

Eggon Language Counting System and Derivational Processes

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Abstract

The paper presents Eggon numerals in their order of occurrence, explaining the computation and derivation processes involved using descriptive method. The writer's intuitive knowledge of the language and a review of previous works on Eggon numerals constitute a major source of data for this paper. The study reveals four types of numerals- cardinals, ordinals, distributives and adverbials (times). The cardinal numerals are classified into basic and derived. The basic numerals which are *àkyèn* '1', *àhà* '2', *àrà* '3', *ènyì* '4', *àtò* '5', *éfi* '6', *àfohà* '7', *áfote* '8', *àtronyè* '9', *ek'pò* '10', *ènd'gà* '100', and *èzbi* '1000' are used to derive the secondary numerals using the arithmetic principles of addition and multiplication, on the one hand, and the linguistic phonological, morphological, and syntactic processes of vowel elision, tone change, compounding, sentential expressions on the other. The ordinals are derived using the prefix *ba* before the respective cardinal number except *ori* 'first' which has a distinct word. Similarly, the adverbials are also derived using the prefix *engyi*, while the distributives are produced by partial reduplication in a triplicate form. It can be said that Eggon is a decimal language that is in counts in multiples of ten.

Keywords: Eggon language, numerals, derivation

Introduction

Eggon belongs to the Niger-Congo Phylum of the Western Benue Congo Plateau group of African languages, (Williamson and Blench 2000). The language belongs to a minority group of languages in Nigeria and is one of the major indigenous languages in Nasarawa State. It has twenty six dialects which are mutually intelligible except one-Alogani (madantara).

Numeral is an important aspect of a language that cannot be separated from the grammar of the language. Numbers are often used in various forms in our day-to-day conversation; such as phone numbers, codes, addresses, size, time, quantity, counting of money, among others. Each language has its unique counting system which is a valuable linguistic asset that cannot be ignored. Particularly, languages that belong to the minority group such as Eggon need to be described and documented because they are more vulnerable to endangerment.

Eggon is a less described language because little has been done on the numeral system and the structure of the language in general. Previous work on the numeral system only presented the numerals in their order of occurrence without information on how they are derived (Anzaku 2006). This necessitates this work in order to inform, preserve and document the unique linguistic features embedded in the numerals. The cardinal numbers, which is what readily comes to mind when talking about numerals, are used in Eggon to derive the ordinal, distributive and numeral adverb; using prefixes and partial reduplication. Eggon uses Wana dialect in writing. Thus, this paper employs the Wana dialect which is considered the standard for writing due to its use in the Eggon New Testament Bible published in 1974.

An Overview on Numerals

The study of numerals was initiated to an extent by scholars interested in the study of linguistics and anthropology. History shows that there were no numbers in ancient times in the universe. Rather, fingers, rocks, sticks or the eyes were used to represent numerals. The need for numeric system however, arose when people started forming clans, villages, settlements and trading by barter (Ortenzi 1964). History of numerals as used today can be traced to the Hindu Arabic numeral system first mentioned in the 9th century (Smith & Karpinski 1911). It is generally believed that the Arabic numeral system from which the numerals in use today were derived was introduced by the Muslims from India and that the Hindus invented the nine digits and zero (dot) and the decimal system.

Counting is an old activity whose origin is difficult to state as implied by Girling (2006: 8:69-70). "Counting is nearly as old as speech and numerals as old as writing". Some early numeral systems include the Egyptian number system, which consists of hieroglyphic writing. It used addition principle and had a decimal base. The Babylonian number system is also one of the oldest number systems which began about 5,000 years ago. It has a base 60 (sexagesimal) and is difficult to write, understand and calculate when hundreds and thousands are involved. <http://en.wikipedia.org/wiki/babyloniannumerals>. The Chinese also

had one of the oldest systems of numerals that resembled sticks. The numerals also referred to as rod numerals were used by merchants, astronomers and mathematicians. <http://en.wikipedia.org/wiki/chinese-numerals>

The Eggon Basic Numerals

The basic numerals are those numerals which cannot be broken down into morphemes and are used to derive other numerals. Below are the basic numerals in Eggon language

Table 1: Eggon Basic Numbers

Numbers	Linguistic Forms	Phonetic Transcription	Computation
1	àkyèn		
2	àhà	[akiŋ]/ [atʃiŋ]	1
3	àtrà	[aha]	2
4	ènyĩ	[akra]	3
5	àtnò	[epĩ]	4
6	èfi	[atnɔ]	5
7	àfohà	[efi]	6
8	àfoté	[afɔha]	7
9	àtronyè	[afɔte]	8
10	èk'pò	[afuŋi]	9
100	ènd'gà# àkyèn	[ekpɔ]	10
1000	hundred# one èzbi # àkyèn thousand # one	[endgakiŋ] [izbikiŋ]	100 1000

The Eggon Secondary Numerals

The secondary numerals are the numerals derived from the basic numerals. These numerals can be endless as noted by (Anagbogu, 2006) and cited by (Omachonu 2011). The secondary numerals are derived through addition and multiplication. Addition is indicated by the use of the word *-là-* (and), as in *èk'péha là kyen* (21). Multiplication on the other hand is indicated by the use of plurality, as in the vowel *-e* in *èk'péha* (20). The numerals presented are divided based on the mathematical processes involved in their derivation.

Addition: this is the process of putting two or more numbers or amounts together. In Eggon, numbers can be generated using the word *là-* which means and /plus. The word is represented by the addition sign + in the computation. The word *là-* is used to derive numerals 21-29, 31-39, 41-49, 51-59, etc. Numerals 11-19 are derived using addition but the addition is implied without the use of the above addition word as seen in the examples that follow. Most Eggon numerals are derived using addition some of which can be seen in table 2.

Table 2: Eggon Numerals Derived by Addition

Number	Linguistic Form / Phonetic Transcription	Linguistic Computation
11	èk'pò # àkyèn → ten # one èk'pókyèn [ekpɔkiŋ] eleven	10+1
12	èk'pò # àhà → ten # two èk'póhà [ekpɔha] twelve	10+2
13	èk'pò # àtrà → ten # three èk'pótra [ekpɔkra] thirteen	10+3
14	èk'pò # ènyĩ → ten # four èk'pónyĩ [ekpɔŋi] fourteen	10+4
15	èk'pò # àtnò → ten # five èk'pótno [ekpɔtnɔ] fifteen	10+5
21	èk'pé# àhà # là # àkyèn → ten(pl) #two# and #one èk'péha là àkyèn [ekpeha la akiŋ] twenty one	20+1

33	ek'pé# àtrà # là # àtrà → ek'pétra là àtrà [ekpetra la akra] ten(pl) #three# and# three thirty three	30+3
44	ek'pé # ènyĩ # là# ènyĩ → ek'pényĩ là ènyĩ [ekpejĩ la ejĩ] ten(pl) # four# and# four forty four	40 +4
101	ènd'gà# àkyèn # là # àkyèn → ènd'gà àkyèn là àkyèn [endgakiŋ la akiŋ] hundred# one # and # one 101	100+1
110	ènd'gà# àkyèn # là # ek'pó → ènd'gà àkyèn là ek'pó [endgakiŋ la ekpɔ] hundred#one# and# ten 110	100+10
120	ènd'ga# àkyèn# là # ek'péha → ènd'gàkyèn là ekpeha [endgakiŋ la ekpeha] hundred# one #and# twenty 101	100+20
1001	èzbi # kyèn # là# àkyèn → èzbikyèn là àkyèn [izbikiŋ la akiŋ] thousand# one# and # one 1001	1000+1
1002	èzbi# kyèn # là# àhà → èzbikyèn là àhà [izbikiŋ la aha] thousand# one# and# two 1002	1000+2
1003	èzbi# kyèn # là# àtrà → èzbikyèn là àtrà [izbikiŋ la akra] thousand# one# and# three 1003	1000+3
1004	èzbi # kyèn # là # ènyĩ → èzbikyèn là ènyĩ [izbikiŋ la ejĩ] thousand# one# and # four 1004	1000+4

The initial vowels /a/ in *àhà* (two), /a/ in *àtrà* (three), /e/ in *ènyĩ* (four) /a/ in *àno* (five), /e/ in *èfi* (six), /a/ in *àfohà* (seven), and /a/ in *àtronyè* (nine) are deleted through the process of elision which is also obvious in discourse. Moreover, the root words for the numerals 1 to 9 are *ha*, *tra*, *nyĩ*, *tno*, *fi*, *foha*, and *tronye* which retain their meanings with or without the initial vowels.

Multiplication: this is seen as a number obtained from another which contains the first number a specified number of times. Numbers can be derived in Eggon using multiplication. There is a null multiplication marker; however, a tone change from low to high shows multiplication. The numerals derived using this process can be seen in the examples in table 3:

Table 3: Eggon Numerals Derived by Multiplication

Number	Linguistic Form /Phonetic Transcription	Linguistic Computation
20	èk'pé # àhà → èk'péha [ekpeha] ten (pl) # two twenty	10×2
30	èk'pé # àtrà → èk'pétra [ekpetra] ten(pl) #three thirty	10×3
40	èk'pé # ényĩ → èk'pényĩ [ekpeɲĩ] ten(pl) #four forty	10×4
50	èk'pé # àtnò → èk'pétno [ekpetnɔ] ten(pl) #five fifty	10×5
60	èk'pé# éfi → ek'péfi [ekpefi] ten(pl) #six sixty	10×6
70	èk'pé # áfohà → èk'péfoha [ekpefoha] ten (pl) #seven seventy	10×7
80	èk'pé áfote → èk'péfote [ekpefoɓe] ten (pl) #eight eighty	10×8
90	èk'pé# atronyi → èk'pétronyi [ekpefuɲi] ten (pl) #nine ninety	10×9
200	ènd'gà# àhà → ènd'gáhà [endgaha] hundred# two two hundred	100×2
300	ènd'gà# àtrà → ènd'gátrà [endgatra] hundred# three three hundred	100×3
400	ènd'gà# ényĩ → ènd'gányĩ [endganĩ] hundred # four four hundred	100×4
500	ènd'gà# àtnò → ènd'gátnò [endgatnɔ] hundred# five five hundred	100×5
600	ènd'gà #éfi → ènd'gáfi [endgafi] hundred six six hundred	100×6
700	ènd'gà# áfohà → ènd'gáfohà [endgafɔha] hundred# seven seven hundred	100×7
800	ènd'gà# áfoté → ènd'gáfoté [endgafɔɓe] hundred# eight eight hundred	100×8
900	ènd'gà# atronyi → ènd'gátronyi [endgafuɲi] hundred # nine nine hundred	100×9
2000	èzbi # àhà → èzbihá [izbiha] thousand# two 2000	1000×2

As seen in table 3, the derivation of *èk'péha* '20', *èk'pétra* '30', *èk'pényĩ* '40', *èk'pétno* '50', *èk'péfi* '60', *èk'péfoha* '70', *èk'péfote* '80', *èk'pétronyi* '90', involves multiplying *èk'po* 'ten' by the number that applies i.e. 2-9. The last vowel /o/ becomes /e/, as in *èk'pé* (tens-plural). That is, /e/ serves as the plural marker. There is no general plural marker in Eggon language. Words have their special way of marking or showing plurality. The initial vowels are also removed by the process of elision since the root words *ha*, *traet* convey the same meaning as *àhà*, *àtràet*, which speakers understand.

In the case of deriving *ènd'gàhà* '200', *ènd'gàtrà* '300', *ènd'ganyĩ* '400', *ènd'gàtnò* '500', *ènd'gáfi* '600', *ènd'gáfohà* '700', *ènd'gáfoté* '800', *ènd'gátronyi* '900', *ènd'gákyen* '100' is multiplied by the basic number that applies as in $200 = 100 \times 2$, etc. However, there is no clear plurality marker but there is a change in tone from low tone to high tone. Similarly, *èzbiha* '2000' is 1000 times two, and there is also no plural marker. In cases where there is no change in vowel, as in, *ènd'gàhà* '200', *èzbiha* '2000', there is a slight change in tone from low to high which is used and understood by the speakers to mean multiplication.

Ordinal Numbers

Ordinal numbers are words representing position or rank in a sequential order. In English, ordinal numbers are formed from cardinal numbers by adding suffixes. However, in Eggon, the morpheme *ba* is used before the cardinal number to derive ordinal number, except the ordinal number *ori* 'first' where a different word from the cardinal number *ákyèn* 'one' is used. It is the only ordinal numeral that can be used with or without the morpheme *ba*. In other words, Eggon can be said to have a distinct ordinal number for first which is *òrì*. This implies that Eggon is not an island, a number of languages also derive their ordinal numbers using similar process of affixation with the exception of 'first', (Atoyebi, n.d) in Oko, (Omachonu 2011) in Igala, (Muhammad & Alkali 2013) in fulfulde, (Sanusin.d) in Batonu. The cardinal and ordinal numbers in Eggon are related. This is because all the cardinal numbers are maintained, without any form of modification, in deriving the ordinal numbers except cardinal number *ákyèn* 'one'. Examples

41.	<i>òrì/ùrì</i>	1 st	<i>baàhà</i>	2 nd	<i>baàtrà</i>	3 rd	<i>baènyĩ</i>	4 th	<i>baàtnò</i>	5 th
	<i>baèfi</i>	6 th	<i>baafohà</i>	7 th	<i>baafoté</i>	8 th	<i>baàtronyè</i>	9 th	<i>baek'pò</i>	10 th

In Anzaku (2006) and every day discourse, it is observed that most Eggon speakers use *òrì* 'first' for the cardinal number *ákyèn* 'one'. This usage is wrong as seen in the examples that follow. The word for one is *ákyèn* while *òrì* is first. This work intends to show the difference between the cardinal number *ákyèn* 'one' and the ordinal number *òrì* 'first' in the examples that follow. In other words Eggon has two distinct number words for 'one' and 'first'.

42	Right	Wrong
	A bàoriwò a ná (where is the first)	*A bàákyènwò a ná (where is the one)
	Amèwòori (i am first)	*Amèwòákyèn (i am one)
	Nósókóanàorì (which will you carry first)	*Nósókóanàákyèn (which will you carry one)

Eggon Distributive Numerals

Distributive numerals express a group of the number specified. This type of numerals are used in Eggon to represent each, one by one, or twos, threes, etc in English. The distributive numerals are derived from the cardinal numerals through the process of reduplication. The cardinal numerals undergo the process of partial reduplication in various forms. Eggon distributive numeral is distinct from many other languages where they are derived either by complete reduplication (Omachonu 2011) in Igala; or both complete and partial reduplication (Muazu&Balami 2013) in Bura; (Muhammad & Alkali 2013) in Fulfulde; (Obikudo 2013) in Nkọrọ; (Atoyebi.n.d) in Òkò. In Eggon, Cardinal numerals with monosyllabic roots undergo a form of a triplicate reduplication such as follows:

	Cardinal	Distributive	Gloss
6a	<i>ákyèn</i> (one)-	<i>ákyákyákyèn</i>	(one each/one by one)
	<i>àhà</i> (two)-	<i>àhàhàhà</i>	(two each/twos/ two by two)
	<i>àtrà</i> (three)-	<i>àtràtràtrà</i>	(three each/threes/ three by three)
	<i>ènyĩ</i> (four)-	<i>ènyínyinyìn</i>	(four each/fours/ four by four)
	<i>àtnò</i> (five)-	<i>àtátàtnò</i>	(five each/fives/ five by five)
	<i>èfi</i> (six)-	<i>èfyáfyafìn</i>	(six each/ six by six)
	<i>èk'pò</i> (ten)-	<i>èkòkòk'pò</i>	(ten each/ tens/ ten by ten)

While in cardinal numerals with disyllabic root, the last syllable is reduplicated such as follows:

	Cardinal	Distributive	Gloss
6b	<i>áfohà</i> (seven)-	<i>áfohàhà</i>	(seven each/ seven by seven)
	<i>áfoté</i> (eight)-	<i>áfotété</i>	(eight each/ eight by eight)
	<i>àtronyè</i> (nine)-	<i>àtronyényè</i>	(nine each/ nine by nine)

Further examples of distributive numerals can be seen in the sentences that follow.

6c Moa àshé lo a baàhàhàhà
 pl woman the came twotwotwo (the women came in twos)

Moa shiàgbò- imuàkyàkyàkyènda moa àwèn lo.
 they give orange oneoneonepl child the (the children have been given one orange each)

Moa a gréemoàkyàkyàkyèn (they left one by one)
 they left them oneoneone

Eggon Adverbial Numerals

An adverbial numeral is a word that expresses countable number or times. Multiples such as once, twice, thrice, or one time, two times, three times, etc are expressed in Eggon language through the use of the morpheme engyi (times) followed by the respective cardinal number as shown in the examples that follow.

7	Engyiàkyèn	once	Engyiàhà	twice	Engyiàtrà	thrice
	Engyiènyĩ	four times	Engyiàtnò	five times	Engyièfì	six times
	Engyiàfòhà	seven times	Engyiàfotè	eight times	Engyiàtronyè	nine times
	Engyiek'pò	ten times				

Summary and Conclusion

In conclusion, this paper described the numeral system of Eggon and their computation processes. Four types of numerals were discussed which include cardinal, ordinal, distributive and adverbial (times). The latter three types of numerals are derived from the former using the prefixes 'ba' for ordinals and 'engyi' for adverbials, while distributives are derived using partial reduplication in a special way. Furthermore, counting in Eggon, as seen in this work, is done using certain arithmetic operations which are addition and multiplication. These lead to some phonological, morphological and syntactic processes of compounding, vowel elision, and tone change among others; which would be discussed in details in subsequent work. There is also room for further work on expression of some arithmetic operation such as addition, division, subtraction in Eggon language, the notion of time, etc. Thus, one can say that Eggon is not a language that uses an entirely different counting system. The counting system is similar to that of most of the cited works but differ slightly.

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