An Analysis of the Etulo Counting System

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Abstract: This paper examines the numeral system of Etulo, an Idomoid language spoken in Benue state, Nigeria. It discusses the features of the Etulo traditional counting system; as well as an evolving modern counting system which has considerable influence from the decimal system used in Hausa. The modern system of counting is mostly preferred or used by the younger generation of Etulo speakers. Etulo basically adopts the vigesimal system for its traditional counting. Some numerals are formed by compounding and other periphrastic means. Ordinal numbers are derived from cardinal numbers by the expression onwi. In the noun phrase, cardinal and ordinal numbers follow the noun and precede the demonstrative. Mathematical processes such as subtraction, addition, and division are mostly expressed by verbs.

I. INTRODUCTION

Etulo is classified as an Idomoid language of the Benue Congo subgroup of the Niger Congo language family (Armstrong 1989). It is spoken in some parts of Benue and Taraba states in Nigeria. This study focuses on the variety spoken in the Etulo speech community of Adi (Katsina-ala LGA) of Benue state. Etulo coexists alongside some other languages like Tiv, Hausa, Idoma, Igede etc. which are all spoken in Benue state and are more dominant. The Etulo language data analysed in this paper are represented using IPA (International Phonetic Alphabet).

Languages adopt different strategies in building up numeral systems. In a cross-linguistic study, Comrie (2005) groups numeral systems into six types. Among them are the decimal, vigesimal, hybrid vigesimal-decimal and extended body part system. The most common of these systems is the decimal. English and Mandarin for instance, present a decimal system. This is also the case for many languages of Europe. Other languages such as Yoruba, Igbo (West African) and Chukchi (Siberia) operate with a vigesimal system (cf: Comrie 1999). In the traditional system, Etulo adopts the vigesimal system. However, in modern usage, many Etulo speakers, (especially the young generation) use numeral terms attested in other dominant languages such as Hausa and English, which are spoken alongside Etulo in the Benue speech community. Mmadike and Okoye (2008) give a description of a semi modern Etulo numeral system evolving from the counting system of Hausa where terms such as deli (ideli) ‘hundred’ and dubu (idubu) ‘thousand’ are borrowed from Hausa to express higher numerals in Etulo. As for semantics and function, numerals may be derived from cardinals via morphological and syntactic means (cf: Stolz and Veselinova 2005).

This paper examines the numeral system of Etulo with focus on the distinction between cardinal, ordinal and distributive numerals. The phonological, morphological and syntactic properties of these numerals are established. The most common way of deriving higher numerals in Etulo is by compounding and other periphrastic means.

The rest of the paper is organized as follows: In § 2, I discuss the formation of cardinal numerals; outlining the differences between the traditional and modern counting systems. The derivation of ordinals from cardinal numerals is discussed in § 3.0. In § 4 and 5, distributive numerals and arithmetic operations are briefly discussed. This is followed by the conclusion in §6.0.

II. CARDINAL NUMERALS

Traditionally, Etulo presents a vigesimal system. Base twenty is used consistently, such that forty is expressed as two twenties and hundred as five twenties. In modern usage however, hundred is alternatively expressed by the basic form ideli ‘hundred’ which is borrowed from Hausa. Cardinal numerals in Etulo consist of simple and complex forms. Cardinals realized as simple forms include the numerals 1-10, and 20. Below are some examples:

1) ọnị ‘one’
2) ọbụ ‘two’
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étá ‘three’
éné ‘four’
edá ‘five’
egín ‘six’
egíáfá ‘seven’
egíáta ‘eight’
egíání ‘nine’
ijúó ‘ten’
osú ‘twenty’

Cardinal numerals realized as complex forms are derived by either compounding or addition. For numbers such as 50, 70, 90, and other higher numerals, both strategies are involved.

2.1 Cardinal numerals formed by compounding

Some numerals are derived by combining or juxtaposing two other numerals without a linking element. For instance, the numeral ọnwúsè èfá ‘forty’ is derived by combining ọnwús ‘twenty’ and èfá ‘two’. In compounding, ọsú ‘twenty’ is realized as ọnwús ‘twenty’. It is not yet clear what sort of process (phonological/morphological) is involved. The literal translation of forty in Etulo would thus be ‘two twenties’.

In actual speech, there is assimilation of the final vowel of ọnwús by the initial vowel of èfá or any other numeral that follows. With regressive assimilation, onwusè èfá becomes ọnwúsè èfá ‘forty’. The tone of the assimilated vowel is retained. Below are some examples of cardinal numeral compounds:

2a) ọnwúsè èfá ‘forty’ 2b) ọnwúsè ènè ‘eighty’
twenty two        twenty four

c) ọnwúsè ètá ‘sixty’ 2d) ọnwúsè èdá ‘hundred’
twenty three      twenty five

2.2 Cardinal numerals formed by addition

Some numerals are derived by adding any numeral to a base of ten or twenty. This is achieved by the use of the verb dù ‘add’. This verb is sometimes replaced by its variant d̀n especially in the derivation of numerals above forty (3a-e). The numerals 11–19, for instance, are formed by the addition of lower numerals to a base of ten, while 21–39 are derived by adding lower numerals to a base of twenty. In actual speech, the vowel of the verb assimilates to the following vowel.

<table>
<thead>
<tr>
<th>11–19</th>
<th>21–30</th>
<th>31–39</th>
</tr>
</thead>
<tbody>
<tr>
<td>ijúó dà ònìlì ‘eleven’</td>
<td>osú dà ònìlì ‘twenty one’</td>
<td>osú dà ijúó dà ijúó ònìlì ‘thirty one’</td>
</tr>
<tr>
<td>ijúó dà èfá ‘twelve’</td>
<td>osú dà èfá ‘twenty two’</td>
<td>osú dà ijúó dà ijúó èfá ‘thirty two’</td>
</tr>
<tr>
<td>ijúó dà ètá ‘thirteen’</td>
<td>osú dà ètá ‘twenty three’</td>
<td>osú dà ijúó dà ijúó ètá ‘thirty three’</td>
</tr>
<tr>
<td>ijúó dà ènè ‘fourteen’</td>
<td>osú dà ènè ‘twenty four’</td>
<td>osú dà ijúó dà ijúó ènè ‘thirty four’</td>
</tr>
<tr>
<td>ijúó dà èdá ‘fifteen’</td>
<td>osú dà èdá ‘twenty five’</td>
<td>osú dà ijúó dà ijúó èdá ‘thirty five’</td>
</tr>
<tr>
<td>ijúó dà ègíin ‘sixteen’</td>
<td>osú dà ègíin ‘twenty six’</td>
<td>osú dà ijúó dà ijúó ègíin ‘thirty six’</td>
</tr>
<tr>
<td>ijúó dà ègíáfá ‘seventeen’</td>
<td>osú dà ègíáfá ‘twenty seven’</td>
<td>osú dà ijúó dà ijúó ègíáfá ‘thirty seven’</td>
</tr>
<tr>
<td>ijúó dà ègíátá ‘eighteen’</td>
<td>osú dà ègíátá ‘twenty eight’</td>
<td>osú dà ijúó dà ijúó ègíátá ‘thirty eight’</td>
</tr>
<tr>
<td>ijúó dà ègíání ‘nineteen’</td>
<td>osú dà ègíání ‘twenty nine’</td>
<td>osú dà ijúó dà ijúó ègíání ‘thirty nine’</td>
</tr>
<tr>
<td>ijúó dà ijúó ‘thirty’</td>
<td>osú dà ijúó ‘twenty ten’</td>
<td>osú dà ijúó ‘twenty ten’</td>
</tr>
</tbody>
</table>

1 Some native speakers prefer using the term nwuso in place of onwuso. Examples: nwúsò èfá ‘forty’, nwúsò ètá ‘sixty’ etc. In the derivation of cardinal numerals therefore, the numeral ‘twenty’ is realized as either onwusè or nwúsè.

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2.3 Cardinal numerals formed by compounding and addition

Other numerals are derived by compounding and addition. They generally have a base of twenty and include many numerals above forty. Tens based on odd numerals such as 50, 70 and 90 fall under this group. They are constructed with the pattern $XN + Y = Z$ where $XN$ is the compound numeral, $Y$ the added lower numeral and $Z$ the resulting numeral. Consider the following examples:

3a) ònwúsè ēfà dón ópǐi ‘forty one’
   twenty two  add one

b) ònwúsè ēfà dón ǐjūò ‘fifty’
   twenty two  add ten

c) ònwúsè ẹtà dón ǐjūò ‘seventy’
   twenty three add ten

d) ònwúsè ènè dón ǐjūò ‘ninety’
   twenty four add ten

e) ònwúsè èdá dón ègíá tà ‘hundred and eight’
   twenty five add eight

When the borrowed numeral term èdèlí is used, numerals such as èdèlí ètá dón ópǐi ‘three hundred and ten (literal: three hundreds add ten)’, èdèlí ópǐi dón ègíá tà ‘one hundred and seven’ are realized.

Following the traditional numeral system of Etulo, one could possibly count (in hundreds) up to 600 in a fairly simple way using a base of twenty. Numerals (in hundreds) above 600 involve more complexity and ambiguity. This is probably one of the reasons why native speakers now resort to the use of èdèlí in the expression of hundreds and idúbú for the expression of thousands (see Mmadike and Okoye 2008). The table below provides some illustration:

<table>
<thead>
<tr>
<th>Traditional counting system</th>
<th>Semi-modern counting system (borrowed from Hausa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ònwúsè èdá twenty five ‘one hundred’ idélí ópǐi ‘one hundred’ hundred one</td>
<td></td>
</tr>
<tr>
<td>ònwúsè ǐjúò twenty ten ‘two hundred’ idélí ẹfà ‘two hundred’ hundred two</td>
<td></td>
</tr>
<tr>
<td>ònwúsè ǐjúò dó ǐjúò èdá twenty ten add ten five ‘three hundred’ idélí ẹtà ‘three hundred’ hundred three</td>
<td></td>
</tr>
<tr>
<td>ònwúsè ọsù twenty twenty ‘four hundred’ idélí ènè ‘four hundred’ hundred four</td>
<td></td>
</tr>
<tr>
<td>ònwúsè ọsù dón èdá twenty twenty five ‘five hundred’ idélí èdá ‘five hundred’ hundred five</td>
<td></td>
</tr>
<tr>
<td>ònwúsè ọsù dón ǐjúò twenty twenty ten ‘six hundred’ idélí ègín ‘six hundred’ hundred six</td>
<td></td>
</tr>
<tr>
<td>ude ópǐi ‘one thousand’</td>
<td>idúbú ópǐi ‘one thousand’</td>
</tr>
</tbody>
</table>

### III. ORDINAL NUMERALS

Stolz and Veselinova (2005) observe that in many languages, ordinal numerals are derived from cardinal numerals. Etulo belongs to the category of such languages. Ordinal numerals are derived from cardinal ones by the addition of the morpheme ònwí. For instance, the ordinal onwi onwusè ẹfà ‘fortieth’ is derived from onwusè ẹfà ‘forty’. This form of derivation excludes the ordinal numeral ‘first’, which is realized by two suppletive forms: óvulè and àbábò. Òvulè is exclusively used for kinship terms and functions syntactically as a nominal modifier (constituent of a NP), while àbábò applies to other animate and inanimate entities and is not realized as a constituent of a NP. The use of both ordinals is illustrated below:

4a) ìnjáni li ọnwè óvúlè ńgbí ánì
   PN COP child first POSS 1SG
   ‘Inyani is my first child’
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4b) nɛ́ ɛ́ nɛ́ àjàtù ðìgbì ānì ònwí  ábābọ̀
   this COP  car  POSS 1SG REL.P first
   ‘This is my first car’

4c) rìdà ònwí  ábābọ̀ nwi ānì gíà mà kwùlú wà
   cow REL.P first REL 1SG:SUBJ buy the die PERF
   ‘The first cow that I bought is dead’

4d) ngísì  ònwí ábābọ̀
   person REL.P first
   ‘The first person’

In the formation of ordinals 2–9, a phonological change is observed. The word initial vowel and tone of the numeral is deleted after ònwí and the harmonic vowel [u] is inserted. As an example, ònwí + èfà = onwufa ‘second’. Other examples are listed in table 2 below.

<table>
<thead>
<tr>
<th>Table 3 Ordinal numerals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st - 9th and 20th</td>
</tr>
<tr>
<td>òvúlè/ábábọ̀</td>
</tr>
<tr>
<td>ònwí + èfà → onwufàn</td>
</tr>
<tr>
<td>ònwí + ètà → onwútá</td>
</tr>
<tr>
<td>ònwí + ènè → onwùnùè</td>
</tr>
<tr>
<td>ònwí + èdà → onwùdà</td>
</tr>
<tr>
<td>ònwí + ègín → onwúgīn</td>
</tr>
<tr>
<td>ònwí + ègiàfà → onwùgīàfà</td>
</tr>
<tr>
<td>ònwí + ègiátà → onwùgīátà</td>
</tr>
<tr>
<td>ònwí + ègiàn → onwùgīàn</td>
</tr>
<tr>
<td>ònwí + èsù → onwùsû</td>
</tr>
<tr>
<td>10th - upwards</td>
</tr>
<tr>
<td>ònwí ijùù</td>
</tr>
<tr>
<td>ònwí òsù dì ijùù</td>
</tr>
<tr>
<td>ònwí òn ònwús ëfà</td>
</tr>
<tr>
<td>ònwí òn ònwús ëtæ</td>
</tr>
<tr>
<td>ònwí òn ònwús ënè</td>
</tr>
<tr>
<td>ònwí òn ònwús ënè ëfà</td>
</tr>
<tr>
<td>ònwí òn ònwús ënè ëtæ</td>
</tr>
<tr>
<td>ònwí òn ònwús ënè ëgín</td>
</tr>
</tbody>
</table>

3.1 Cardinal and ordinal numerals as modifiers

In Etulo, cardinal and ordinal numerals may modify the noun in the expression of quantity and hierarchy/position. Etulo falls in the group of languages in which cardinal numerals undergo no change in form as nominal modifiers. As constituents of a noun phrase, the numerals are preceded by the modified noun. In other words, they are post-nominal. There is a relative change in their position (in proximity to the noun) when they co-occur with other nominal modifiers in a NP. For instance, when a cardinal numeral co-occurs with an adjective, it is directly preceded by the adjective (moves farther away from the noun) as in the phrase: àjàtù òfùf èfà ‘three new cars’ (N→Adj→Num). By contrast, in a NP such àjàtù òfùf èfà ñtòn ìñi ‘These three new cars’ where the cardinal co-occurs with another modifier (demonstrative), it is directly preceded by the noun (N→Num→Dem). If for instance, both the adjective òfùf ‘new’ and the demonstrative ñtòn ìñi are involved as in: àjàtù òfùf ìñi òwòù ìñi ‘Those three new cars’, the order realized is N→Adj→Num→Dem. The linking element ìñi is optionally used in NPs comprising numerals in modifying function. More examples are given below:

5a) àfè òsù  ‘twenty books’
   book twenty

5b) àjàtù òsù dì ijùù dì ijùù ìpìì  ‘thirty one cars’
   car twenty add ten add ten one

6a) ònwè ònwúgīn ‘sixth child’
   child sixth

6b) rìdà ònwùtù ‘third cow’
   cow third

IV. DISTRIBUTIVE NUMERALS

According to Seth (2012), distributive numerals are a derived numeral class which indicates that the modified NP ‘is distributed over’ some other entity or event. Thus, it is usually translatable into English as ‘n NPs each’, ‘n at a time’ or ‘n by n’ (where n stands for any numeral). Distributive numerals denote a numerically specified category. They typically answer the question: how many each? Etulo distributive numerals are derived by full reduplication of the cardinal numeral. Consider the following examples:

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V. ARITHMETIC OPERATIONS

In this section, I briefly examine the manner in which arithmetic operations such as addition, subtraction, multiplication and division are realized in Etulo. As shall be seen in the subsequent subsections, these operations are mostly expressed by verbs, except for multiplication. The result of an arithmetic operation is generally introduced by the copula *li* ‘be’.

5.1 Addition

Addition is expressed by the verb *tu* ‘meet’. The use of this verb for addition seems to be common with older speakers. Younger Etulo speakers of Etulo prefer the verb *beke* ‘join/merge’. Examples:

10a) ọpọ̀lọ̀pọ̀ *tu* ेkà *li* ेtà  
   *one* meet *two* COP *three*  
   ‘one plus two equals three’

10b) ेdà *tù* ेdà *li* ẹ̀júọ̀  
   *five* meet *five* COP *ten*  
   ‘five plus five equals ten’

5.2 Subtraction

Subtraction is realized by the verb *dúrú* ‘remove’. The result is introduced by the copula *li* ‘be’, is interchangeably used with the verb *sísí* ‘remain’.

11a) ẹ̀nè *dúrú* ेkà *li* ेkà  
   *four* remove *two* COP *two*  
   ‘Four minus two equals two’

11b) ẹ̀júọ́ *dúrú* ेdà *sísí* ेdà  
   *ten* remove *five* remain *five*  
   ‘Ten minus five equals five’

5.3 Division

Division is expressed by the verb *ɣá* ‘share/divide. It co-occurs with the preposition *mi* ‘in’ in contexts where the dividend precedes the divisor as in (12a). It however functions independently of any other morpheme when the divisor precedes the dividend (see 12b).

12a) ẹ̀nè ɣá *mi* ेkà *li* ेkà  
   *four* share *in* two COP *two*  
   ‘Four divided by two equals two’

12b) ेkà ɣá ẹ̀nè *li* ेkà  
   *two* share *four* COP *two*  
   ‘Two divide four equals two’

5.4 Multiplication

Multiplication involves the use of the noun *àkpé* ‘a number of times’. It’s semantics in an arithmetic operation connotes the cumulation of the multiplied number in a group of one, two, three or more. In spoken form, there is always assimilation of the final vowel of *akpe* before a numeral. For instance, *akpe opiti* becomes *akpo opiti* ‘once’. The resulting sum is introduced by the copula *li* or the verb *je* ‘become’.

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2 Some variations are observed in the realization of arithmetic operations by Etulo native speakers. For addition, some speakers use the verb *beke* ‘join/merge’ together with the preposition *ji* ‘with’ while others use the verb *tu* ‘meet’. The use of *beke* is illustrated below:

i) ेdà *beke* *ji* ेdà *je* ẹ̀júọ̀  
   *five* join with *five* become *ten*  
   ‘five plus five equals ten’

For introducing the corresponding sum realized from arithmetic operations, some informants make use of the copula *li* ‘be’ while others prefer the use of the verb *je* ‘become’.

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13a) ijuó ákpé étá li òsù dó ijuó
ten times three COP thirty
13b) efá ákpé efá li ènè
two times two COP four
‘Ten times three equals thirty’
‘Two times two equals four’

5.5 Fraction
Fractions are expressed by means of the preposition phrase mi ikie ‘from head’ and by qualificatives and nouns such as ajè ‘half’, āgājī ‘half’, itisísi ‘short’ The last three are specifically involved in the realization of ‘half’ as a fraction. The choice is conditioned or determined by the semantic feature of the noun. Examples:

14a) ánì giá itisísi óbá isikápá
1SG buy short bag rice
‘I bought half bag of rice’

14b) ajè āgbúábá kwúlúū
half animal die
‘Half of the animals died’

14c) àdì kíe āgājī ibreadi nū ánì
PN take half bread give 1SG
‘Adì gave me half a loaf of bread’

For other fractions, the prepositional phrase is used, as illustrated below:

15) àdì jí úmí ónjị mi ikié ijuó ángwá mgbí ánì
PN steal theft one from head ten yam POSS 1SG
‘Adì stole one tenth of my yam’

VI. CONCLUSION
The foregoing discussion shows that the traditional numeral system of Etulo which adopts the base of twenty is vigesimal much like what is obtained in some West African languages such as Igbo and Yoruba. Some numerals are formed by compounding and other periphrastic means. The ordinal numerals are derived from the cardinal numerals by the use of the expression onwí. The Etulo vigesimal system is however, relatively restricted and not very user-friendly. Deriving numerals above two hundred becomes quite complex with this system. This has motivated the tendency to borrow from other languages. In particular, in order to express higher numerals (hundreds, thousands, millions), a modern numeral system seems to be evolving, which utilizes numerals borrowed from Hausa, such as ideli ‘hundred’, idubu ‘thousand’ etc.

Etulo is on the verge of losing its traditional counting system, which is mostly used by the older generation. The younger generation prefers to use numerals from other dominant languages spoken in their community, such as Hausa and English. In the near future, it remains to be seen if Etulo will combine its vigesimal system with the decimal system of Hausa and English or replace its traditional counting system entirely.

REFERENCES