ON THE SYSTEM OF NUMERATION IN EFIK

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ABSTRACT

This paper is a response to Olderroge 1984 that Efik does not have a system of number beyond one thousand, since according to the claim, the word for thousand in Efik is tosin, a recent borrowing from English and assimilated phonologically to synchronize with Efik. We dispute this position and argue that Efik can count up to 999,999 internally, and that borrowing is not meant to enrich the internal resourcefulness of the language in this case, but merely for ease of pronunciation. In this paper, we examine the structure of the system of cardinal numbers and the processes of forming complex numbers in Efik. Complex numbers are formed from addition, subtraction or multiplication of the basic units which are 1-5, 10, 15 and 20 or from a combination of addition and multiplication and/or subtraction. *Ye* is the particle for addition, *-suk* is the subtraction marker and multiplication is indicated by a zero allomorph. The general pattern of numeration in Efik is iterative. Our assumption is that the analysis of the number system in Efik has some linguistic implications as it triggers certain grammatical phenomena in the language.

Keywords: Efik, number systems, African languages

RÉSUMÉ

Cet article est une réponse à Olderroge (1984) qui prétend que la langue éfik ne dispose pas de numéros au-delà de mille, conclusion basée sur le mot *tosin* (‘mille’), un prêt récent de l’anglais qui est assimilé phonologiquement a l’éfik. Nous disputons cette conclusion et montrons que l’éfik peut compter à 999,999 et que ce prêt de l’anglais est employé pour son aise de prononciation et non pas pour suppléer les ressources internes de la langue. Cet article examine le système en éfik de numéros cardinaux et du procès de former les numéros complexes. Les numéros complexes sont formés par l’addition, la soustraction, ou la multiplication des unités de base qui sont 1 à 5, 10, 15, et 20 et une combinaison d’addition, de soustraction, ou de multiplication. *Ye* est le particle employé dans l’addition, *-suk* est le marqueur de la soustraction, et la multiplication est indiquée par un allomorph zéro. Le modèle de numération en éfik est iteratif. Nous concluons que l’analyse du système de numéros en éfik a des implications linguistiques, comme elle débranche certaines phénomènes grammaticaux dans la langue.

Mots-clés : éfik, systèmes de numération, langues africaines

1. Introduction

An important subset of the concept of literacy is the skill of numeracy, which entails an ability to understand and work with numbers. People are not necessarily required to be literate to possess the skill of numeracy or to understand counting operations in a given language. Every language community has its system of number, which is acquired as a

part of the overall language acquisition/learning process. This knowledge enables an individual to function effectively in the society, especially in meeting the daily demands of social life, which include among other things representation of amount or quantity, account number for banking transactions, telephone number for day-to-day contacts, and even in locating residential addresses, hotel rooms or office accommodation. In this concern, numeracy is an important subcomponent of functional literacy.

In this paper, we investigate the structure of the system of numbers in Efik, a Lower-Cross language spoken predominantly in Southern Cross River State, Nigeria. We examine the representation of number in quantity and amount, the system of forming complex numbers, counting operations, and the grammatical processes that can be signaled by number derivation in addition to the syntactic representation of number. In the discussion that follows, we describe the structure of number with particular emphasis on quantity.

2. The structure of numbers (quantity)

Efik exhibits a positional numeral system in which each position relates to the basic unit by subtraction, addition and/or subtraction value representation. According to Ore (1988: 16), the positional systems are based upon the principle of local value, so that a symbol designates a value or class which depends on the place it takes in the numeral representation. The basic units of number or the lexical numeral in the language are as follows:

1. kíét - 'one'
   íbá - 'two'
   ítá - - 'three'
   ínáñ - 'four'
   ítíón - 'five'
   dúóp - 'ten'
   éfút - 'fifteen'
   édíp - 'twenty'

It is from these units that every other number constitutes complex numeral in the language is derived by the process of addition, subtraction or multiplication of a basic unit with another. For instance, the numbers 6-9 are derived as follows:

2(a) ítíón yé kíét → (5 + 1) ítiókíét
five and one
'six'

2(b)

2(c) ítión yé ítá → (5 + 3) ítiáitá
five and three
'eight'

2(d) (dúóp)súk- kíét → (10 - 1) úsúk- kíét
ten less one
'nine'

The derivation strategy here especially in 2(a) – (c) is basic unit + Xy. These numbers are formed by segment deletion of the final consonant of the basic unit in the case of (a) and the final syllable in (b) and (c), which are substituted with the low central vowel /a/. 2(b) also involves the deletion of the initial vowel sound of the following unit of number. The particle *ye* which indicate addition is completely deleted in the derivation. In 2(d), úsúk-kíét 'nine' has the value one less than the value of a base. The remainder is the value of the derived number. The numbers 11-14 are derived as follows:

3(a) dúóp yé kíét → (10 + 1) dúópekíét
ten and one
'eleven'

3(b) dúóp yé íbá → (10 +2) dúóp ebá
ten and two
' twelve'

3(c) dúóp yé ítá → (10 +3) dúóp etá
ten and three
'thirteen'

3(d) dúóp yé ínáñ → (10 + 4) dúóp enáñ
ten and four
'fourteen'

Here, the number derivation is structured by an additive system of decimal representation of two bases. We have seen that the addition particle *ye* has its consonant /y-/ completely deleted in the derivation. In 3(a) – (d) the e sound functions as an epenthetic vowel. It brings about the elision of the first vowel of the root words, which is mainly high front vowel /i/. This same counting operation is used to derive the numbers 16-19.

4(a) efút yé kíét → (15 + 1) éfútékíét
fifteen and one
'sixteen'

4(b) éfút yé íbá → (15 + 2) éfútéba
fifteen and two

‘seventeen’

4(c) éfút yé ítá → (15 + 3) éfútéta
fifteen and three
‘eighteen’

4(d) éfút yé ínáñ → (15 +4) éfúténañ
fifteen and four
‘nineteen’

The numbers 20-39 involve the addition of the number 1-19 to twenty. As we can see in 5:

5 édíp → (20)
‘twenty’

édíp yé kíét → (20 + 1)
twenty and one
‘twenty one’

édíp yé íbá → (20 + 2)
twenty and two
‘twenty two’

édíp yé ítá → (20 + 3)
twenty and three
‘twenty three’

édíp yé ínáñ → (20 + 4)
twenty and four
‘twenty four’

édíp yé ítión → (20 + 5)
twenty and five
‘twenty five’

édíp yé ítiókíét → (20 + 6)
twenty and six
‘twenty six’

édíp yé itiábá → (20 + 7)
twenty and seven
‘twenty seven’

édíp yé ítiáitá → (20 + 8)

twenty and eight
‘twenty eight’

édíp yé úsúk- kíét → (20 + 9)
twenty and nine
‘twenty nine’

édíp yé dúóp → (20 + 10)
twenty and ten
‘thirty’

édíp yé dúópekíét → (20 + 11)
twenty and eleven
‘thirty one’

édíp yé dúópebá → (20 + 12)
twenty and twelve
‘thirty two’

édíp yé éfútéta → (20 + 13)
twenty and thirteen
‘thirty three’

édíp yé éfúténañ → (20 + 14)
twenty and fourteen
‘thirty four’

édíp yé éfút → (20 + 15)
twenty and fifteen
‘thirty five’

édíp yé éfútékíét → (20 + 16)
twenty and sixteen
‘thirty six’

édíp yé éfútéba → (20 + 17)
twenty and seventeen
‘thirty seven’

édíp yé éfútéta → (20 + 18)
twenty and eighteen
‘thirty eight’

édíp yé éfúténañ → (20 + 19)
twenty and nineteen
‘thirty nine’

However, the derivation of the numbers 40, 60 and 80 take different counting operations:

6(a) àbà - (2 x 2 x 10) forty
6(b) átá - (3 x 2 x 10) sixty
6(c) ánáñ - (4 x 2 x 10) eighty

This counting system involves both addition and multiplication of basic units by the power of base 10, that is, ($10^{x + x}$). Àbà is derived from iba 'two' ata from ita 'three' and ánáñ from ínáñ 'four'. The replacement of the initial vowels of these elements from /i/ - /a/ implies the doubling of the units which are then multiplied by 10 to achieve the derivation. From the numbers 41-59, 61 – 79 and 81-99 involve the addition of the numbers 1-19 to the units of 40, 60 and 80 respectively. However, the derivation of 100 is somehow different from the above operation.

7. íkíé → kíét (1 x 10 x 10)
'one hundred'

Íkíé 'one hundred' is clearly derived from *kíét* 'one'. The phonological operation involves the deletion of the coda consonant in kiet and the insertion of the initial vowel in íkíé. The counting operation continues by adding 1-99 until we derive 200 -999.

We disagree with Olderroge (1984) who argues that the numeration system of Efik developed only in the 19th century because of the use of the word 'tosin' for 1000, which he feels is an adoption of the English word 'thousand'. Thousand in Efik counting system is also a derivation from the basic units:

8(a) íkíé dúóp (100 x 10)
hundred (by) ten
'one thousand'

The multiplication particle, which is indicated by zero allomorph, is used to differentiate between a thousand and a hundred and ten:

8(b) íkíé yé dúóp (100 +10)
hundred and ten
'one thousand and ten'

We posit that the adoption of the form 'tosin' is simply for economy but not as a result of absence of equivalence vocabulary. The system of number can hardly be separated from the history of the people. Granted that as early 15th century, the Efik had had contact with Portuguese supercargoes, and manilla was identified as the currency in use side by

side with the barter economy, which was a dominant practice. The Efik could not just have adopted English 'tosin' to develop its system of numeration. It is also argued that the word 'tosin' was introduced to the Efik counting system due to contact with other neighbouring languages. The word has equally been introduced to many other languages along the Atlantic coast like Ibibio, Igbo, Lokaa and Ejagham, for various reasons, one being openness to Europeans. The Efik number operation can be constructed up to a million. Anana ibat 'million' (lit. 'uncountable') is certainly a recent adoption. The general view is that the people did not have the need for such extensive and advanced counting operations. They could however count up to several millions if need aptly arises. Other complex number derivation in Efik can be seen as follows:

	Complex number	**Extended form**
9(a)	1,001 → íkíé dúóp yé kíét hundred (by) ten and one 'one thousand and one'	(100 x 10 + 1)
9(b)	1,070→ íkíé dúóp yé átá yé duop hundred (by) ten and sixty and ten 'one thousand and seventy'	(100 x 10 + 60 + 10)
9(c)	1,100→ íkíé dúóp yé íkíé hundred (by) ten and one 'one thousand one hundred'	(100 x 10 + 100)
9(d)	2,000→ íkíé édíp hundred (by) twenty 'two thousand'	(100 x 20)
9(e)	5,000→ íkíé ánáñ yé dúóp hundred (by) forty and ten 'five thousand'	(100 x 40 + 10)
9(f)	10,000→ íkíé íkíé hundred (by) hundred 'ten thousand'	(100 x 100)
9(g)	100,000→ íkíé íkíé dúóp hundred (by) hundred (by) ten 'one hundred thousand'	(100 x 100 x 10)
9(h)	200,000→ íkíé íkíé édíp hundred (by) hundred (by) twenty 'two hundred thousand'	(100 x 100 x 20)

9(i) 500,000→ íkíé íkíé yé àbà yé dúóp (100 x 100 + 40 + 10)
hundred (by) hundred and forty and ten
'five hundred thousand'

9(j) 900,000→ íkíé íkíé yé ánáñ yé dúóp (100 x 100 + 80 + 10)
hundred (by) hundred and eighty and ten
'nine hundred thousand'

9(k) 999,999→ íkíé íkíé yé ánáñ yé dúóp énáñ (100 x 100 x 80 + 19)
hundred (by) hundred and eighty and nineteen
'nine hundred thousand nine hundred and ninety-nine'

3. Linguistic devices in Efik counting concepts

In the course of this research we discover that the system of counting in Efik interacts with a number of linguistic operations which are relevant for the derivation to take place. Some of these linguistic devices include nominalization, co-ordination, deletion, vowel harmony and vowel elision. In the discussion that follows, we discuss each of these processes:

The only case of nominalization is found in the derivation of the number 9 as we can see in 10:

10. súk kíét → ú - sʊ́rk kíét (10 – 1) 'nine'
(less one) (? less one)

The derived compound noun that yields nine is derived from the adverbial root in (a). Going by the lexical phonology rule, the adverbial root being the post-lexical component is introduced into the lexicon for nominalization through prefixation (Urua 2001). Observe that the initial input to the compound form in (b) is affected by tonal modification. The normalized prefix is introduced as having a specific definite referent, which is the number 10. Therefore, 9 is derived as *dúóp úsʊ́rk kíét* 'ten minus one'. This type of compounding process is known as Synthetic since it involves the creation of a compound noun from an adverb. Another type of compounding process that is used as a counting device in Efik is endocentric, in which the one of the elements a head:

11(a) íkíé - íbá → (100x 2)
hundred two
'two hundred'

11(b) íkíé - ítíón → (100 x 5)
hundred five

'five hundred'

11(c) íkíé - dúóp → (100 x 10)
hundred ten
'one thousand'

In 11 (a)-(c), *íkíé* 'hundred' is the dominant constituent of the expressions syntactically. The non-head elements *íbá* 'two', *ítíón* 'five', and *dúóp* 'ten' respectively function as modifiers of the head. They specify the source of the derivation. However, this kind of derivation violates Williams's (1981:48) Right-hand Head Rule (RHR) which says that '…in morphology, we define the head of a morphologically complex word to be the right-head member of that word'. This goes to show that this principle does not apply universally.

An important lexical device that is employed in the counting system of Efik is the use of co-ordinator *yé* 'and' to link figures or elements of the same syntactic equivalence, justifying Carmie's (2006:53) claim that 'coordinate structure that are constituents of the same syntactic category can be conjoined'. Allerton (1979:197) also maintains that … the basic notion of co-ordination is one of parallel grouping of equals; no element is downgraded, all coordinated elements are on par with each other. The use of *yé* 'and' is very productive in number derivation. In all cases, it has a basic meaning of addition.

12(a) edip yé dúóp → (20 + 10)
twenty and ten
'thirty'

12(b) edip yé ítíón → (20 + 5)
twenty and five
'twenty five

12(c) íkíé yé dúóp → (100 + 10)
(hundred and ten)
'one hundred and ten'

In 12, the conjunction *ye* 'and' is interpreted collectively since it has no unique lexical or content meaning. We discovered that there are instance where the entire coordinator *ye* 'and' is deleted when its additive meaning changes to being multiplicative:

13(a) íkíé íbá → (100 x 2)
hundred two
'two hundred'

13(b) íkíé dúóp → (100 x 10)
hundred ten
'one thousand'

13(c) íkíé édíp → (100 x 20)
hundred twenty
'two thousand'

The insertion of the coordinator ye between these pair of numeral element in 15 (a) – (c) will yield different counting results as we can see in 16:

14(a) íkíé yé íbá → (100 +2)
hundred and two
'a hundred and two'

14(b) íkíé yé dúóp → (100 + 10)
hundred and ten
'a hundred and ten'

14(c) íkíé yé édíp → (100 + 20)
hundred and twenty
'a hundred and twenty'

The implication here is that complex numbers involving the co-ordinator 'yé' encodes additive meaning while those without it have multiplicative meaning.

Further instances of this can be seen in 15, where the harmony is not only progressive but complete:

15(a) ítíón yé íbá → ítíábá (5 + 2)
five and two
'seven'

15(b) ítíón yé ítá → ítíátá (5 + 3)
five and three
'eight'

The numbers in 15 are derived as a result of the deletion of the consonant of the coordinator ye 'and'. The choice of the vowel of the co-ordinator is determined by the vowel of the following root form. The use of *ye* with its additive meaning can be iterative:

16 (a) édíp yé éfút yé ínáñ → édíp yé éfút énáñ (20 + 15 + 4)
twenty and fifteen and four

'thirty nine'\

16(b) íkíé yé ata yé éfút yé íbá → ikie átá yé éfút ábá (100+ 60 + 15 + 2)
hundred and sixty and fifteen and two
'hundred and seventy seven'

16(c) íkíé édíp yé édíp yé éfút yé ítá → (100 x 20 + 20 + 15 + 3)
hundred by twenty and twenty and fifteen and three
'two thousand and thirty eight' (íkíé édíp yé édíp yé éfút éta)

The iterative nature of *yé* 'and' makes the number system to exhibit the property of recursion, which can yield longer versions of complex numbers. This can be related to the nesting property of language which a descriptively adequate grammar should be able to account for.

In Efik, the free morpheme /ikv-/ is usually attached to a numeral to create a new word meaning 'X times'.

17	**numeral**		**underlying form**	**derived form**	
17(a)	Ítíon	'five'	Íkó itíon	íkótión	'five times'
17(b)	Ìbà	'two'	Íká ibá	Íkáibá	'two times'
17(c)	Ítá	'three'	Íká itá	Íkátá	'three times'
17(d)	Ítiábá	'seven'	Íká Ítiábá	Íkátĭábá	'seven times'

We have observed that when the /ikv-/ morpheme is attached to the numeral form, certain phonological processes are triggered. First, there is vowel assimilation between the terminating vowel of the prefix and the vowel of the second syllable root. Secondly, in the disyllabic stem in 6(a) – (c), as a result of prefixation, an underlying short vowel which occurs in the final position of /ikv-/ will be lengthened. The underlying final vowel of /ikv-/ in 6 retains its height when it is not attached to numeral roots, but when it occurs with the numerals, the terminating vowel of /ikv-/ becomes long, and no short vowel is found after a prefix. This is what Okrand (1984:125) calls "short vowel constraints". It has also been observed that the initial vowel of the numeral is deleted by syncope rule.

4. Ordinal numerals

So far, we have limited our discussion on numbers and counting concepts in Efik to the cardinal numbers. Here, we investigate the processes of forming ordinal numbers in Efik. The ordinal number is used to indicate relative position of items in an ordered sequence in such a way that an order of referent is related to another. In English, ordinal numbers are derived from cardinal numbers by a method of attaching a suffix to the latter. In Efik,

however, there are only two ordinal numbers found in the lexicon; *ákpá* 'first' and *ákpátrê* 'last'. *Údiáná* 'second' is derived from the verb *dián* 'add', which is extended by a derivational suffix and realized through nominalization by prefixation. The others are formed by the addition of the ordinal indicator *óyóhó* to the cardinal number:

18(a) óyóhó ítá - 'third'
18(b) óyóhó ínáñ- 'fourth
18(c) óyóhó dúóp -'tenth'
18(d) óyóhó édíp- 'twentieth'

Oyóhó here can be understood as the 'order of sequence', which equals English ordinal suffix, -th. The major difference between the morphological structure of ordinal and cardinal numbers is that cardinal numbers cannot take plural markers, which the ordinal numbers can:

19(a) mme óyóhó ítá - 'third (pl)'
19(b) mme óyóhó ínáñ - 'fourth (pl)'
19(c) mme óyóhó dúóp - 'tenth (pl)'
19(d) mme óyóhó édíp - 'twentieth (pl)'

20(a)* mmé ítá - 'three (pl)'
20(b)* mmé ínáñ -'four (pl)'
20(c)* mmé dúóp - 'ten (pl)'
20(d)* mmé édíp - 'twenty (pl)'

From the Efik data, we can see that ordinal numbers express not just positions within a sequence, that determine regularity, frequency or size, which themselves can be marked for number, whereas the cardinal number basically indicates quantity. Although in English, the reverse is the case where cardinal numbers take plural forms as in twos, threes, fours, tens, twenties and so on and where the ordinal number cannot take plural inflection.

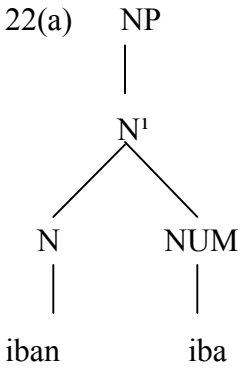
5. Syntactic representations

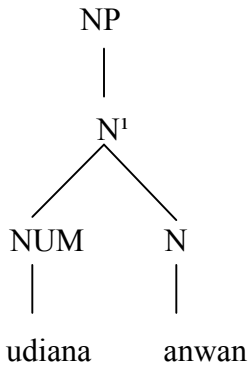
In this section, we examine aspects of the syntax of numerals in Efik. The two categories of number; cardinal numbers and ordinal numbers occur as modifiers of nouns within the overall noun phrases. According to Dryer (2005), the cardinal number indicates how many referent the NP denotes, while the ordinal numbers specify a referent in terms of its order with respect to other referents. The two number categories exhibit different syntactic behaviours within the NP structures in Efik. The cardinal number follows the head noun, while the ordinal number precedes it:

21(a) íbán íbá
women-PL two

‘two women’

21(b) údiáná ánwàn
second-DEF woman-SG-DEF
‘(the) second woman’

22(a) 

(b) 

The tree diagrams in 22(a) and (b) show the constituency and sequence relations between the head nouns and the numeral items. In (a), the cardinal number *íbá* ‘two’ post modifies the noun *íbán* ‘women’ in this way; it complements the meaning of the noun. However, if the discourse participants have background knowledge of the noun, the numeral complement can stand on its own to convey sense, leaving the unexpressed noun in the context of conversational experience. In this way, number can be conceptualized pragmatically in Efik. In (b), the ordinal number *údiáná* ‘second’ functions as a modifier of the head noun nwàn ‘woman’. The numeral items exist in a close relationship with the head nouns and they either precede or follow them.

Cardinal numerals in Efik can function as determiners in expressing indefiniteness. Mensah (in prep) maintains that the most common lexical device used in expressing indefiniteness is the numeral *kíét* ‘one’, which can inflect for number and case:

23(a) ówó kíét
person-SG-ACC INDEF
‘a/one person’

23(b) ákpákáhá kíét
chair-SG-ACC INDEF
‘a/one chair’

The use of the determiner *kíét* ‘one’ is generic and indicates that the noun which it modifies is not known to the discourse participants. The use of this numeral determiner

triggers accusative case, (which is not marked by inflection in Efik) on the noun irrespective of the syntactic structure of the phrase.

When ordinal numerals occur within a NP, we observed the phenomenon of tone dropping, which affects the noun they modify:

24(a)	étó tree '(a) tree'	25(a)	èkpàt bag '(a) bag'
24(b)	ákpá étò NUM tree-SG '(the) first tree'	25(b)	údiáná ékpàt NUM bag-SG '(the) second bag'

In 24(b) and 25(b), the tone of the head noun is totally dependent on the tone of its numeral modifiers, where a HH and LL structures have dropped to become HL. In other words, the sequence of modifier and noun require the noun to drop its tone before its modifier. It is only numerals and adjectives that can affect the morph-syntactic structure of NPs in this way in Efik. This evidence shows that the behaviour of tones is equally significant to the structure of NP in addition to linear order of elements. Another morphosyntactic property of numeral in Efik is that both cardinal and ordinal numbers can be used as pronouns and adjectives respectively in the language:

26(a) Ń- dí ówó kíét á- má -dé ndító
1SG be person NUM 3SG love PRESchildren
'I am someone that loves children'

26(b) M- ké- mén ákpá ítié ké úfòk-ńwèd
1SG PAST take NUM place PREP school
'I took first position in school'

The cardinal numeral in 26(a), *kíét* 'one', which modifies the noun *ówó* 'person' functions as the indefinite pronoun someone or somebody in English. This is however possible only if the referent of the noun denotes a singular person. In (b), the ordinal numeral *ákpá* 'first' modifies the noun *ítié* 'position', which has a prepositional complement.

6. Concluding remarks

In this paper, we argue in line with Nelson and Toivonen (2000:188) that once the set of rules for forming numeral has been acquired, a speaker of a language is able to compute and generate an unlimited number of numerals, contrary to Olderroge's (1984) claim that Efik does not have a system of forming complex numerals beyond a thousand. We have

identified the basic units of numbers as the lexical numerals from which complex numerals are derived. We discovered that the system of numeration can trigger significant linguistic processes such as nominalization, insertion, elision, weakening as well as being sensitive to syntactic representations, especially as modifiers within the noun phrase. Our assumption is that the need to understand and work with numbers is fast becoming increasingly compelling in our contemporary society given the challenges posed by the revolution in information and communication technology, therefore every culture's system of numeration ought to trigger significant research interest.

ACKNOWLEDGEMENT

I wish to express gratitude to an anonymous reviewer, who made invaluable contribution that has saved this work from a number of inaccuracies.

REFERENCES

Allerton, D. J. 1979. *Essentials of grammatical theory: A consensus view of syntax and morphology.* London: Routledge and Kegan Paul.

Camacho, J. 2001. *The structure of NP coordination.* Dordrecht: Kluwer Academic Press.

Carnie, A. 2002. *Syntax: A generative introduction.* Oxford: Blackwell.

Dryer, M. 2006. Noun phrase structure. In *Complex constructions, language typology and syntactic description,* ed. *T.* Shopen, vol.2. Cambridge: Cambridge University Press, 1-46.

Mensah E. O. (in prep.) "The structure of noun phrases in Efik". Ms., University of Calabar.

Nelson, N. and I. Toivonen, 2000. Counting and the grammar: Case and numeral in Inari Sami, ed. Nelson, D & P. Foulkes. In *Leeds Working Paper in Linguistics* 8:179-192.

Okrand, M. 1979. Metathesis in Costanoan grammar. *International Journal of American Linguistics* 45(2):123-130.

Olderroge, D. A. 1984. Systems of numeration in the languages of people of Tropical and Southern Africa. In *Ethnograficheski Sbornik*, Leningrad.

Ore, O. 1988. *Number theory and its history*. New York: Dover Publishers.

Urua, E. 2001. On Ibibio compounds*. Kiabara: Port Harcourt Journal of Humanities*

2(7):1-14.

William, E. 1981. On the notion of ‘lexically related’ and ‘head of a word’. *Linguistic Inquiry* 12:245-274.