also one of the earliest zones of contact with the Portuguese, who are generally held to have introduced maize from the Americas.

In contrast to the West Coastal and Congo Basin Bantu languages, most **-cángó* reflexes meaning 'maize' in South West Bantu languages are phonologically regular. One can infer from this that these reflexes were most probably used to name a pre-existing indigenous cereal and, only later, were these used to name 'maize'. In all likelihood this pre-existing indigenous cereal was pearl millet, since this is the most widely occurring meaning among the phonologically regular South West Bantu **-cángó* reflexes. As has previously been recognized, most **-cángó* reflexes meaning 'pearl millet' occur within this particular western Bantu subgroup. Indeed, languages of this subgroup are the only ones within western Bantu that are spoken entirely in a savannah environment, i.e. where the climatic and ecological conditions are favourable to pearl millet cultivation.

Nevertheless, regular 'pearl millet' reflexes also occur in many more West Coastal and Congo Basin Bantu languages than have hitherto been recognized. The fact that attestations for pearl millet are less numerous in these subgroups is probably because most of these languages are spoken in areas where pearl millet does not grow well. Those languages which do have a **-cángó* reflex meaning 'pearl millet' are spoken in areas between the rainforest and the savannah, such as the Bandundu and Lower Kasai areas in the Democratic Republic of Congo (DRC) where pearl millet cultivation is feasible. Some of these reflexes are given in Table 4.

Table 4: West Coastal and Congo Basin Bantu **-cángó* reflexes meaning '(pearl) millet'

Language	Subgroup	Term	Meaning	Source
Nsong (B85F)	W-Coast	*másàŋ*	'pearl millet'	(Koni Muluwa & Bostoen 2008: 26)
Mpiin (B863)	W-Coast	*masangu*	'millet'	(Obenga 1985: 47)
Pende (L11)	W-Coast	*disangu*	'millet'	(Gusimana 1972: 16)[7]
Kwezo (L13)	W-Coast	*másàngù*	'millet'	(Forges 1983: 137)
Bushong (C83)	IC-Basin	*maʃáaŋ*	'millet'	(Vansina 1959: 96)
Lele (C84)	IC-Basin	*masangu*	'millet'	(Obenga 1985: 47)
Wongo (C85)	IC-Basin	*masangu*	'millet'	(Obenga 1985: 47)
Gesogo (C53)	IC-Basin	*-sangu* (5/6)	'millet'	(Harries 1955: 439)

Insofar as the dictionary notations of the reflexes in Table 4 are reliable, they are phonologically regular reflexes of **-cángó*. All languages are 7-vowel languages, except Mpiin and Kwezo. The final vowel /*u*/ in the latter two languages is the regular reflex of the second degree back vowel. This is not the case in the 7-vowel languages cited by Obenga (1985), but his notations are questionable. In Mpiin, for instance, Joseph Koni Muluwa (pers. comm.) noted the reflex *másã:* 'pearl millet' during recent fieldwork in the region of Kikwit (Bandundu), similar to *ásaŋ* 'pearl millet', which he noted in Mbuun (B86). As can be seen in Table 4, the final vowel was also dropped in Nsong, closely related to Mpiin and Mbuun, as well as in Bushong. Although no **-cángó* reflexes could be directly found in the available Lele and Wongo sources, final vowel reduction is also known to be a regular phonological process in these languages, both closely related to Bushong (Burssens 1993; Chanda 1986; Rutinigirwa Kahinyuza 1975). The adding of a final vowel, as observed in Obenga's data, is a typical way of 'kikongo-lizing' such words.[8] With respect to tonal correspondences, the nominal tonality of the Bandundu languages Mpiin, Mbuun and Nsong is still insufficiently established to draw reliable diachronic conclusions from the available data. In Bushong, however, according to the data of Vansina (1959), the tone pattern of *maʃáaŋ* seems to correspond regularly to *HH: **-púngú* 'eagle' > *pwóoŋ*, **-pémbá* 'kaolin' > *pyéémy*, **-bíndá* 'calabash' > *mbyéen*. This is also the case in Kwezo, where data from Forges (1983) demonstrates that *HH regularly corresponds to LL preceded by a high tone nominal prefix: **-bóngó* 'knee' > *díbòngo*, **-déndé* 'hammer' > *múndènde*, **-cíndí* 'squirrel' > *gásìnzi*.[9]

It can be safely assumed, on the basis of this evidence, that all attestations in Table 4 – except the one from Gesogo – are phonologically regular **-cángó* reflexes meaning 'pearl millet'. This is in line with the fact that pearl millet is an important and environmentally well-adapted food crop, both traditionally and currently, in those parts of the Bandundu and Kasaï provinces where these languages are spoken (Muyolo & al. 2002; Vandenput 1981).

Regarding the Gesogo reflex, its final vowel is a 1st degree back vowel, according to the notation system of Harries (1955). Gesogo has seven vowels and the 2nd degree back vowel is noted as /*o*/. This **-cángó* reflex meaning 'pearl millet' would thus be phonologically irregular in the same way as the above-mentioned reflexes meaning 'maize' from languages of the same region, such as Linga and Mongo

(see Table 3). Gesogo, classified by Guthrie (1967–1971) in the C50-group, is closely related to Topoke and Linga, which Maho (2003, 2008) has put in the same group. The historical status of these C50-languages is not well established. In the lexicostatistical study of Bastin & al. (1999), they generally surface as part of the bigger Congo Basin subgroup, but their exact position within this subgroup shifts, depending on the statistical calculation applied. All of these C50 languages are spoken in the vicinity of Kisangani in the middle of the wet tropical rainforest. This environment differs drastically from that of the speakers of those other Congo Basin and West Coastal Bantu languages in Table 4, where regular **-cángó* reflexes meaning 'pearl millet' were noted. Therefore, it is doubtful whether pearl millet has ever been a common food crop among Gesogo/Topoke speakers. The available ethnographic literature does not mention the cereal as one of their staple foods. According to Walle Sombo Bolene (1981: 13), speakers of these languages traditionally specialized in hunting but also cultivated bananas, cassava, yams and maize. Thus, one can question whether 'millet' is a reliable translation for the Gesogo reflex and whether this reflex actually should be part of the phonologically irregular **-cángó* reflexes meaning 'maize'. The fact that Stoop (1976) translated *lisángú* as 'maize cob, maize plant' in the unpublished manuscript of his Gesogo grammar further confirms this suspicion.

Irrespective of the questionable Gesogo reflex, there are sufficient phonologically regular **-cángó* reflexes meaning 'pearl millet' within the West Coastal and Congo Basin Bantu subgroups to assume that those languages must have inherited it from a common ancestral language. Several Bantu classification studies have revealed close ties between the West Coastal, Congo Basin and South West Bantu languages (for instance Bastin & al. 1999 and Nurse & Philippson 2003), to such an extent that Vansina (1995) has proposed to lump them as 'narrow West-Bantu'. With phonologically regular **-cángó* reflexes meaning 'pearl millet' in all three subgroups or 'narrow West-Bantu', the term can be reconstructed to their putative common ancestor.

Beyond these 'narrow West-Bantu' attestations, one more possible **-cángó* reflex could be pinned down in the western half of the Bantu domain, i.e. *muyángu* in Komo (D23), which Harries (1958: 295) translated as 'millet'. In their comparative study of Bantu plant names, Bahuchet & Philippson (1998: 13) translate the same term as 'sorghum', but do not mention their source. The existence of a phono-

logically regular*-*cángó* reflex in this language is potentially important from a historical point of view. Komo belongs to the so-called 'Boan' Bantu languages (Vansina 1995). These languages do not constitute a historically well-defined subgroup, but rather form, together with the so-called 'Lebonya' languages (see Table 1), a kind of remnant group whose position within the wider Bantu language tree needs more precision. According to certain Bantu trees in Bastin & al. (1999), they form an early offshoot of the Bantu nucleus. If such is the case, this would give greater time depth to **-cángó* within western Bantu. Even though a single attestation would be rather weak evidence, it could be revealing. Indeed, we cannot expect to discover multiple pearl millet terms in a very poorly documented group of languages, which are mainly spoken in a pearl millet-unfriendly rainforest environment. Nevertheless, the Komo reflex is not unproblematic. Firstly, even though certain Komo speakers live in a rainforest-savannah transition area where the cultivation of pearl millet is possible, most live in the typical rainforest environment in the Maniema and Orientale Provinces of the DRC. Neither pearl millet nor sorghum are cited in the ethnographic literature as food crops among the Komo, unlike for instance yams, cassava, bananas, rice, groundnuts and maize (Allan 1965: 219-23; Van Geluwe 1956: 53). Consequently, doubt can be cast on both of the translations as 'millet' and 'sorghum' given by Harries (1958) and Bahuchet & Philippson (1998), respectively. Secondly, the phonological regularity of the Komo term as a possible **-cángó* reflex is not certain. In contrast to the Gesogo reflex, its final vowel is unmistakably a regular reflex of the 2nd degree back vowel. The vowel notation system used by Lyndon Harries for the description of Komo (*ị i e a o u ụ*) differs from the one he used for Gesogo (*i e ɛ a ɔ o u*). However, the stem-initial glide /*y*/, which can be considered as an epenthetic glide linking to successive vowels, is problematic. This term is one of the very few possible **-cángó* reflexes beginning with a glide and the only one in this region. Moreover, it is the sole possible **-cángó* reflex having a /*mu-*/ nominal prefix.[10] If it were a loanword, it would be difficult to conceive from which language it would have been borrowed. The question is therefore whether the initial glide (or Ø) could be a regular reflex of **c* in this position. The available Komo data are unfortunately not sufficient to answer this question with any certainty. The existing Bantu lexical reconstructions in Bastin & Schadeberg (2003) yield only few possible **c* reflexes in the data of Harries (1958) and Thomas (1994),

the only available Komo sources. In a few cases, **c* corresponds to /*y*/ or Ø: **-cúkà* 'hoe' > *iúka* 'axe' (Harries 1958: 293), **-còká* 'axe' > *eóká* 'axe head' (Thomas 1994: 184)[11]. However, other possible and more frequent reflexes of **c* are /*s*/ and /*ʃ*/, e.g. **-cómb-* 'to buy' > *-ʃumb-*, **-cùg-* 'to spit' > *-ʃu-*, **-còk-* 'to wash' > *-sukus-*, **-còm-* 'to read' > *-sóm-* (Harries 1958), **-céké* 'sugar cane' > *εsέké*, **-céké* 'sand; grains; dregs; chaff' > *isεέ* 'sandy spot', **-càngà* > *kesanga* 'island' (Thomas 1994). It is very difficult to say which reflexes result from regular inheritance and which from lateral influences. We cannot rule out the conclusion that the Komo term *muyángu* is a regular reflex of **-cángó*, but neither can it be accepted as a regular reflex. Thus, this sole (possible) reflex among the Lebonya/Boan Bantu languages cannot alone serve as evidence of a greater time-depth to **-cángó* within western Bantu.

If, on the basis of internal Bantu evidence, **-cángó* cannot be reconstructed with the probable meaning 'pearl millet' to a deeper time level than 'narrow West-Bantu', what is its origin? Taking into account the widely held belief that pearl millet was introduced among Bantu speakers from a single eastern centre of origin, one would expect to find **-cángó* reflexes among East-Bantu languages. However, the only possible eastern attestation is the Ila (M63) term *insangu*, which means 'small seeds, as of tobacco and hemp' (Fowler 2000: 224).[12] Given the omnipresence of **-cángó* reflexes in western Bantu, it seems more plausible to interpret this sole East-Bantu attestation as the result of contact with western Bantu languages, for instance those spoken in the Western Province of Zambia where **-cángó* is a regular millet term (Bostoen 2007).

More telling with respect to the origin of **-cángó* is the presence of several reflexes in Bantoid languages from Cameroon. Leroy (1980: 139) cites the noun stem *-sāŋ* 'maize' in the Bagangu, Bafut, Nkwen, Bambui and Awing languages of the Ngemba-cluster, which is part of the wider Mbam-Nkam within Eastern Grassfields Bantu (Watters 2003). In the same vein, Hyman (1979) proposes a Proto-Eastern-Grassfields reconstruction **-sáŋ* 'maize'. More Bantoid reflexes are attested in the Ring or Western Grassfields subgroup, where several languages have a *-sáŋ/-ʃáŋ*-like root for 'maize' (Hyman & Jisa 1977). Even beyond Bantoid, in several Cross-River languages, possible **-cángó* reflexes can be observed: Leyigha (Upper Cross) *nsaŋe* 'maize', Legbo (Upper Cross) *nzana* 'maize', Usakade (Lower Cross) *úsân* (Blench & al. 1997). It is difficult to tell whether the concurrent

presence of these phonologically similar terms in several Bantoid and Cross-River languages spoken in adjoining regions from northwestern Cameroon and southeastern Nigeria is the result of a common inheritance or contact. Given that maize is known to have been diffused across language boundaries, together with associated vocabulary, a contact scenario should certainly not be excluded. It would rather be implausible, however, to assume that these maize terms were imported through contacts with Narrow Bantu languages further to the south. As we explained above, it is well known that the Portuguese introduced the crop at several points along the coast from whence it spread via African middlemen to the respective hinterlands of introduction points (McCann 2005). It is more likely that cognates of the Narrow Bantu **-cángó* already existed in Grassfields Bantu, and possibly in Cross-River languages too, at the time of maize introduction and that they were employed to designate this foreign crop. The implications of this argument are important. It suggests that the term **-cángó* is considerably older than 'narrow West-Bantu', and that it even may be reconstructed into Proto-Bantu. In this scenario, 'narrow West-Bantu' languages retained this term from Proto-Bantu, rather than having acquired the term through contact with eastern Bantu languages. This scenario could also explain the rare attestations in East-Bantu.

Having said that, the Bantoid data do not allow us to claim that the 'narrow West-Bantu' languages inherited **-cángó* from Proto-Bantu with the specific meaning pearl millet because not one of the Bantoid or Cross-River reflexes is attested with this meaning. Rather, they refer exclusively to maize. While it does not make sense to copy Hyman (1979) and reconstruct the meaning 'maize' into Proto-Eastern-Grassfields, we can hypothesize that the root originally referred to another cereal or to cereal in general. The data available do not give a clue as to what this original meaning may have been. Similarly, **-cángó* probably referred to some kind of grain in Proto-Bantu, but not necessarily 'pearl millet'. This meaning may have been adopted when the first western Bantu speakers became familiar with pearl millet. Given that nearly all phonologically regular 'narrow West-Bantu' **-cángó* reflexes do mean 'pearl millet', it can be safely assumed that this semantic shift must have happened before the latest common ancestor of the West Coastal, Congo Basin and South West Bantu languages split up.

In sum, the time depth of the root **-cángó*, which is the common term for 'pearl millet' in the western half of the Bantu domain, is

considerably older than has thus far been accepted by scholars. The existence of cognate forms beyond Narrow Bantu even makes it possible to reconstruct the root to Proto-Bantu. The reconstruction of the original meaning of **-cángó* is more complicated, however, because its meaning is only attested as 'maize' beyond Narrow Bantu, a gloss which cannot have been the original meaning.

5 A historical reappraisal of the Bantu lexical evidence for pearl millet cultivation

As explained in section 3, scholars who have used linguistic evidence to reconstruct the origin and distribution of pearl millet in the Bantu-speaking world have all concluded that Bantu speakers first acquired pearl millet when the crop started to spread in the eastern part of Central Africa around the beginning of the first millennium AD (Ehret 1974, 1998; Vansina 1990, 1994/95, 2004; Philippson & Bahuchet 1994/95). These scholars all assumed that pearl millet was introduced to Bantu speakers from a single eastern centre of origin. A reconsideration of the linguistic evidence on which these assumptions were based urges us to reconsider these historical conclusions. The data suggest that the introduction of pearl millet among Bantu speakers did not necessarily happen from a single point of origin and that its emergence in the western half of the Bantu area probably occurred earlier than usually assumed, probably even earlier than in the eastern region of Bantu Africa.

First of all, the fact that there are only two widespread Bantu terms for pearl millet suggests that its introduction among Bantu speakers must be fairly old. As I have shown above, Bantu vocabulary for more recently introduced cereals, like maize and even indigenous sorghum, is patchier within the Bantu domain. Moreover, both pearl millet terms generally demonstrate regular diachronic phonology, a sign that they were transmitted through inheritance from a common ancestor language. In other words, these terms spread together with the crop, not across languages, but together with languages and their speakers. Thus, the diffusion of pearl millet in the Bantu area is the result of the steady expansion of Bantu-speaking farming communities.

Secondly, the same lexical data do not necessarily support the belief that pearl millet was introduced into the Bantu-speaking world

from a single eastern point of origin. The (West-)Nilotic origin of the common East-Bantu term **-bèdé* suggests that pearl millet was, indeed, once introduced to Bantu speakers via eastern Africa, even though lexical evidence is not entirely conclusive in this respect because the term refers only to sorghum in western Nilotic languages. It is more difficult to see, however, how the nearly exclusively western distribution of **-cángó* could support the assumption of a single point of origin in the East. Several authors have interpreted **-cángó* as linguistic evidence for the eastern introduction of pearl millet into the savannahs of the southwestern part of the Bantu domain (Ehret 1974; Vansina 2004). Vansina (2004: 76) is not entirely clear on this point, but seems to consider **-cángó* as an inherited term which adopted the meaning 'pearl millet' in the South West Bantu languages once the cereal was introduced from the east. Ehret (1974) regards it as a loanword that spread through southwestern Bantu speech communities along with the contact-induced dispersal of pearl millet. However, a careful reconsideration of the linguistic data renders this last hypothesis rather unlikely. If the cereal was really introduced in this area through contact with East-Bantu speakers, why then did West-Bantu speakers not simply borrow the most common East-Bantu word for pearl millet, i.e. **-bèdé*?

Thirdly, nearly all **-cángó* reflexes meaning 'pearl millet' are phonologically regular; they are inherited vocabulary rather than loanwords. With respect to the time depth of the emergence of pearl millet in the western half of the Bantu area, lexical data obviously do not allow us to make estimates in terms of absolute chronology. Nevertheless, the distribution of inherited **-cángó* reflexes meaning 'pearl millet' across Bantu subgroups offers clues on its relative chronology; we can confidently reconstruct **-cángó* with the meaning 'pearl millet' into at least 'proto-narrow West-Bantu' and this means that the introduction of pearl millet in the western half of the Bantu-speaking world happened before the latest common ancestor of the West Coastal, Congo Basin and South West Bantu languages split up. With respect to the possible homeland of this 'narrow West-Bantu' ancestor language, several studies have located a secondary nucleus of Bantu expansion in the Lower Congo region (Heine & al. 1977; Vansina 1984). Situated close to the Atlantic Ocean, it is rather unlikely that pearl millet was introduced to this area of linguistic dispersal from the eastern half of the continent. An independent western introduction seems far more plausible. The lexical data cannot tell us whether western Bantu speak-

ers arrived in this secondary expansion nucleus as cultivators of pearl millet or whether they only adopted the cereal once they were settled there. That is to say, the reconstruction of **-cángó* into Proto-Bantu cannot be held as proof of the fact that the cultivation of pearl millet belonged to the original agricultural traditions of Bantu speakers. The Bantoid cognate forms on which this Proto-Bantu reconstruction is founded are indeterminate with respect to its original meaning. It cannot be precluded that Bantu speakers cultivated pearl millet before they left their assumed homeland in the Cameroonian-Nigerian borderland, and that western Bantu speakers then inherited this practice, together with the term **-cángó*, as part of their ancestral agricultural tradition. Nevertheless, the lexical data certainly do not provide firm evidence for such a scenario either. It is perfectly possible that this Proto-Bantu root originally referred to another cereal and that western Bantu speakers used this inherited term to designate pearl millet once they started to cultivate it. According to this scenario, the earliest Bantu speakers were not familiar with pearl millet when they left their homeland. The diffusion of pearl millet caught up at some point with the western Bantu expansion and the crop was further diffused concomitantly with the dispersal of the West Coastal, Congo Basin and South West Bantu languages. The pearl millet remnants dating back to 400 and 200 BC, which were recently discovered in southern Cameroon could actually fit in both scenarios. Taking into account the widely assumed time depth for the start of the Bantu expansion, i.e. 4 000 to 5 000 years ago (Blench 2006; Nurse & Philippson 2003), the second scenario according to which the diffusion of pearl millet and the western Bantu expansion only interacted at a later stage is, for the time being, probably the most plausible one. Nevertheless, the discovery of more archaeobotanical evidence could lead us to completely different conclusions.

6 Conclusions

The careful reexamination of the Bantu pearl millet vocabulary undertaken in this paper calls into question certain of the previous hypotheses about the history of this food crop that had been developed from lexical data.

First of all, there are absolutely no linguistic grounds to think that pearl millet was introduced only once among Bantu speech commu-

nities or that this only occurred in eastern Africa. The cereal was independently introduced in the Bantu-speaking world at least twice: once among western Bantu speakers and once among eastern Bantu speakers.

Secondly, in both parts of the Bantu area, the diffusion of pearl millet coincided to a large extent with the dispersal of the Bantu languages themselves. The phonological regularity of most pearl millet terms contradicts a scenario of late diffusion across language boundaries after the major Bantu expansions had taken place.

Thirdly, closely associated with the preceding conclusion, the introduction of pearl millet occurred twice fairly early with respect to the different development phases of the Bantu expansion. In the eastern half of the Bantu area, it happened before the latest common linguistic ancestors of the East-Bantu speech communities started to spread southwards and eastwards from the Great Lakes region, possibly after having adopted the pearl millet through contacts with Nilotic speakers. In the western half of the Bantu area, it happened before the latest common ancestor of the West Coastal, Congo Basin and South West Bantu languages started to expand southwards and (north-)eastwards from the Lower Congo region, perhaps even earlier (depending on the status of the Kumu reflex). In any case, both of these diffusions are much earlier than has usually been accepted. On the basis of the available lexical data, it cannot be established, however, whether these western Bantu speakers introduced pearl millet themselves as part of the agricultural traditions they inherited from their (Proto-Bantu) ancestors or whether they only acquired it subsequently in the course of the western Bantu expansion. We can be certain, however, that the word they used to designate pearl millet was a retention from Proto-Bantu, even if Bantoid glosses of this root as 'maize' do not allow us to conclude that the original meaning was 'pearl millet'.

Fourthly, the possibility of reconstructing inherited pearl millet vocabulary to early stages of Bantu language history provides strong circumstantial evidence for the fact that the major phases of the Bantu language dispersal coincided with the dispersal of food production. Given that there are no wild pearl millet varieties that could have been locally domesticated in the Bantu area, the reconstruction of inherited vocabulary for pearl millet necessarily denotes the domesticated plant and serves as indirect evidence of its past cultivation and human-driven spread. Nevertheless, there is still no unquestionable lexical evidence for the widely held belief that the Bantu expansion

was a farming dispersal right from the beginning. No pearl millet term can be unmistakably reconstructed to Proto-Bantu. With the possible exception of words for two *Vigna* species, all plant names that have so far been reconstructed as reliable Proto-Bantu plant names either refer to wild plants or to currently cultivated plants, such as yams, whose domestication did not necessarily lead to lexical change in the Bantu languages, since their wild varieties also occur in the area of initial Bantu expansion. Consequently, there is still no firm lexical evidence for cultivated plants at the initial stage of the Bantu dispersal, let alone that agriculture would have been a driving force behind the Bantu expansion.

Finally, and no less importantly, this reconsideration of lexical data, from which several preceding studies have drawn conclusions on the history of pearl millet cultivation in the Bantu-speaking world, demonstrates that cultural vocabularies need to be carefully studied in their own right b e f o r e they are used as a means to reconstruct broader and encompassing human histories. Lexical 'evidence' should speak for itself and not purely serve as confirmation of pre-conceived historical hypotheses. At the same time, one has to accept the limits of linguistic palaeontology. This paper has shown how semantic shifts leaving no traces of the original meaning may seriously reduce the historical potential of comparative lexical studies. Both common Bantu pearl millet terms refer to other cereals in their regions of ultimate origin. The term **-bèdé*, a Nilo-Saharan loanword into Bantu, has not been found in any Nilo-Saharan language with meaning 'pearl millet'. In western Nilotic, where the term is most common, it exclusively refers to 'sorghum'. The term **-cángó* exclusively refers to maize in the non-Narrow Bantu Benue-Congo languages where it is attested. This cannot be the original meaning. Even when we can determine the ultimate origin of both terms, their value with respect to the history of pearl millet is critically reduced because we cannot reconstruct their original meaning with any certainty.

Notes

[1] Research for this paper was conducted at the Linguistics Service of the Royal Museum for Central Africa (RMCA) and was funded by the Belgian Federal Science Policy Office. I wish to thank Roger Blench, Kathryn de Luna, Stefanie Kahlheber and Anneleen Van der

Veken for commenting on a draft of this paper. The usual disclaimers apply.

[2] In this paper, 'Bantu' refers to 'Narrow Bantu', i.e. the Bantu languages recognized as such in Guthrie's 1971 referential classification. Nevertheless, data from the closely related 'Bantoïd' languages from north-western Cameroon and south-eastern Nigeria, often considered as part of 'Wide Bantu', and from other Benue-Congo languages will be considered to put the Narrow Bantu data in a wider historical perspective.

[3] The data in this collection is based on both fieldwork and documentary research on linguistic and ethnobotanical materials, conducted at the Royal Museum for Central Africa (RMCA), Tervuren/ Belgium.

[4] Guthrie (1967–71) gives a Herero (R31) reflex of **-bèdé*, i.e. *omaβeɽe*. This would be a unique western Bantu reflex of **-bèdé*, but I could not find it in the dictionaries of Brincker (1886), Irle (1917) or Viehe (1897).

[5] All data followed by (Anne Storch pers. comm.) are unpublished fieldwork data, which Anne Storch kindly allowed me to integrate in this paper. I wish to thank her for her generosity.

[6] See for instance Boyeldieu (2000) for the Sara-Bongo-Bagirmi languages of the Central-Sudanic subgroup.

[7] Philippson & Bahuchet (1994/95: 117) cite the same Pende reflex with the meaning 'sorghum'. The available Pende literature contradicts this translation.

[8] *Kikongo Ya Leta* is the lingua franca of this part of the DRC. This and more western variants of Kikongo (H16) have their own **-cángú* reflex with final vowel /*u*/. It habitually designates maize, but may also refer to millet: *disàngú* 'un épi de maïs, parfois de mil' (Swartenbroeckx 1973: 56).

[9] A non-marked syllable bears the same tone as the preceding syllable in Forges' notation system.

[10] Given that Komo is an atypical Bantu language lacking a productive noun class and nominal concord system, this /*mu-*/ prefix could be a reanalysis of the cl. 6 /*ma-*/ prefix, which is more commonly associated with **-cángú*.

[11] Thomas (1994) adopts another vowel notation system than Harries (1958): *i e ɛ a ɔ o u*.

[12] Guthrie (1967–1971) also cites a Bemba (M42) reflex with the meaning 'small seeds', but the available Bemba sources could not

confirm this (Mann 1980; White Fathers 1954). The only resembling term is *olusangwa* 'seed head (of plant, e.g. tobacco)' (Mann 1980: 83), but it is not sure that it is related. In the western Bantu language Umbundu (R11), the term *osangu* has a similar meaning as in Ila. Le Guennec & Valente (1972: 591) translate it as 'semente pequena, de couve, salada'.

References

Allan, William, 1965: The African Husbandman. Edinburgh: Oliver & Boyd.

Bahuchet, Serge & Gérard Philippson, 1998: Les plantes d'origine américaine en Afrique bantoue: une approche linguistique. In: Monique Chastanet (ed.), Plantes et paysages d'Afrique. Une histoire à explorer. Paris: Karthala, 87–116.

Bastin, Yvonne, André Coupez & Michael Mann, 1999: Continuity and Divergence in the Bantu Languages: Perspectives from a Lexicostatistic Study. Tervuren: MRAC, Annales, Série in-8º, Sciences humaines 162.

Bastin, Yvonne & Thilo Schadeberg (eds), 2003: Bantu lexical reconstructions 3. Online Database: http://linguistics.africamuseum.be/BLR3.html [last consultation: 23/05/2008].

Blench, Roger, 1994/95: Evidence for the inception of agriculture in the Nigeria-Cameroon borderland. In: J.E.G. Sutton (ed.), The Growth of Farming Communities in Africa from the Equator Southwards. Nairobi: BIEA, Azania Special Volume XXIX–XXX, 83–102.

–, 2006: Archaeology, Language and the African Past. Lanham: Altamira Press.

–, 2008: Using linguistics to reconstruct African subsistence systems: Comparing crop names to trees and livestock. In: Timothy P. Denham, José Iriarte & Luc Vrydaghs (eds), Rethinking Agriculture: Archaeological and Ethnoarchaeological Perspectives. Walnut Creek: Left Coast Press, 598-644.

Blench, Roger, Kay Williamson & Bruce Connell, 1997: The diffusion of maize in Nigeria: a historical and linguistic investigation. In: Sprache und Geschichte in Afrika 14: 19–46.

Bostoen, Koen, 2005a: A diachronic onomasiological approach to early Bantu oil palm vocabulary. In: Studies in African Linguistics 34, 2: 143–188.

–, 2005b: Des mots et des pots en bantou. Une approche linguistique de l'histoire de la céramique en Afrique. Frankfurt am Main: Peter Lang.

–, 2007: Bantu plant names as indicators of linguistic stratigraphy in the Western Province of Zambia. In: Doris Payne (ed.), Selected Proceedings of the 37th Annual Conference on African Linguistics. Somerville: Cascadilla Press, 16–29.

–, forthcoming: The subsistence economy of early Bantu speech communities from a historical-linguistic point of view. In: D. Fuller & M.A.

Murray (eds), Flora, Past Cultures and Archaeobotany in Africa. Walnut Creek: Left Coast Press.

Bostoen, Koen & Claire Grégoire, 2007: La question bantoue: bilan et perspectives. In: Mémoires de la Société de Linguistique de Paris. Nouvelle Série, Tome XV, Tradition et rupture dans les grammaires comparées de différentes familles de langues. Leuven: Peeters, 73–91.

Boyeldieu, Pascal, 2000: Identité tonale et filiation des langues sara-bongo-baguirmiennes (Afrique centrale). Köln: Rüdiger Köppe.

Brincker, H., 1886: Wörterbuch und kurzgefasste Grammatik des Otji-Hérero mit Beifügung verwandter Ausdrücke und Formen des Oshi-Ndonga – Otj-Ambo. Leipzig: republished 1964 Ridgewood Gregg Press.

Brunken, J., J. M. J. de Wet & J. R. Harlan, 1977: The morphology and domestication of pearl millet. In: Economic Botany 31: 163–174.

Burssens, Nico, 1993: Lexique et texte wongo (Bandundu-Z). In: Annales Aequatoria 14: 457–481.

Chanda, Vincent Musanda, 1986: Notes on Wongo phonology and morphology. In: Africana Linguistica 10: 279–294.

Connell, Bruce, 1998: Linguistic evidence for the development of yam and palm culture among the Delta Cross peoples of southeastern Nigeria. In: R. Blench & M. Spriggs (eds), Archaeology and Language II, Archaeological Data and Linguistic Hypotheses. London, New York: Routledge, 324–365.

Eggert, Manfred K. H., Alexa Höhn, Stefanie Kahlheber, Conny Meister, Katharina Neumann & A. Schweizer, 2006: Pits, graves and grains: archaeological and archaeobotanical research in southern Cameroon. In: Journal of African Archaeology 4, 2: 273–298.

Ehret, Christopher, 1973: Patterns of Bantu and Central Sudanic settlement in Central and Southern Africa (ca. 1000 B.C. – 500 A. D.). In: Transafrican Journal of History 3, 1/2: 1–71.

–, 1974: Agricultural history in Central and Southern Africa, ca. 1000 B. C. to A. D. 500. In: Transafrican Journal of History 4, 1/2: 1–25.

–, 1998: An African Classical Age: Eastern and Southern Africa in World History, 1000 B. C. to A. D. 400. Charlottesville: University Press of Virginia.

–, 2001: Bantu expansions: Re-envisioning a central problem of early African history. In: The International Journal of African Historical Studies 34, 1: 5–27.

Forges, Germaine, 1983: Phonologie et morphologie du kwezo. Tervuren: MRAC, Sciences sociales et humaines, Annales, Série in-8º, vol. 113.

Fowler, Dennis G., 2000: A Dictionary of Ila Usage 1860-1960. Münster & al.: LIT.

Fuller, Dorian, 2003: An agricultural perspective on Dravidian Historical Linguistics: Archaeological crop packages, livestock and Dravidian crop vocabulary. In: Peter Bellwood & Colin Renfrew (eds.), Assessing the Language/Farming Dispersal Hypothesis. Cambridge: McDonald Institute for Archaeological Research Monographs, 191–213.

Gusimana, Barthelemy, 1972: Dictionnaire pende-francais. Bandundu: CEEBA Publications.

Guthrie, Malcolm, 1967–71: Comparative Bantu: An Introduction to the Comparative Linguistics and Prehistory of the Bantu Languages. 4 Volumes. London: Gregg International Publishers.

Harlan, J. R., 1971: Agricultural origins: Centers and noncenters. In: Science 174: 468–474.

Harries, Lyndon, 1955: Grammar of Gesogo. In: Kongo-Overzee 21, 5: 420–440.

–, 1958: Kumu. A Sub-Bantu language. In: Kongo-Overzee 24, 4/5: 265–296.

Heine, Bernd, Hans Hoff & Rainer Vossen, 1977: Neuere Ergebnisse zur Territorialgeschichte der Bantu. In: Wilhelm Möhlig, Franz Rottland & Bernd Heine (eds), Zur Sprachgeschichte und Ethnohistorie in Afrika. Berlin: Dietrich Reimer, 57–72.

Homburger, Lilias, 1925: Le groupe sud-ouest des langues bantoues. Paris: Geuthner, Mission Rohan-Chabot, Tome III, Fascicule 1, Linguistique.

Hulstaert, Gustaaf, 1966: Notes d'ethnobotanique mongo. Bruxelles: Académie royale des sciences d'Outre-Mer.

Hyman, Larry M., 1979: Les racines reconstituées du proto-Eastern Grassfields. Unpublished Manuscript [copy held at the RMCA, Tervuren].

Hyman, Larry M. & H. Jisa, 1977: Word list of comparative Ring (Kom group, Western Grassfields Bantu). Unpublished Manuscript [copy held at the RMCA, Tervuren].

Irle, Johann Jakob, 1917: Deutsch-Herero Wörterbuch. Hamburg: Abhandlungen des Hamburgischen Kolonialinstituts, Reihe B, Band 18.

Johnston, Harry Hamilton, 1919/22: A Comparative Study of the Bantu and Semi-Bantu Languages, 2 vols. Oxford: Clarendon Press.

Koni Muluwa, Joseph & Koen Bostoen, 2008: Noms et usages des plantes utiles chez les Nsong (RD Congo, Bandundu, bantu B85F). Göteborg: University of Gothenburg, Göteborg Africana Informal Series, nº6.

Le Guennec, Grégoire & José Fransisco Valente, 1972: Dictionario Português-Umbundu. Luanda: Instituto de Investigação Cientifica de Angola.

Leroy, Jacqueline, 1980: The Ngemba Group: Mankon, Bagangou, Mundum I, Bafut, Nkwen, Bambui, Pinyin, Awing. In: Larry Hyman & Jan Voorhoeve (eds), Les classes nominales dans le bantou des Grassfields (l'expansion bantoue, actes du colloque international du CNRS Viviers (France) – 4–16 avril 1977). Paris: SELAF, 111–141.

Maho, Jouni Filip, 2003: A classification of the Bantu languages: an update of Guthrie's referential system. In: Derek Nurse & Gérard Philippson (eds), The Bantu Languages. London, New York: Routledge, 639–651.

–, 2008. NUGL Online: The web version of the New Updated Guthrie List, a referential classification of the Bantu languages (version dated March 25th, 2008).
Downloaded from http://goto.glocalnet.net/mahopapers/nuglonline.pdf

Mamet, M., 1955: La langue ntomba telle qu'elle est parlée au lac Tumba et dans la région avoisinante (Afrique centrale). Tervuren: Annales du Musée royal du Congo belge, vol. 11.

–, 1960: Le langage des Bolia (Lac Léopold II). Tervuren: Annales du Musée royal du Congo belge, Sciences de l'Homme, vol. 33.

Maniacky, Jacky, 2005: Quelques thèmes pour "igname" en Bantu. In: K. Bostoen & J. Maniacky (eds), Studies in African Comparative Linguistics with Special Focus on Bantu and Mande. Tervuren: RMCA, Human Sciences Collection 169, 165–189.

Mann, Michael, 1980: Guthrie's Bemba Vocabulary. Unpublished Manuscript [copy held at the RMCA, Tervuren].

Mbida, Christophe M., Wim Van Neer, Hugues Doutrelepont & Luc Vrydaghs, 2000: Evidence for banana cultivation and animal husbandry during the first millenium BC in the forest of southern Cameroon. In: Journal of Archaeological Science 27: 151–162.

Mbida, Christophe M., Hugues Doutrelepont, Luc Vrydaghs, Rony L. Swennen, Hans Beeckman, Edmond de Langhe & Pierre de Maret, 2001: First archaeological evidence of banana cultivation in central Africa during the third millennium before present. In: Vegetation History and Archaeobotany 10: 1–6.

McCann, James C., 2005: Maize and Grace: Africa's Encounter with a New World Crop. 1500–2000. Cambridge: Harvard University Press.

Muyolo, N. G., K. Kamizelo, A. A. M. Kamwimba & E. W. Wawende, 2002: Variabilité agromorphologique chez le millet (Pennisetum glaucum) dans le Sud-Kwilu, Republique Democratique du Congo. Plant Genetic Resources Newsletter 131: 23–28.

Nebel, Arthur, 1979: Dinka-English, English-Dinka Dictionary. Bologna: Museum Combonianum.

Neumann, Katharina, 2003: The late emergence of agriculture in sub-Saharan Africa: Archaeological evidence and ecological considerations. In: Katharina Neumann, Ann Butler & Stefanie Kahlheber (eds), Food, Fuel and Fields. Progress in African Archaeobotany. Köln: Heinrich-Barth-Institut, Africa Praehistorica 15, 71–92.

–, 2005: The romance of farming: Plant cultivation and domestication in Africa. In: Ann Bower Stahl (ed.), African Archaeology: A Critical Introduction. Oxford: Blackwell Publishers, Blackwell Studies in Global Archaeology, 249–75.

Nurse, Derek, 1999: Towards a historical classification of East African Bantu languages. In: Jean-Marie Hombert & Larry Hyman (eds), Bantu Historical Linguistics: Theoretical and Empirical Perspectives. Stanford: CSLI, 1–41.

Nurse, Derek & Gérard Philippson, 2003: Towards a historical classification of the Bantu languages. In: Derek Nurse & Gérard Philippson (eds), The Bantu Languages. London, New York: Routledge, 164–181.

Obenga, Théophile, 1985: Sémantique et étymologie comparées: le cas de l'agriculture. In: Muntu 2, 1: 35–68.

Pasch, Helma, 1979: Linguistische Aspekte der Verbreitung lateinamerikanischer Nutzpflanzen in Afrika. Köln: Universität zu Köln, Dissertation.

–, 1983: Zur Geschichte der Verbreitung des Maises in Afrika. In: Sprache und Geschichte in Afrika 5: 177–218.

Philippson, Gérard & Serge Bahuchet, 1994/1995: Cultivated crops and Bantu migrations in central and eastern Africa: A linguistic approach. In: J. E. G. Sutton (ed.), The Growth of Farming Communities in Africa from the Equator Southwards. Nairobi: BIEA, Azania Special Volume XXIX–XXX, 103–120.

Rutinigirwa Kahinyuza, 1975: Esquisse grammaticale de la langue lele. Lubumbashi: Université Nationale du Zaïre, Faculté des Lettres, dissertation.

Sagart, Laurent, 2003: The vocabulary of cereal cultivation and the phylogeny of East Asian languages. In: Bulletin of the Indo-Pacific Prehistory Association 23, 1: 127–136.

Schadeberg, Thilo C., 1994/95: Spirantization and the 7-to-5 vowel merger in Bantu. In: Mark Dominicy & Didier Demolin (eds), Sound Change. Amsterdam: John Benjamins, 73–84.

–, 2003: Historical Linguistics. In: Derek Nurse & Gérard Philippson, The Bantu Languages. London & New York: Routledge, 143–163.

Stemler, A., J. R. Harlan & J. M. J. de Wet, 1975: Caudatum sorghums and speakers of Chari-Nile languages in Africa. In: Journal of African History 16: 161–183.

Stoop, H., 1976: Gesogo-grammatika (lyombo). Unpublished Manuscript [copy held at the RMCA, Tervuren].

–, 1984: Petit lexique de la basse-lomami. Wenge: Unpublished Manuscript [copy held at the RMCA, Tervuren].

–, n. d.: Linga (lolinga). Unpublished Manuscript [copy held at the RMCA, Tervuren].

Storch, Anne, 2005: The Noun Morphology of Western Nilotic. Köln: Rüdiger Köppe.

Swartenbroeckx, Pierre, 1973: Dictionnaire kikongo- et kituba-français: vocabulaire comparé des langages kongo traditionnels et véhiculaires. Bandundu: CEEBA Publications.

Thomas, Paul, 1994: Bantu noun-class reflexes in Komo. In: Africana Linguistica 11: 177–196.

Tostain, Serge, 1998: Le mil, une longue histoire: hypothèses sur sa domestication et ses migrations. In: Monique Chastanet (ed.), Plantes et Paysages d'Afrique. Une histoire à explorer. Paris: Karthala, 461–490.

Tucker, Archibald N., 1994: A grammar of Kenya Luo (Dholuo). 2 volumes. Köln: Rüdiger Köppe.

Ukoko, Joseph, Jan Knappert & Marcel Van Spaandonck, 1964: Proeve van Dho Alur woordenboek. Gent: Rijksuniversiteit te Gent, Ganda Congo, vol. 3.

Vandenput, R. (ed.), 1981: Les principales cultures en Afrique centrale. Bruxelles: Administration Générale de la Coopération au Développement.

Van Geluwe, Huguette, 1956: Les Bira et les peuplades limitrophes. Tervuren: MRAC, Annales du Musée royal du Congo belge.

Vansina, Jan, 1959: Esquisse de grammaire bushong. Tervuren: MRAC, Sciences sociales et humaines, Annales, Série in-8º, vol. 29.

–, 1984: Western Bantu Expansion. In: Journal of African History 25, 2: 129–145.

–, 1990: Paths in the Rainforests. Madison: University of Wisconsin Press.

–, 1994/95: A Slow Revolution: Farming in Subequatorial Africa. In: J. E. G. Sutton (ed.), The Growth of Farming Communities in Africa from the Equator Southwards. Nairobi: BIEA, Azania Special Volume XXIX–XXX, 15–26.

–, 1995: New linguistic evidence and the Bantu expansion. In: Journal of African History 36: 173–195.

–, 2004: How Societies Are Born: Governance in West Central Africa before 1600. Charlottesville: University of Virginia Press.

Viehe, Gottlieb, 1897: Grammatik des Otjiherero nebst Wörterbuch. Stuttgart: W. Spemann, Lehrbücher des Seminars für Orientalische Sprachen zu Berlin Bd. 16.

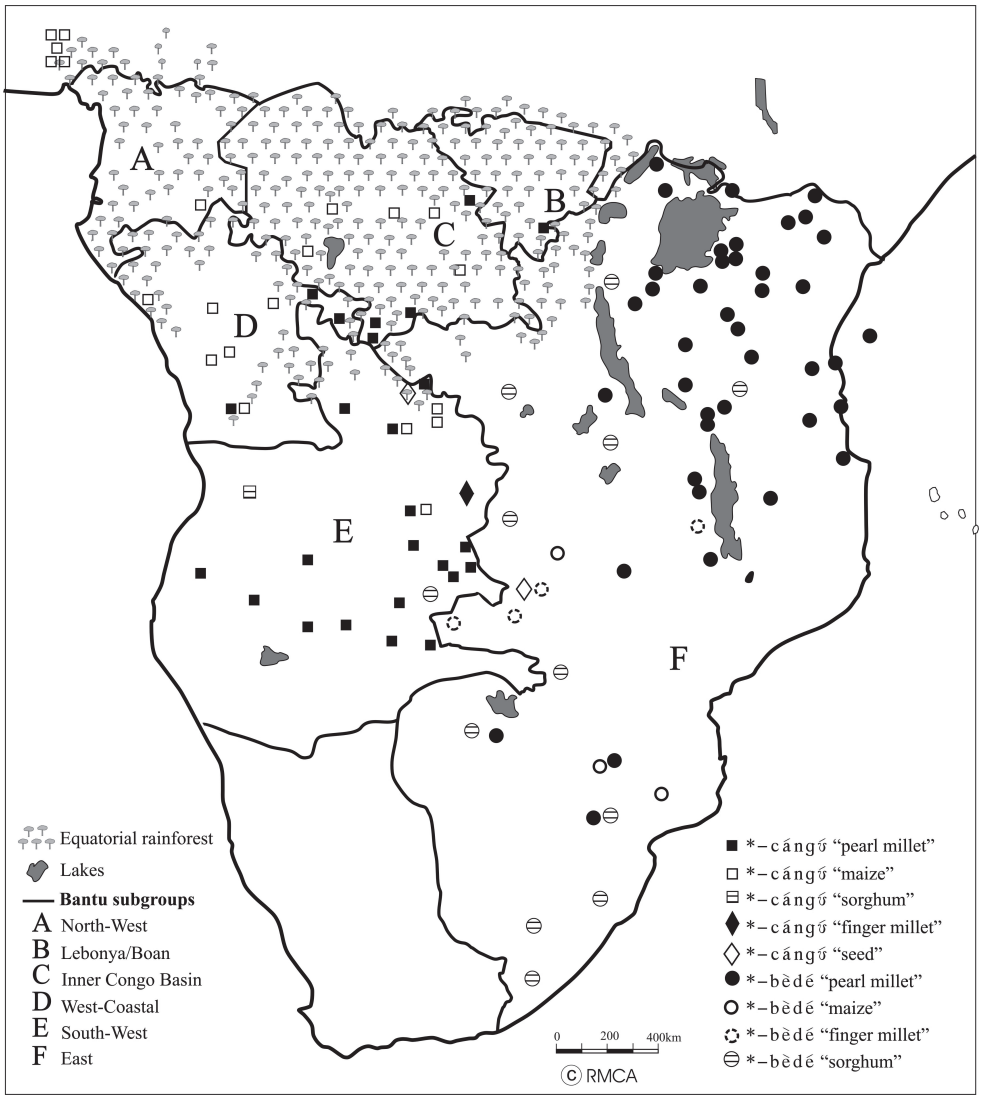
Walle Sombo Bolene, 1981: L'histoire politique des Topoke à Kisangani (Haut-Zaïre) des origines à 1964. Bruxelles: Cahiers du CEDAF/ASDOC Studies, vol. 3.

Watters, John R., 2003: Grassfields Bantu. In: Derek Nurse & Gérard Philippson (eds), The Bantu Languages. London, New York: Routledge, 225-256.

White Fathers, 1954: The White Fathers' Bemba-English dictionary. London: Longmans, Green & Co.

Whitehead, John, 1899: Grammar and Dictionary of the Bobangi Language, as Spoken over a Part of the Upper Congo West Central Africa. London: Kegan Paul, Trench, Trübner & Co Ltd.

Appendix 1: Distribution map of **-bèdé* and **-cángú* with their respective meanings in present-day Bantu languages



The **-cángú* 'maize' symbols in the left upper corner represent the Grassfields Bantu reflexes in their whole. Due to space constraints, not all individual attestations could be represented.