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## Cardinal Numerals in Kambaata\*

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**Abstract:** In the Cushitic language Kambaata (Ethiopia) most cardinal numerals belong to the same word class as adjectives. As modifiers they agree with their head nouns in case and gender. Only higher numerals such as ‘100’, ‘1000’ and ‘million’ are noun-like and invariantly encoded in the genitive case when modifying a head noun. The present study does not only aim at describing the characteristic morpho-syntactic features of Kambaata numerals with examples from texts and elicitation but it also points out an important aspect of the diachronic development of tens (‘10’, ‘20’, ... ‘90’). A comparison of the Kambaata numerals with those of related languages reveals that Kambaata must have restructured its tens in recent times. In addition to the vocalic ten-marking morpheme that Kambaata shares with other Highland East Cushitic languages, a morpheme *-duma* is suffixed; i.e. all tens are double-marked. The old (simple) forms of the tens were retained only in the numerals made up of tens plus units (e.g. ‘21’).

### 1. Introduction

Kambaata belongs to the Cushitic branch of the Afro-Asiatic language phylum, more precisely to the Highland East Cushitic (HEC) language group. The language is spoken by more than 600,000 speakers in an area approximately 300 km south-west of the Ethiopian capital Addis Ababa.

Kambaata is a head-final and strictly suffixing language; it has a rich verbal and nominal morphology. There is a robust noun-verb distinction and a separate word class of attributes, which encompasses adjectives, cardinal numerals and demonstratives. Members of the word class ATTRIBUTE display a unique morphology, which serves to encode case and agreement with the head noun.

First data on Kambaata cardinal numerals have already been made available in previous publications, albeit often in a quite unreliable transcription. As early as 1925, Cerulli published a 550-word list of Kambaata, including cardinal numerals (1925: 648), which, however, seem to be rather of Hadiyya than Kambaata origin. Moreno (1939: 269) is the earliest source of numerals that are truly Kambaata. Hudson (1976) compares selected numerals of all HEC languages, which have also been included into his HEC dictionary (Hudson 1989). Treis (2006) gives a first overview of the case marking morphology of cardinal numerals. A list of Xambaaro<sup>1</sup> numerals (Xambaaro is a slightly divergent dialect of Kambaata) is provided by Borelli (1890: 475f).

This paper intends to examine the inflectional morphology of cardinal numerals and to demonstrate their use in sentential contexts. Furthermore, this paper is designed to supplement the comparative literature on numerals in Cushitic (Plazikowsky-Brauner 1963, Zaborski 1997), which mainly concentrates on the basic numerals (1-10). Here, special emphasis is placed on tens and tens plus units

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<sup>1</sup> Alternative spellings in the literature are T'imbaaro and T'ambaaro.

in Kambaata. The formation of numerals consisting of tens plus units has so far not been taken into account in the literature.

## 2. Numbers from 1 to 10

Kambaata has a decimal numeral system. Numerals from one to ten are presented in Table 1; they are given in their citation form, the oblique case form which speakers use in counting.

Table 1. Numerals from 1 to 10<sup>2</sup>

máto	1	lého	6
lámo	2	lamála	7
sáso	3	hezzéetto	8
shóolo	4	hónso	9
ónto	5	tordúma	10

In counting, only the masculine form is used (see example (1)), whereas numerals in a sentential context are gender-sensitive and distinguish between masculine and feminine forms (see section 4).

- (1) Ros-is-áan-ch-u-s                      "mát-o, lám-o, sás-o"                      y-í                      ké'  
learn-CAUS-AAN-SG-M.NOM-3M.POSS    one-M.OBL two-M.OBL    three-M.OBL    say-3M.PCO    get:up.3M.PCO  
 wollishsh-ó=hanníichch                      zakk-íin                      daguxxáanch-u-s                      jammárr-o.  
count(.CAUS)-3M.PVO.REL=NOMIN.M.ABL    after-M.ICP    race-M.NOM-3M.POSS    start-3M.PVO  
 The teacher counted "one, two, three", then the race started.

## 3. Numbers between 10 and 100

The numeral *tor-dúma* '10' is morphologically complex. It consists of the stem *tor-* '10' plus the building morpheme for tens, *-duma*, and could thus literally be translated as "ten-ty". As shown in the left half of Table 2, the subsequent tens ('20', '30', ..., '90') are formed through multiplication. The numbers from 2 to 9 (Num<sub>2...9</sub>) serve as multipliers, *-duma* as multiplicand. A long vowel is located between multiplier and multiplicand. This vowel is mostly *-aa* (see, for instance, *ont-aa-dúma* '50'), in one case *-oo* (see *lam-oo-dúma* '20'). A historical explanation for the origin of the long vowel will be provided below, after a comparison of the Kambaata data with data from closely related East Cushitic languages. The lexeme *sajj-aa-dúma* '30' is slightly irregular: it contains *jj* as a second stem consonant while the basic numeral *sás-o* '3' has a stem-final *s*.

Table 2. Numerals above 10

		TENS		TENS PLUS UNITS					
		tor-dúma	10	tóo-na	Num <sub>1...9</sub>	e.g.	tóo-na	hónso	19
lám-o	2	lam-oo-dúma	20	lam-ée-na	Num <sub>1...9</sub>	e.g.	lam-ée-na	hezzéetto	28
sás-o	3	sajj-aa-dúma	30	sajj-áa-na	Num <sub>1...9</sub>	e.g.	sajj-áa-na	lamála	37
shóol-o	4	shool-aa-dúma	40	shool-áa-na	Num <sub>1...9</sub>	e.g.	shool-áa-na	lého	46
ónt-o	5	ont-aa-dúma	50	ont-áa-na	Num <sub>1...9</sub>	e.g.	ont-áa-na	ónto	55
léh-o	6	leh-aa-dúma	60	leh-áa-na	Num <sub>1...9</sub>	e.g.	leh-áa-na	shóolo	64
lamál-a	7	lamal-aa-dúma	70	lamal-áa-na	Num <sub>1...9</sub>	e.g.	lamal-áa-na	sáso	73
hezzéett-o	8	hezzeett-aa-dúma	80	hezzeett-áa-na	Num <sub>1...9</sub>	e.g.	hezzeett-áa-na	lámo	82
hóns-o	9	hons-aa-dúma	90	hons-áa-na	Num <sub>1...9</sub>	e.g.	hons-áa-na	máto	91

<sup>2</sup> The Kambaata data is written in the official orthography (Maatewoos 1992): *x = t'*, *q = k'*, *ch = tʃ*, *c = tʃ'*, and *' = ?*. Unaccented and devoiced final *i* is not written orthographically, despite its phonological status. In this article, accents are consistently indicated while the official orthography leaves them unmarked. The accentuation of a long vowel is only marked on the first grapheme, i.e. *´V*, although the long vowel as a whole is accented.

The building morpheme for tens, *-duma*, is **not** found in numbers made up of tens plus units; see *hons-aa-dúma* ‘90’ but *hons-áa-Ø-na máto* ‘91’. The morpheme *-duma* is "subtracted" before the units are added. The morpheme *-na*, the conjunctive suffix of modifiers, links tens with units, as illustrated in the right half of Table 2. The numbers consisting of tens plus units are assumed to form two phonological and morphological words. The evidence for this assumption is presented in section 6 below.

Two aspects of the numbers consisting of tens and units have to be pointed out in particular:

(i) Whereas the numeral *tor-dúma* ‘10’ contains an element *tor-*, the numerals from 11 to 19 are based on another allomorph of ‘10’, namely *too-*; see Table 3.

(ii) Whereas the long vowel between the multiplier ‘two’ and the multiplicand ‘ten’ is *-oo* in *lam-oo-dúma* ‘20’, it is *ee* for the numbers between 21 and 29; see, for instance, *lam-ée-na hezzéetto* ‘28’. All other numbers consisting of tens plus units are generated in a regular way and the long vowel of the tens is retained in the tens plus units; see, for instance, *sajj-aa-dúma* ‘30’ and *sajj-áa-na ónto* ‘35’.

Table 3. Numerals from 11 to 19

<b>tóo-na</b>	}	máto	11
		lámo	12
		sáso	13
		shóolo	14
		ónto	15
		lého	16
		lamála	17
		hezzéetto	18
		hónso	19

Having presented the essential data, it remains to be explored why the multiplier *-duma* occurs only in the tens but not in the tens plus units. A look at related languages provides an explanation (Table 4). The data on Sidaama, Hadiyya, Gedeo, Burji (all HEC), and Oromo (Lowland East Cushitic) is taken from Hudson (1989), the Qabeena (HEC) data from Crass (2005: 207-210). The orthographic conventions of the sources have not been changed but the segmentation is mine. In addition to the data from published sources, the Oromo numerals consisting of tens and units were provided by Dabala Goshu (p.c. 2005).

In HEC and in Oromo two strategies are attested for the formation of tens:

**Strategy I** is applied throughout the tens of Sidaama and Hadiyya and most tens of Qabeena. Suffixes containing (a) vowel(s) and, sometimes, a glide (Qabeena *w* and *y*, Hadiyya *y*) are attached to the stem of Num<sub>2...9</sub>; see, for instance, Qabeena *'ont-u* '5' > *'ont-aawu* '50', Sidaama *ont-e* '5' > *ont-ao* '50', and Hadiyya *ont-o* '5' > *ont-ayya* '50'. As a weak consonant, the glide is no obstacle for morpho-phonological processes such as merging and assimilation between stem and suffix phonemes. For the formation of tens, strategy I is probably older than strategy II, because it has given rise to irregular, fusional, and hardly predictable forms; see, for instance, Qabeena *sasu* ‘three’ – *sajju* ‘thirty’, *šoolu* ‘four’ – *šaylu* ‘forty’, and *'ontu* ‘five’ – *'ontaawu* ‘fifty’.<sup>3</sup>

**Strategy II**, the ‘-ty’ strategy, is a simple multiplication process of basic numerals (Num<sub>2...9</sub>) and an element (‘-ty’), whereby ‘-ty’ is expressed by morphemes which seem to be cognate with Kambaata *-duma*, namely, *-dama* in Oromo, *-tama* in Gedeo, *-(t)tan(na)* in Burji. Qabeena has the morpheme *-dima* only in the numeral ‘20’; for higher tens strategy I is applied. Interestingly, only the Burji

<sup>3</sup> The Qabeena tens from ‘50’ to ‘90’ are derived regularly from the unit stems through the suffixation of *-aawu*.

'-ty', *-(t)tan(na)*, does show a clear resemblance with the lexeme '10', *tanna*, in the same language. The building morphemes for tens in the other languages bear only little or hardly any resemblance to their independent lexemes '10'; see Gedeo *tomme* '10' and *-tama* '-ty' (< Oromo), Oromo *kud'a* '10' and *-tama* '-ty', Qabeena *tonnu* '10' and *-dima* '-ty'.<sup>4</sup>

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<sup>4</sup> The '-ty' strategy is widespread not only in Cushitic languages but also among Omotic languages, as Zelealem's data (2003) reveal; see *-tam-* in Bayso, *tomón-* in Rendille, *t'ómón-* in Elmolo and *-tanna / -tom / -tama / -tabana* in Afar as well as an element *-tama* (or similar) in seven out of eight Omotic languages Zelealem examined (Mao, Aari, Benchnon, Wolaitta, Zaye, Maale, and (partly in) Shinasha). Note that there is also a lexeme *tama* '10' in some of these Omotic languages (e.g. Wolaitta).

Table 4. Formation of tens in HEC languages and Oromo compared: selected examples

	KAMBAATA	QABEENA	SIDAAMA	HADIYYA	GEDEO	BURJI	OROMO
10	tor- <b>dúma</b>	tonnu	tonne	tommo	tomme	tanna	kud'a
11	tóo-na máto	tonaa-matu	tonaa-mitto	tommo-mato	tommi-nna-mitte	tannaa-micc	kud'a-tokko
20	lam-oo- <b>dúma</b> < lám-o '2'	lam-oo- <b>dima</b> < lam-u '2'	lem-oo < lam-e '2'	lam-iyye < lam-o '2'	did- <b>damá</b> / lame-tomme < lame '2'	lama-(t)tan(na) < lama '2'	dig- <b>dama</b> cf. lama '2'
21	lam-ée-na máto	lam-oo- <b>dima</b> -naa-matu					dig- <b>dami</b> -tokko
30	sajj-aa- <b>dúma</b> < sás-o '3'	sajj-u < sas-u '3'	sajj-oo < sas-e '3'	sad-e < sas-o '3'	sod- <b>doma</b> / sase-tomme < sase '3'	fadi(i)(y)-ttan < fadi(y)(a) '3'	sod- <b>doma</b> < sadii '3'
40	shool-aa- <b>dúma</b> < shóol-o '4'	šayl-u < šool-u '4'	shoyill-oo < shool-e '4'	sor-e < soor-o '4'	afur- <b>tama</b> cf. shoole '4'	foola-ttanna < foola '4'	afur- <b>tama</b> < afur '4'
41	shool-áa-na máto						afur- <b>tami</b> -tokko
50	ont-aa- <b>dúma</b> < ónt-o '5'	'ont-aawu < 'ont-u '5'	ont-ao < ont-e '5'	ont-ayya < ont-o '5'	shan- <b>tama</b> cf. onde / onti '5'	umutta-ttan(na) < umutta '5'	shan- <b>tama</b> < shan '5'
90	hons-aa- <b>dúma</b> < hóns-o '9'	hoons-aawu < hoons-u '9'	hons-ao < hons-e '9'	hons-ayye < hons-o '9'	sagal- <b>tama</b> < sallane '9'	womfa-(t)tanna < womfa '9'	sagal- <b>tama</b>
91	hons-áa-na máto	hoons-aaya-naa-matu					sagal- <b>tami</b> -tokko

Kambaata is the only HEC language that consistently applies strategy I and II cumulatively. Consequently, the following diachronic scenario for the development of tens and tens plus units seems plausible:

**Stage I:** At first, Kambaata applied strategy I to create tens, similar to modern Sidaama, Hadiyya, and Qabeena: a vowel morpheme was added to the stem of a basic numeral; see the reconstructed form \**hons-aa* ‘90’. Numbers consisting of tens plus units, e.g. ‘91’, were created by joining tens plus units with the conjunctive morpheme *-na* (‘90 *-na* 1’).

**Stage II:** The *-duma* strategy (‘-ty’ strategy) was later superimposed upon strategy I and reinforced and lengthened the old tens. The *-duma* strategy seems to be of younger age, because no allomorphic variation and no signs of reduction are observed. The *-duma* strategy did not replace strategy I, but *-duma* was applied **in addition**. *Hons-aa+dúma* ‘90’ is thus diachronically interpretable as “nine-ty+ty”. The new strategy did not intrude into the domain of numbers consisting of tens plus units; i.e. the ancient form of ‘90’, \**hons-aa*, was retained in *hons-áa-na máto* ‘91’. The situation in Kambaata is in contrast to the situation in other languages that apply the ‘-ty’ strategy: in Oromo, the *-tama* (‘-ty’) morpheme is **not** dropped when units are added to tens; see, for example, *sagal-tama* ‘90’ and *sagal-tami-tokko* ‘91’ (Dabala Goshu, p.c. 2005); nor is *-dima*, which is used to create ‘20’ in Qabeena, dropped when the numbers ‘21’ to ‘29’ are formed; see, for instance, *lamoo-dima* ‘20’ and *lamoo-dima-naa-matu* ‘21’ (Crass 2005: 209).<sup>5</sup>

Interestingly, Kambaata also created a new numeral ‘ten’, *tor-dúma*, with the help of *-duma*. Thus Kambaata is the only HEC language in which ‘10’ is morphologically complex and structured by analogy with ‘20’, ‘30’, ..., ‘90’ (Table 4).

It is unknown what the motivation was as to why Kambaata created new tens. One can, however, exclude an internal motivation, as no cognate of *-duma* is found in contemporary Kambaata. It seems more plausible that the morpheme was borrowed and the numeral system restructured in a language contact situation. The latter scenario is, however, speculative, because no donor language could be identified so far.

## 4. Case and Gender Inflection

### 4.1. Case and Gender Inflection of Attributive Numerals

In the previous sections all numerals have been given in the masculine oblique form (ending in *´o* or *´a*), which is the form used in counting. Parallel to canonical adjectives, however, attributive numerals differentiate three cases (accusative, nominative, and oblique) and two genders (masculine and feminine); see Table 5. The numerals *lamal-á* / *lamal-í-ta* ‘seven’ and *tordum-á* / *tordum-í-ta* ‘10’ inflect like adjectives of declension A4, all other numerals (with the exception of ‘100’ and ‘1000’) like adjectives of declension A3 (Treis 2006). Declension A3 is characterized by different vowels in the masculine and feminine forms (*u* vs. *i*). It is sufficient to present only the case forms of the numbers from 1 to 10 in Table 5, because all higher numbers either have one of these numbers as last digit or the formative *-dum-á* / *-dum-í-ta* ‘-ty’ as last element; i.e. *leháa-na hons-ú* / *hons-í-ta* ‘69’ is inflected like *hons-ú* / *hons-í-ta* ‘9’, *lamalaa-dum-á* / *-dum-í-ta* ‘70’ like *tor-dum-á* / *-dum-í-ta* ‘10’.

<sup>5</sup> Unfortunately, neither Hudson (1989) nor Zelealem (2003) contain data on numbers consisting of tens plus units from the languages applying strategy II in HEC, namely Gedeo and Burji.

Table 5. Case and gender marking of the numerals from 1 to 10

ACC		NOM		OBL			
M	F	M	F	M <sup>6</sup>	F		
mat-ú	mat-í-ta	mát-u	mát-i-t	mát-o	mát-e	1	A3
lam-ú	lam-í-ta	lám-u	lám-i-t	lám-o	lám-e	2	A3
sas-ú	sas-í-ta	sás-u	sás-i-t	sás-o	sás-e	3	A3
shool-ú	shool-í-ta	shóol-u	shóol-i-t	shóol-o	shóol-e	4	A3
ont-ú	ont-í-ta	ónt-u	ónt-i-t	ónt-o	ónt-e	5	A3
leh-ú	leh-í-ta	léh-u	léh-i-t	léh-o	léh-e	6	A3
lamal-á	lamal-í-ta	lamál-u	lamál-i-t	lamál-a	lamál-e	7	A4
hezzeett-ú	hezzeett-í-ta	hezzéett-u	hezzéett-i-t	hezzéett-o	hezzéett-e	8	A3
hons-ú	hons-í-ta	hóns-u	hóns-i-t	hóns-o	hóns-e	9	A3
tordum-á	tordum-í-ta	tordúm-u	tordúm-i-t	tordúm-a	tordúm-e	10	A4

Numerals (the targets of agreement) agree in case and gender with their head nouns (the controllers of agreement). Nominative numerals precede nominative nouns (see example (2)), accusative numerals accusative nouns (see examples (3) and (4)). If a noun is encoded in a non-accusative / non-nominative case (i.e. genitive, dative, ablative, ICP or locative), the numeral is marked for the oblique case (see example (5)). The agreement potential of numerals and their use in context is exemplified by the following sentences.

- (2) **Mát-it** Meekam-é y-eennó **meent-íchch-ut** hoolam-á dooll-á  
 one-F.NOM M.-F.ACC say-3HON.IPV.REL women-SG-F.NOM much-M.ACC time-M.ACC  
**min-i-sé** **ann-íni-n** **barg-án-t** **he'-aa'ú-t** **yóo** **íkke**.  
 house-M.GEN-3F.POSS owner-M.ICP-N add-PASS-3F.PCO live-3F.IPV.REL.VV-F.NOM COP1.3 INACT  
 One woman called Meekame had been living with her husband for a long time.

- (3) [...] Labaq-ó wo'-í=g-a **lam-ú** **wud-ú** zaaz-áno-a.  
 L.-M.GEN water-M.-GEN=GA-M.ACC two-M.ACC side-M.ACC flow-3M.IPV.REL-M.COP2  
 [...] it meanders [lit. "it flows to two sides] like the water of the *Labaqo*.<sup>7</sup>

- (4) Wol-ú=bb-a orooqq-íichchi-ssa bír-e ffish-u-s  
 other-M.ACC=PLACE-M.ACC go:out-M.ABL-3PL.POSS front-F.OBL seedling-F.NOM-3M.POSS  
**leh-íta** **macc-áta** fúshsh-u has-is-áno-ssa.  
 six-F.ACC leaf-F.ACC take:out(.CAUS)-M.NOM want-CAUS-3M.IPV-3PL.OBJ  
 Before they are transplanted, the seedlings should have [grown] six leaves. (K8: 9)

- (5) **Lám-e** **uull-áan** xaaf-á wícc-eemm.  
 two-F.OBL land-F.LOC tef-M.ACC sow-1SG.PVE  
 I sowed tef (*eragrostis tef*) on two plots of land.

#### 4.2. Inflectional Morphology of Numerals as NP Heads

Numerals are not only used as modifiers but they can also serve as heads of NPs without undergoing further derivational processes. As phrasal heads, numerals distinguish as many case forms as nouns do (Table 6): accusative, nominative, genitive, dative, ablative, ICP, locative, and oblique. It is the final vowel of the accusative form which determines according to which nominal declension a numeral inflects. Numerals in *-á* / *-á-ta* inflect like masculine nouns in *-á* (e.g. *dum-á* 'back room' of declension M1) and feminine nouns in *-á-ta* (e.g. *ang-á-ta* 'hand' of declension F1a), numerals in *-ú* / *-í-ta* like masculine nouns in *-ú* (e.g. *ulaam-ú* 'dish of cheese and cabbage' of

<sup>6</sup> The case form found in this column of the table is the form used in counting.

<sup>7</sup> *Labaqó* is the name of a meandering river in the Kambaata lowlands.

declension M3) and feminine nouns in *-í-ta* (e.g. *tam-í-ta* ‘use’ of declension F2b), respectively (Treis 2006).

Table 6. Case forms of nouns (N) and numerals (Num) as NP heads compared: the examples of *lam-ú* (M) / *lam-í-ta* (F) ‘two’ and *ulaam-ú* (M) ‘dish of cheese and cabbage’ / *tam-íta* (F) ‘use’

	ACC	NOM	GEN	DAT	ABL	ICP	LOC	OBL
N (M)	ulaam-ú	uláam-u	ulaam-í	ulaam-íi(ha)	ulaam-íichch	ulaam-íin	ulaam-óon	uláam-o
Num (M)	lam-ú	lám-u	lam-í	lam-íi(ha)	lam-íichch	lam-íin	lam-óon	lám-o
N (F)	tam-íta	tám-it	tam-é	tam-éé(ha)	tam-ééchch	tam-éen	tam-éen	tám-e
Num (F)	lam-íta	lám-it	lam-é	lam-éé(ha)	lam-ééchch	lam-éen	lam-éen	lám-e

In example (6), an ablative-marked numeral, *hezzeettaadumíichch* ‘from 80’, occurs. It functions as the head of an NP, which expresses the point of departure.

- (6) Waas-á shan-s-íi im-eeníi we’ees-eeníi qixxan-s-eennó  
 enset:pulp-M.ACC rot-CAUS-M.DAT dig-3HON.ICO.CRD1 cover-3HON.ICO.CRD1 get:ready-CAUS-3POL.IPV.REL  
 el-óo **hezzeettaadum-íichch** xibb-é santimeetir-á iill-áno-a.  
 pit-M.NOM eighty-M.ABL hundred-F.GEN centimetres-M.ACC reach-3M.IPV.REL-M.COP2  
 The pit, which is dug, covered [with enset leaves] and prepared to ferment the enset pulp, is 80 to 100 centimetres deep. [lit. "The pit (...) reaches from 80 to 100 centimetres."] (K5: 28)

As heads of NPs, numerals are usually accompanied by genitive phrases or possessive suffixes. Genitives and possessives refer to the set from which a certain number of referents are taken. The possessive suffix *-nne* of example (7) points to a group of 1PL referents (‘of us’). The possessive suffix *-se* in example (8) refers to *hujíta* ‘work, job(s)’, the suffix *-ssa* in (9) to the two female protagonists of a story.

- (7) **Tordum-íichchi-nne-n** án qoxára-ta.  
 ten-M.ABL-1PL.POSS-N 1SG.NOM clever-F.PRED-F.COP2  
 I am the cleverest of the ten of us. [lit. "I am clever from the ten of us."]
- (8) Masaal-íiha ass-eennó qixxanch-íi meent-íi huj-é qood-íichch  
 masaala-M.DAT do-3HON.IPV.REL preparation-M.DAT women-M.GEN work-F.GEN share-M.ABL  
**lam-í-se** xáaf.  
 two-F.ACC-3F.POSS write.2SG.IMP  
 Write down two of [lit. "from"] the jobs of women done for the preparation of the *masaala* festival. (K5: 9)
- (9) [...] **lam-e-ssá** ciil-l-áanta gisán-at waal-tóo-ssa.  
 two-F.GEN-3PL.POSS baby-PL1-F.DAT<N> sleep-F.NOM come-3F.PVO-3PL.OBJ  
 [...] sleep overcame the babies of the two [women].

#### 4.2. Number Poem of Basic Numerals

The poem in (10) is taught to children in primary school in order to familiarize them with the numbers from one to ten. The poem does not only illustrate the morphological features of numerals (e.g. the use of numerals as the heads of subject NPs), but also reflects important aspects of Kambaata culture and environment. In the answer verses, each number is defined by the things or events of the Kambaata physical and social environment that typically occur in sets of that number.



(10) Number Poem

**Matu** mahaan?

Mát-u m-á-haa-n?

one-M.NOM what-M.PRED-M.COP2-Q

What is one?

**Matu** mexxuarraanka.

Mát-u méxx-ua=rr-áanka]

one-M.NOM single-M.OBL=RA-M.PRED<N>

One is just a single thing.

**Lamu** mahaan?

Lám-u m-á-haa-n?

two-M.NOM what-M.PRED-M.COP2-Q

What are two?

**Lamu** harruuchchoa hanxa.

Lám-u harrúuchch-o-a hánx-a.

two-M.NOM donkey(.SG)-F.GEN-M.COP2 teat-M.PRED

Two are the teats of a donkey.

**Sasu** mahaan?

Sás-u m-á-haa-n?

three-M.NOM what-M.PRED-M.COP2-Q

What are three?

**Sasu** mixaadia mexeqenna.

Sás-u mixáad-i-a mexeqénn-a.

three-M.NOM griddle-M.GEN-M.COP2 fire:stones-M.PRED

Three are the firestones of the griddle.<sup>8</sup>

**Shoolu** mahaan?

Shóol-u m-á-haa-n?

four-M.NOM what-M.PRED-M.COP2-Q

What are four?

**Shoolu** sa'ia hanxa.

Shóol-u sá'-i-a hánx-a.

four-M.NOM cow-M.GEN-M.COP2 teat-M.PRED

Four are the teats of a cow.

**Ontu** mahaan?

Ónt-u m-á-haa-n?

five-M.NOM what-M.PRED-M.COP2-Q

What are five?

**Ontu** angata zuru'mma.

Ónt-u áng-a-ta zurú'mm-a.

five-M.NOM hand-F.GEN-F.COP2 finger-F.PRED

Five are the fingers of a hand.

**Lehu** mahaan?

Léh-u m-á-haa-n?

six-M.NOM what-M.PRED-M.COP2-Q

What are six?

**Lehu** meselaakkaa qaraxa.

Léh-u mesel-áakk-a-a qaráx-a.

six-M.NOM girl-PL2-F.GEN-M.COP2 qaraxa-M.PRED

Six are the girls' *qaraxa*.<sup>9</sup>

**Lamalu** mahaan?

Lamál-u m-á-haa-n?

seven-M.NOM what-M.PRED-M.COP2-Q

What are seven?

**Lamalu** minia colba.

Lamál-u mín-i-a cólb-a.

seven-M.NOM house-M.GEN-M.COP2 beams:carrying:the:roof-M.PRED

Seven are the beams carrying the roof.

**Hezzeettu** mahaan?

Hezzéett-u m-á-haa-n?

eight-M.NOM what-M.PRED-M.COP2-Q

What are eight?

**Hezzeettu** heerota wiima.

Hezzéett-u héer-o-ta wíim-a.

eight-M.NOM group:of:eight-F.GEN-F.COP2 full-F.PRED

Eight are a full *heeruta*.<sup>10</sup>

**Honsu** mahaan?

Hóns-u m-á-haa-n?

nine-M.NOM what-M.PRED-M.COP2-Q

What are nine?

**Honsu** utubita heezzu.

Hóns-u utúb-i-ta héezz-u.

nine-M.NOM centre:pole-M.GEN-F.COP2 support:beam-F.PRED

Nine are the support beams of the centre pole.

**Tordumu** mahaan?

Tordúm-u m-á-haa-n?

ten-M.NOM what-M.PRED-M.COP2-Q

What are ten?

**Tordumu** wollota wiima.

Tordúm-u wóll-o-ta wíim-a.

ten-M.NOM counting-F.GEN-F.COP2 full-F.PRED

Ten is the full [i.e. highest] number.

<sup>8</sup> Three firestones support and provide balance to the cooking pot (*quríta*) or to the griddle (*mixaadú*).

<sup>9</sup> The meaning of *qaraxa* is not known for sure. One informant assumed that it refers to the things given to the family of the bride by the family of the bridegroom; in this context, it was considered a synonym of *qootá* 'bride price'.

<sup>10</sup> Whereas English *dozen* denotes a group of 12, Kambaata *heeríta* refers to a group of 8 entities.

## 5. Numbers above 100

The numbers *xibbíta* ‘100’ and *kumíta* ‘1000’ are not case and gender-agreeing numeral attributes but feminine **nouns**. With the younger generation, *kumíta* is being replaced by the Amharic loan *shii* ‘1000’. The numeral *milooná* ‘one million’, a masculine noun, is borrowed from European languages via Amharic.<sup>11</sup> As modifiers of a head noun, the numeral nouns are always encoded in the genitive case. Unlike other cardinal numerals, they cannot agree with their head noun in gender or number; see the examples in (11).

- |      |  |   |  |                                       |
|------|--|---|--|---------------------------------------|
| (11) | <i>xibb-é</i><br>hundred-F.GEN<br>(one) hundred  | <i>santimeetir-á</i><br>centimetre-M.ACC<br>centimetres | <i>xibb-é</i><br>hundred-F.GEN<br>(one) hundred  | <i>kil-ú-ta</i><br>kilo-F.ACC<br>kilo |
| (12) | <i>kum-é</i><br>thousand-F.GEN<br>(one) thousand | <i>mann-á</i><br>people-M.ACC<br>people                 | <i>kum-é</i><br>thousand-F.GEN<br>(one) thousand | <i>lokk-áta</i><br>foot-F.ACC<br>feet |

The occurrence of adjective-like lower numerals and noun-like higher numerals in one and the same language is frequently attested cross-linguistically. See, for example, Corbett (1978). The Kambaata data supports the universal stated by Corbett (1978: 363): "If the simple cardinal numerals of a given language vary in their syntactic behaviour the numerals showing nounier behaviour will denote higher numerals than those with less nouny behaviour."

Hundreds and thousands are made up of a modifying numeral in its feminine form plus the head noun *xibbíta* or *kumíta*. The modifier agrees in gender and case with the NP head; see the agreement of *ontíta* ‘five’ with *xibbíta* and the agreement of *lamaláta* ‘seven’ with *kumíta* in example (13).

- |      |   |                                  |                                   |                              |                                  |
|------|---|----------------------------------|-----------------------------------|------------------------------|----------------------------------|
| (13) | <i>ont-íta</i><br>five-F.ACC<br>500     | <i>xibb-íta</i><br>hundred-F.ACC | <i>tóo-na</i><br>ten-CRD2<br>1500 | <i>ont-íta</i><br>five-F.ACC | <i>xibb-íta</i><br>hundred-F.ACC |
| (14) | <i>lamal-áta</i><br>seven-F.ACC<br>7000 | <i>kum-íta</i><br>thousand-F.ACC |                                   |                              |                                  |

Example (15) illustrates the use of ‘1500’ in the context of a sentence. As modifier of the noun *woggáan* ‘in the year’, the number noun *xibbíta* ‘100’ must be encoded in the genitive case, *xibbé*. The genitive noun *xibbé* is itself modified by the case and gender-agreeing numeral ‘15’.<sup>12</sup>

- (15) **Tóo-na ónt-o xibb-é** wogg-áan Ameerik-á iill-ée’u.  
 ten-CRD1 five-F.OBL hundred-F.GEN year-M.LOC America-M.ACC reach-3M.PVE  
 He reached America in the year 1500 [lit. "in the year of 1500"].

In example (16), the number ‘500’ is part of a complex NP. The noun *ma’nnéen* ‘at the place’ is modified, among others, by the genitive-marked number noun *xibbé* ‘100’. The oblique-marked numeral *ónte* ‘five’ signals gender and case agreement with *xibbé*.

- (16) **Bonqoq-íichchi-s ónt-e xibb-é** meetir-í qáx-ata ma’nn-éen  
 cave-M.ABL-3M.POSS five-F.OBL hundred-F.GEN metre-M.GEN as:much:as-F.OBL place-F.LOC  
 móochch-u fellaa’-ú-s bogg-ée mánn-u canc-áyyoo’u íkke.  
 wild:animal-M.NOM goats-M.ACC-3M.POSS devour-3M.PVE.REL people-M.NOM shout-3M.PROG INACT  
 Around 500 metres away from the cave, people, whose goats had been devoured by a beast, were shouting. (K8: 22)

<sup>11</sup> The Kambaata word *tunsú-ta* is given by Moreno (1939: 267) as translation for ‘one million’. Moreno’s translation is probably the result of a misunderstanding; in fact, *tunsú-ta* means ‘darkness’.

<sup>12</sup> Recall that attributive (/modifying) numerals are encoded in the oblique case if their head is neither in the nominative case nor in the accusative case.

If ‘100’ modifies ‘1000’, it occurs in the genitive case as well (17). If the genitive modifier ‘100’ is itself modified by a smaller (adjectival) numeral, the latter occurs in the oblique case (18), which is the regularly sign of agreement with a non-accusative / non-nominative head noun.

(17) *xibb-é kum-íta* e.g. *xibb-é kum-é mann-á*  
 hundred-F.GEN thousand-F.ACC hundred-F.GEN thousand-F.GEN person-M.ACC  
 100,000 100,000 people

(18) *lám-e xibb-é kum-íta* e.g. *lám-e xibb-é kum-é mann-á*  
 two-F.OBL hundred-F.GEN thousand-F.ACC two-F.OBL hundred-F.GEN thousand-F.GEN person-M.ACC  
 200,000 200,000 people

Tens and units are simply juxtaposed to hundreds and thousands; linker morphemes are not necessary (see the examples in (19)). In such complex numerals, only the last constituent, i.e. the tens and units (e.g. *lám-o* in (19) and *ónto* in (20)), are inflected according to their position in the sentence and according to the case and gender of their head noun. The preceding hundreds or thousands occur in the accusative case (the citation form).

(19) *xibb-íta lám-o* e.g. *xibb-íta lám-o meetir-íichch*  
 hundred-F.ACC two-M.OBL hundred-F.ACC two-M.OBL metre-M.ABL  
 102 from 102 metres

(20) *ont-íta xibb-íta ontáa-na ónt-o*  
 five-F.ACC hundred-F.ACC fifty-CRD2 five-M.OBL  
 555  
 e.g. *ont-íta xibb-íta ontáa-na ont-ú meeter-á*  
 five-F.ACC hundred-F.ACC fifty-CRD2 five-M.ACC metre-M.ACC  
 (to) 555 metres

The bold face NP in (21) has the following complex structure: the head noun *mereeróon* ‘in the middle’ is modified by the genitive noun *xoqqittí* ‘of the height’, which is again modified by two coordinated (-na CRD2) numbers, 1600 and 3100. Each coordinand (in [square brackets]) contains a number, which is made up of thousands and hundreds.

(21) *Abb-á-s qixx-ú wees-é le'in-íi iitt-am-anóo*  
 big-M.ACC-3M.POSS equal-M.ACC enset-F.GEN growth-M.DAT like-PASS-3M.IPV.REL.VV.M.NOM  
 [**mat-íta kum-íta léh-e xibb-é]-na [sas-íta kum-íta**  
 one-F.ACC thousand-F.ACC six-F.OBL hundred-F.GEN-CRD2 three-F.ACC thousand-F.ACC  
**mát-e xibb-é] xoqqitt-í mereer-óon yóo-haa hegég-u.**  
 one-F.OBL hundred-F.GEN height-M.GEN middle-M.LOC COP1.3.REL-M.COP2 area-M.PRED

The most suitable [area] for the growth of enset is the area between 1600 and 3100 meters above sea-level. (K5: 28)

The case and gender morphemes of the first coordinand, ‘1600’, can be explained as follows. The coordinand is headed by the number noun *xibbé* ‘100’, which is modified by the case and gender-agreeing attribute *léhe* ‘6’. As *xibbé* occurs in the genitive case (i.e. in a non-accusative / non-nominative case), *léhe* is encoded in the oblique. The number noun *kumíta* ‘1000’ is in apposition to *léhe xibbé* ‘600’; as non-final element of a complex numeral, it is invariably marked for the accusative case (the citation form of nouns). *Kumíta* is modified by a gender and case-agreeing numeral *matíta* ‘one’. By analogy, the inflectional morphemes of the second coordinand, ‘3100’, can be explained.

## 6. Reduplicated Numerals

The reduplication of numerals is a frequent phenomenon in Kambaata. In order to express, for instance, ‘Molgude gave **each** child two oranges’, Kambaata speakers usually say literally “Molgude gave to the children **two-two** (*lál-lamú burtukaaná*) oranges”.

The reduplication of numerals is only partial, i.e. it affects only part of the stem. The first consonant and vowel of the numeral is copied and prefixed; see *hóns-o* ‘9’ → *hó-hóns-o* ‘9 each’. In most cases, a second copy of the first stem consonant is inserted between the prefixed syllable and the stem; see *mát-o* ‘1’ → *má-m-mát-o* ‘1 each’. Double copying of the stem-initial C is possibly determined phonotactically. The rule seems to be as follows: If the second radical of the numeral stem is a cluster (as, for instance, in *tordúma* ‘10’), the stem-initial C is copied once (*tó-tordúma*, but *\*tó-t-tordúma* ‘10 each’). If the second radical is a single consonant (as, for instance, in *léh-o* ‘6’), double copying is observed (*lé-l-léh-o* ‘6 each’).

The vowel of the prefixed syllable is always short, even if the first vowel of the stem is long; see *shóol-o* ‘4’ > *shó-sh-shóol-o* ‘4 each’. Table 7 gives an overview of the reduplicated forms.<sup>13</sup>

Table 7. Reduplicated numerals

1	mát-o	mám-mát-o
2	lám-o	lál-lám-o
3	sás-o	sás-sás-o
4	shóol-o	shósh-shóol-o
5	ónt-o	ó-’ónt-o
6	léh-o	lél-léh-o
7	lamál-a	lál-lamál-o
8	hezzéet-o	hé-hezzéet-o
9	hóns-o	hó-hóns-o
10	tordúm-a	tó-tordúm-a
11	tóona mát-o	tóona mám-mát-o ~ tó-tóona mám-mát-o
20	lamoodúm-a	lál-lamoodúma
21	laméena mát-o	laméena mám-mát-o ~ lál-laméena mám-mát-o
30	sajjaadúm-a	sá-sajjadúm-a
40	shoolaadúm-a	shósh-shoolaadúm-a
50	ontaadúm-a	ó-’ontaadúm-a
60	lehaadúm-a	lél-lehaadúm-a
70	lamalaadúm-a	lál-lamalaadúm-a
80	hezzeettaadúm-a	hé-hezzeettaadúm-a
90	honsaadúm-a	hó-honsaadúm-a
100	xibb-íta	xí(x)-xibb-íta
101	xibb-íta mát-o	xí(x)-xibb-íta mám-mát-o
200	lam-íta xibb-íta	lál-lam-íta xibb-íta
1000	kum-íta	kúk-kum-íta

The data in Table 7 provides evidence for the solution of the problem as to whether there is a word boundary between the tens and the units of a complex numeral. When tens without units, e.g. *lamoodúma* ‘20’, are subjected to reduplication, the initial CV is doubled, *lál-lamoodúma*. When

<sup>13</sup> The reduplicated forms higher than 100 can at best be considered tentative, because such forms are rarely used and the informants asked were not too sure. Besides this, the accentuation of the reduplicated forms is still provisional. Informants tend to accentuate the prefixed syllable in addition to the stem; whether they do this for emphasis or whether this is the natural pronunciation could not yet be verified.

tens plus units, e.g. *laméena máto* ‘21’, are reduplicated, either the first CV of only the unit numeral or the initial syllable of the units as well as the tens is copied and prefixed, *laméena máám-máto* ~ *lál-laméena máám-máto*. Reduplicating only the very first CV of the complex numeral, *\*lál-laméena máto*, is ungrammatical. The different behaviour of ‘20’ and ‘21’ allows only one interpretation: *lamoodúma* is taken to be a single morphological word, but *laméena máto* consists of two morphological words.

The use of reduplicated numerals in attributive function is illustrated in (22)-(23). The reduplicated numeral ‘one’, *mám-mat-ú* / *mám-mat-íta*, does not only express ‘one each’, but often serves to express ‘some’; see (23) and (26).

- (22) [...] *ánn-aanka ánn-aanka sin-ch-í fagaar-áan lál-lam-íta siin-áta*  
each-M.OBL<N> each-M.OBL<N> enset:seedling-SG-F.GEN bottom-M.LOC RED-two-F.ACC cup-F.ACC  
*buchch-í harshisaanch-ú [...] wór-u weeshsh-ú-s gaan-s-áno.*  
soil-M.GEN compost-M.ACC insert-M.NOM enset:plant(.SG)-M.ACC-3M.POSS become:fat-CAUS-3M.IPV  
 Adding two [lit. "two-two"] cups of compost to the roots of each enset seedling [when they are planted] makes the enset plant fat. (K8: 32f)

- (23) *Mám-mát-it kaashsh-áakkat kaas-ám-u has-is-ano-ssáa*  
RED-one-F.NOM plant-PL2-F.NOM plant-PASS-M.NOM want-CAUS-3M.IPV-3PL.OBJ.REL.VV.M.NOM  
*max-ée agan-áanee-t.*  
rainy:season-M.GEN month-M.LOC.VV-COP3  
 Some plants [plant types] have to be planted in the months of the rainy season. (K3: 62)

- (24) *Hor-íinka-ssa ó-'ónt-e leeter-ó qég-u yóo-ssa.*  
all-M.DAT<N>-3PL.POSS RED-five-F.OBL liter-F.GEN blood-M.NOM COP1.3-3PL.OBJ  
 Everybody has five litres of blood.

The examples (25) and (26), the reduplicated numerals function as NP heads.

- (25) *Masaal-áan shósh-shool-ú té lél-leh-ú ih-éen hag-á qóocc-u*  
masaala-M.LOC RED-four-M.ACC or RED-six-M.ACC become-3HON.ICO group-M.ACC create-M.NOM  
*sheemmaatoom-áta y-éenno.*  
formation:of:a:type:of:group-F.ACC say-3HON.IPV  
 During the *masaala* festival, the formation of groups consisting of [lit. "being"] four or six [family heads] each is called *sheemmaatoomáta*. (K8: 8)
- (26) *Mám-mat-é af-óo híil-u fóoshsh-u he'-ano-síi m-íihaa-t?*  
RED-one-F.GEN mouth-M.NOM bad-M.NOM smell-M.NOM live-3M.IPV-3M.OBJ.REL.VV.M.NOM what-M.DAT.VV-COP3  
 Why does the mouth of some [people] smell bad? (K4: 118)

## 7. Conclusion

This paper intended to show, firstly, that Kambaata restructured the tens (‘10’, ‘20’, ... ‘90’) in its recent history. The vowel morpheme *\*aa* / *\*oo* ‘-ty’, which had once served as the only marker of tens, was supplemented by a morpheme *-duma* ‘-ty’, so that today’s tens are actually marked double. The morpheme *-duma* ‘-ty’ is restricted to tens (e.g. *ont-aa-dúma* ‘50’) but did not intrude the domain of numbers consisting of tens and units (e.g. *ont-áa-na ónto* ‘55’); in the latter numbers only the old ‘-ty’ morpheme is applied.

Secondly, it has been argued in the preceding sections that two groups of cardinal numerals have to be distinguished with regard to morpho-syntactic features: (i) lower cardinal numerals, which belong to the word class ATTRIBUTE and which agree with their head nouns in case and gender, and (ii) higher cardinal numerals (‘100’, ‘1000’, and ‘100,000’), which belong to the word class NOUN and which are invariantly encoded in the genitive case when they modify a head noun.

## Abbreviations

1 / 2 / 3	first / second / third person	M	masculine
AAN	agentive derivation	N	pragmatically conditioned poly-functional morpheme
ABL	ablative		
ACC	accusative	NOM	nominative
CAUS	causative	NOMIN	nominalizer
COP1	locative copula	OBJ	object marker
COP2	- <i>ha</i> / - <i>ta</i> copula	OBL	oblique case
COP3	- <i>t</i> copula	PL	plural / plurative
CRD1	coordination with <i>vv</i>	PL1	plurative 1 with - <i>C-áta</i>
CRD2	coordination with - <i>na</i>	PL2	plurative 2 with - <i>aakk-áta</i>
DAT	dative	POSS	possessive
F	feminine	PRED	predicative
GA	similative morpheme	PROG	progressive
GEN	genitive	PVE	<i>e</i> -perfective
ICO	imperfective converb	PVO	<i>o</i> -perfective
ICP	instrumental-comitative-perlative	Q	question marker
IPV	imperfective	RA	'thing' nominalizer
IMP	imperative	RED	reduplication
INACT	past tense and irrealis	REL	relativization
HON	honorific; impersonal	SG	singular / singulative
L	linker morpheme	VV	vowel lengthening
LOC	locative		

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