



TRANSDERIVATIONAL ANTIFAITHFULNESS IN EKEGUSII NOMINAL PLURALIZATION

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ABSTRACT: *Nominal pluralization in Ekegusii involves combinations of the base with the noun class prefixes. However, little is known about the morphophonemic alternations in nominal pluralization. This study investigated the phonological processes involved in nominal pluralization so as to formulate the phonological constraints within the Transderivational Antifaithfulness theoretical Framework. A descriptive research design was employed to collect, analyze and describe data. The researcher generated a list of 32 plural nominals; at least two plural nominals from each noun class and identified speakers of Ekegusii in Kisii County who verified the data as acceptable. Sample data were obtained from each noun class through purposive sampling, analysed, coded into semantic classes and explained using Anti- Faithfulness Theory provided in Optimality Theory. Findings show that noun Class prefixes induce vowel deletion, alternation, lengthening, consonant mutation and deletion and they occur to simplify articulation and meet the open syllable structure requirements of Ekegusii. The phonological changes mark the winning candidates which satisfy Transderivational Anti-Faithfulness constraints which enforce violation of the related faithfulness constraints.*

KEYWORDS: *Pluralization, Transderivational Anti-Faithfulness, Morphophonemic alternations.*



INTRODUCTION

The present study focused on the description of Ekegusii nominal prefixation, the interface of morphology and phonology and the morphophonological operations that are evident in the bases of plural nominals. Ekegusii is a language spoken by the Bantu people in Kenya settled in two counties; Nyamira and Kisii. They occupy a region which is densely populated and they rely on small scale farming and businesses. The population of Abagusii is approximately 1.5 Million (Cammenga 2002). The ancestral Gusii population entered Kenya from Uganda, moving on from the foothills of Mount Elgon towards their present land. They are settled not only in Kisii, but also in towns, cities and places with fertile soils like Molo and Kitale in the Rift Valley. According to Guthrie (1948) Ekegusii is an E. 42 Bantu language and is classified with Kuria and Logooli in Group 40 of Zone E. Linguistically, the language has a close relationship with Lulogooli, Kuria and Gikuyu. Whiteley (1960) describes it as having linguistic features that agree with those of Logooli, Gikuyu and Kuria especially the seven-vowel system. The language is spoken widely in Kisii in domains like homes, market places and it is taught in lower primary in most rural schools.

Nominal morphology

In morphology, morphemes are units of analysis. The noun consists of morphemes which are combined by word formation processes. It is formed through processes like affixation, compounding and reduplication (Cammenga 2002). This study investigated pluralization of nouns and how the formation of the noun triggers phonological alternations. Inflection is an affixation processes through which words are formed. Inflection characterizes lexemes with features they need when designated in syntactic constructions. Some of the features they mark are case, agreement features and tense. Anderson (1992) defines inflection as the morphology that is relevant to syntax. Agreement and case are morphological processes that encode a relationship with syntax. Inflection is a semantically regular and transparent process where the base and derivative share meaning. This is owing to the fact that the inflected form is different from the uninflected forms in number, case and gender though there is uniformity in their meanings.

The structure of Ekegusii noun consists of the noun class prefix and the base. The noun class prefixes are widely used in Ekegusii nominal pluralization. Noun class prefixes mark the semantic-syntactic categories of singular and plural nouns, so that the stems to which they are attached form a pair of words in singular and plural. Noun Classes 1/2 and 3/4 are illustrated in (1) below.

Class1/2

Singular

Plural

- | | | | |
|-------------------------|-------------|--------------------|--------------|
| (1) a. <i>O-mo-it-i</i> | 'murderer' | <i>a-ba-it-i</i> | 'murderers' |
| b. <i>O-mo-geendi</i> | 'traveller' | <i>a-ba-geendi</i> | 'travellers' |

Class3/4

Singular

Plural

- | | | | |
|------------------------|--------|------------------|---------|
| (2)a. <i>O-mo-tego</i> | 'trap' | <i>e-me-tego</i> | 'traps' |
| b. <i>O-mo-te</i> | 'tree' | <i>e-me-te</i> | 'trees' |



Plural and singular nouns in Ekegusii are marked for number. Number enables the noun to agree grammatically with the adjectives in a noun phrase. The noun may function as a subject of the sentence, direct and indirect object of the verb and as the head in a noun phrase. For example:

(3) *Omoibori(N) omuya(Adj.) oeire(AUX.+V) Mokeira(N) endaagera(N)*

Parent good has given Mokeira food

'A good parent has given Mokeira food.'

The noun *omoibori* functions as a subject in the above sentence, *Mokeira* as the indirect object and *endaagera* functions as the direct object. This is a singular sentence since the subject has a singular prefix *omo-* which it shares with the adjective *omuya*. In this study, the researcher analyses the nominalization pattern of Ekegusii that is mainly through prefixation. Plural formation use Ekegusii noun class prefixes which are presented in Table 1 that follows.

Table 1. Ekegusii Noun Class prefixes.

The table below illustrates the noun class system according to Cammenga (2002) examples for each noun class are also given.

Class	Pre-prefix	Noun class prefixes	Examples	Gloss
1	o-	-mo-	o-mo-boraka	'widow'
1a	∅	∅	Taata	'father'
2	∅	∅	Taata	'father'
2b	a-	-βa-	a-ba-boraka	'widows'
3	o-	-mo-	o-mo-yio	'knife'
4	e-	-me-	e-me-yio	'knives'
5	e-	-ri-	e-ri-ino	'tooth'
	∅	rii-	rii-to	'leaf'
6	a-	-ma-	a-ma-ino	'teeth'
			a-ma-to	'leaves'
7	e-	-ke-	e-ke-rogo	'chair'
	e-	-ge-	e-ge-tonga	'basket'
8	e-	-βi-	e-bi-rogo	'chairs'
			e-bi-tonga	'baskets'
9	∅	-e-	e-yanga	'cloth'
9a	e-	-n-	e-n-daagera	'food'
10	∅	ci-	chi-anga	'clothes'
10a	∅	ci-n-	chi-n-daagera	'foods'
11	o-	-ro-	o-ro-meme	'tongue'
12	a-	-ka-	a-ka-gena	'small stone'
	a-	-ga-	a-ga-ita	'small gate'
14	o-	-βo-	o-bo-taka	'poverty'
15	o-	-ko-	o-ko-ruga	'cooking'
16	∅	a-	a-ase	'place'
21	∅	ña-	nya-ncha	'lakeside'



The noun class system is very important in this study as it gives a clear picture of the classes from which the data analysed are drawn from.

Ekegusii phonetic inventory

Both the vowel system and Consonant systems are presented below since the study analysed phonological alternations in Ekegusii nominal pluralization.

Ekegusii vowel system

Table 2. Ekegusii vowel system

The vowels are presented in Table 2 below: -

	Front		Central		Back	
	Short	Long	Short	Long	Short	Long
High	i	i:			u	u:
Upper mid	e	e:			o	o:
Lower mid	ɛ	ɛ:			ɔ	ɔ:
Low			a	a:		

The vowels in Table 2 above are represented in the following examples:-

Phonetic symbol	orthographic symbol	Ekegusii	Gloss
/i/	i	okorika	'be stuck'
/i:/	i	okoriika	'writing'
/e/	e	kera	'every'
/e:/	e	keera	'by the waterfall'
/ɛ/	e	ogoteba	'becoming impotent'
/ɛ:/	e	ogoteeba	'saying'
/a/	a	okobaka	'fermenting'
/a:/	a	okobaaka	'praising'
/ɔ/	o	ogokona	'ngbewitchi'
/ɔ:/	o	ogokoona	'being annoyed'
/o/	o	okobora	'missing'
/o:/	o	okoboora	'saying'
/u/	u	ogokura	'scratching'
/u:/	u	ogokuura	'screaming'

Consonant system

The consonant inventory of Ekegusii is presented in this section based on the criteria of place and manner of their articulation. Ekegusii consonants are twenty-one in total and voice is distinctive. The prenasalized consonant sounds presented here are seven in total and they are on the last row of the table. The consonants in the Table 3 below have been presented as per Cammenga (2002) and in relation to the researcher's knowledge of Ekegusii sounds as a native speaker.

**Table 3: Ekegusii consonant system**

All the consonants of Ekegusii are presented in table 3 below:

	Bilabial		Alveolar		Alveo-palatal		Velar	
	Voiceless	Voiced	voiceless	Voiced	voiceless	Voiced	Voiceless	voiced
Plosives	p		t				k	
Fricatives		β	s					ɣ
Flapped liquid				r				
Affricate					c			
Nasals		m		n	ñ			ŋ
Semi-vowels		w				y		
Prenasals		mb	nt ns	nd	ñc		nk	ŋg

The 21 consonants in Table 3 above except [w] are illustrated as follows:

Phoneme	Orthography	Ekegusii	Gloss
/β/	b	orobebe	'boundary'
/t/	t	ogoteera	'song'
/k/	k	obokendu	'coolness'
/ɾ/	g	orobago	'fence'
/s/	s	egesieri	'door'
/c/	c	omochaakano	'beginning'
/ɾ/	r	ribaga	'opportunity'
/m/	m	amache	'water'
/n/	n	obobani	'prophecy'
/ŋ/	ng	eng'ondi	'sheep'
/ñ/	ny	omonyenyi	'butcher'
/y/	y	omoyega	'ceremony'
/w/	-	-	-
/mb/	mb	embongi	'weevil'
/nd/	nd	endoro	'bitter thing'
/nt/	nt	omonto	'person'
/ŋk/	nk	enkoko	'chicken'
/ŋg/	ng	eyanga	'piece of cloth'
/ñc/	nch	enchara	'hunger'
/ns/	ns	ensooko	'well'
/p/	p	Apoko	Apoko



Morphophonemics

Morphophonemic alternations involve different forms in which a phoneme is represented. At one point a phoneme is represented by one phonemic shape and sometimes by another or others. For example in English, the plural form of *knife* is *knives*. The sound /f/ changes to /v/ when the plural suffix is attached to the base. In structural terms, [f] alternates with [v] due to suffixation. Morphology is a level of representation above the phonological level. The morphological component entails all the various forms words take by undergoing word formation processes. Morphophonemic alternations apply in contexts that are defined in phonological terms, morphological terms and they generally apply only within words. Morphophonemic changes can either be phonetically conditioned or morphologically conditioned and both alternations occur as a result of the combination of affixes and bases. The phonetically conditioned allomorphy is one of the morphophonological changes which often occur under phonologically defined conditions. In English, the plural affixes change their shape depending on the phonetic context in which they occur. For example, the English plural marker is pronounced as [z], [s] or [iz] depending on the final segment of the root as in frog[z], cat[s], ros[iz]. This study investigated morphophonemics of Ekegusii nominal pluralization so as to establish the morphologically conditioned phonological changes on the plural form compared to the underived form.

LITERATURE REVIEW

The Zulu nominal stem and prefix undergo tonal changes. According to Rycroft (1963:63), certain nouns with ‘full’ prefixes change their tonal pattern which may affect the prefix and in some cases the stem, when they occur in close junction with a preceding word which ends with a ‘low’ consonant. Rycroft likens the foregoing changes to those that occur when nouns are inflected. The changes occur in stable or copulative inflection and with pre-prefixal elements *na-* /*ne-*/ *no-* , concord Noun Classes 8 or *za-* *ze-* *zo-* *lo-* . Rycroft (ibid: 65) explains that nouns that undergo these changes belong to three categories. First, they are those with disyllabic H L prefix except *izi-* in Noun Classes 8 and 10. Second, all nouns in which the prefix has high monosyllabic tone these nouns belong to Noun Classes 9 and 10.

Okombo (1982) explains how the final consonants of the stem show contrast in voice between the singular and plural. The final consonant in plural is voiced while the singular is voiceless and vice versa. Alderete (2001) describes the Luo voicing polarity as an anti-faithfulness instance since the phonetic shapes of the base and derivative vary. For instance, the base *bat* has a voiceless final obstruent [t] while the plural a voiced [d] as in *bede*. This difference is induced by the dominance effect of the plural suffix [e]. Although Okombo analyzes pluralization, the researcher finds the study relevant to this study. It enabled the researcher to analyze Ekegusii consonant mutations in Ekegusii nominal pluralization by using the approach of output- output correspondence relation.

Innes (1971:45) also explains that Mende is characterized by consonant mutations. Mutation comes about due to the contact between word forms and morphemes. He states that ‘most nouns, except those with initial *h,m,n ny* or *η* are within the consonant mutation system, but there are some which are not.’ Nouns other than those with initial *h,m,n,ny, η* outside the consonant mutation are loanwords taken into Mende from Krio and English, for example,



pani 'pan' *Buku*, 'book', personal and geographical names, numerals and words denoting kinship terms and friends. Consonant mutation occurs when the word is second in a compound or genitival phrase and the unmutated form occurs in all other contexts. Some other nouns have a mutated initial consonant when they occur in neither a compound word nor a genitival phrase.

According to Elwell (2005) nouns are derived from verbs through prefixation in Ekegusii. However, he doesn't explain morphophonological processes that are involved in the nominalization process. Since there is no relevant information on the study, the researcher sought to explain morphophonology in pluralization in Ekegusii.

Frazier (2006) analyzed accent alternations in Proto-Indo-European Athematic nouns using the Anti-faithfulness constraints provided in Transderivational Anti-faithfulness theory. She assessed anti-faithfulness in inflectional paradigms in Proto-Indo-European Athematic nouns. In her findings, she explains that each accent pattern is distinguished by either alternating stress or vowel quality between weak forms and strong forms. She presents an argument that surface stress is as a result of the interplay of the lexical accent specifications of the morphemes that comprise the stem. The strong endings are classified as dominant and are responsible for ablaut alternations. Frazier analyzed anti-faithfulness in inflectional paradigms, but in the current study the researcher applies the Transderivational Anti-faithfulness theory to show that just like inflectional morphology, stem modifications can be analyzed using TAF theory in derivational morphology.

Similarly, Park (1995) assessed Swahili syllabic requirements of nouns and reveals that Swahili nouns require a minimum of two syllables. Nouns in Class 11 drop the [u] in formation of plurals as in the singular *ukuta* and the plural *kuta*. Others like [uta] – *Nyuta* N is added to retain disyllabicity in the plural. The results imply that affixation determines Swahili's phonological changes that occur in the struggle to retain disyllabicity. This phenomenon occurs in cases where stems are too small so affixes are added to meet the disyllabic minimality requirement in the language.

Optimality Theory and Transderivational Anti-Faithfulness Theory

The study utilized the constraints of Optimality Theory, Transderivational Anti-faithfulness theory's (TAF) principles and constraints (Alderete 2001) to explain both vowel and consonant alternations. TAF constraints are negations of faithfulness constraints (McCarthy & Prince 1995) and TCT (Benua 1997). Markedness and faithfulness constraints (McCarthy & Prince 1993, 1995) are used to explain data. Markedness constraints impose requirements on the structure wellformedness of the output. The markedness constraints used in this study include: ONSET, NOCODA, NLV and *VV. ONSET requires that syllables must have onsets, NOCODA requires that syllables must be open, NLV prohibits long vowels and *VV prohibits vowel sequences. Faithfulness constraints explain the relation between the input and output. The output form must match the input form in some specific way. Therefore they prevent every input from being realized as a different form in the output. The faithfulness constraints are obeyed if the output candidate is identical in every regard to the input. Markedness and faithfulness constraints conflict in formation of the outputs so that the winning candidate violates the constraints. MAX_IO(X) faithfulness constraint prohibits linguistic feature deletion requiring that input segments must have output correspondents. DEP_IO (X) prohibits linguistic feature insertion and requires that output segments must



have input correspondents. IDENT_IO (X) constraint prohibits linguistic feature mutation, PRENASAL prohibits prenasalization and PARSE- μ constraint requires that all moras are parsed into syllables.

Transderivational correspondence OO constraints (Benua 1997) are also used in explaining data. TCT constraints explain phonetic similarities between base and derivative outputs pairs. They were developed from the original faithfulness constraints which assess input-output pairs but TCT constraints assess output candidates. TCT constraints have a general constraint OO_FAITH- X which requires that every element of the derivative form has a correspondent in the base and vice versa. They borrow the symbols of faithfulness constraints i.e OO-MAX-X etc.

The inadequacies of Transderivational Antifaithfulness necessitated the utilization of other OT constraints in interpreting the data. Anti-faithfulness constraints by Alderete (2001:211-213) were used in identification of the alternating features. \neg OOMAXIMALITY constraint family requires obligatory deletion of at least one x in the s1 to s2 mapping, \neg OODEPENDENCY constraint family requires obligatory insertion of x in S2 not present in S1 and \neg OOIDENTITY (F) constraint family requires that at least one pair of correspondent segments must differ in feature F. TAF constraints can be simplified further as follows:

- \neg OO- MAX – X: requires obligatory deletion of feature X
- \neg OO- DEP- X: requires obligatory insertion of feature X
- \neg OO- IDENT-X: requires obligatory mutation of feature X

Statement of the problem

The morphologically conditioned phonological alternations observed when some morphemes in a language behave distinctly due to morphological processes. The changes occur on the base relative to an unaffixed base or relative to additional prefixes and suffixes. Alternations of this kind are irregular in contrast with the phonologically conditioned ones. Irregular phonological changes are experienced when the derivational affixes are combined with the base to form plurals. Such irregular phonological changes occur when a morphological process triggers processes like deletion of a segment. In Ekegusii, irregularities are observed in nominal pluralization. In pluralization, the following structures are realized:

Singular	plural	gloss
(4) a. <i>.e-ng 'ombe</i>	<i>chi-ombe</i>	'cows'
b. <i>o-ro-teeru</i>	<i>chi-nteeru</i>	'winnowing trays,
c. <i>o-ro-bebe</i>	<i>chi-mbebe</i>	'boundaries'

The bases above exhibit differences in their phonetic content. In example (4) a, the plural prefix triggers deletion of [ŋ], (4b-c) shows prenasalization of the initial consonant of the stem. The alternatives are observed in the base morpheme and they are unique to each base and the resultant word form. The phonological changes shown above occur as a result of the dominance effect of both prefixes and suffixes. Given the phonological alternations that are undocumented, the study sought to study the morphophonemic alternations in Ekegusii



nominal pluralization with an aim of explaining the various phonological processes involved and the constraints guiding them.

Purpose

The purpose of the study is to examine the morphophonemics of Ekegusii nominal pluralization.

Objectives

1. To explore the phonological alterations in Ekegusii nominal pluralization.
2. To formulate the Transderivational Antifaithfulness constraints in Ekegusii nominal pluralization.

RESEARCH DESIGN AND METHODOLOGY

A descriptive design was employed. The data constituted pluralized nouns that were to be analysed in relation to their bases. The researcher generated a list of 32 Ekegusii pluralized nouns. The target population included adult native speakers of the Rogooro dialect of Ekegusii living in Kisii County to verify the data and provide proper spellings and pronunciation. Purposive sampling was used to select two speakers Rogooro dialect speakers in Kisii County. Adult informants were preferred since the researcher was interested in authentic pronunciation and spellings of Ekegusii nouns.

Data Collection

The informants were given a list of nouns which they read out aloud one by one. As they read the list, the researcher recorded the nouns on paper. After the whole process, both the researcher and respondents checked the final copy of the list and agreed that those were the correct nouns as used in the Rogooro dialect. Nouns were obtained from the researcher's knowledge of Ekegusii. The researcher selected between two to five nouns from each noun class so that the selected nouns could act as representative data for each noun class. The nominals were read out aloud to the two respondents who confirmed that they were acceptable words in Ekegusii by proposing the accurate pronunciations that were contentious especially vowel length in some bases. These nominals were then ready for transcription and analysis.

Data Analysis and Interpretation

The plural nouns were classified and analyzed based on the semantic classification of Ekegusii Noun Class system. Further, plural nominals were transcribed morphemically to distinguish the noun class prefixes from the bases then, phonetically to identify the segmental mutations, deletions and insertions the noun class prefixes induce. These morphophonemic alternations are explained using Transderivational Anti-Faithfulness theory.



RESULTS AND DISCUSSION

Pluralization in Ekegusii

Nouns which form plurals were identified and selected for analysis. Data that was collected shows that the Noun Classes which form plurals by the combination of the plural prefix with a nominal base include Noun Classes 1/ 2, 3/ 4, 5/ 6, 7/ 8, 9/ 10, 9a/ 10a, 11/10a, 12/14 and 12/8 whereas Noun Classes 14, 15, 16 and 21 do not have plural concepts. Data on nominal pluralization is divided into eight sections: 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.6, 4.3.7 and 4.3.8 to show some of the phonetic changes displayed in pluralization. The phonological processes are then discussed and finally morphophonemic constraints are formulated to explain the changes. These nouns are presented and discussed under categories provided by Ekegusii Noun Class system.

Personal nouns

The prefixes [*o-mo-*] and [*a-ba-*] are characteristic of this class. Nouns in singular and plural forms are presented in order to show the changes involved in the shift from singular to plural.

Singular		Plural		Gloss
(5) a. o-mo-tureeti	[omoture:ti]	a-ba-tureeti	[aβature:ti]	‘chiefs’
b. o-mw-ana	[omwana]	aba-ana	[aβa:na]	‘children’
c. o-mo-geend-i	[omoge:ndi]	a-ba-geendi	[aβaye:ndi]	‘travellers’

This Noun Class constitutes names of humans and so they are referred to as personal nouns where the singular takes the prefix *o-mo-* while the plural takes *a-ba-*. One of the striking phonetic characteristic of the nouns in (25 a-c) above is vowel length in singular and plural. It is a unique attribute for this Noun Class.

Cultural objects/ parts of the body

The nouns in class 3/4 are marked by the prefix [*o-mo-*] in singular and [*e-me-*] in plural. Some nouns sampled from this class are presented below:

Singular		Plural		Gloss
(6) a. o-mo-gondo	[omoyondo]	e-me-gondo	[emeyondo]	‘farm’
b. o-mo-twe	[omotwe]	e-me-twe	[emetwe]	‘heads’
c. o-mo-te	[omote]	e-me-te	[emete]	‘trees’

Noun Class 3 and 4 denote a variety of things though it is hoped that the data selected for this study will be representative. Based on the above data, the nouns denote trees and different types of trees, parts of the body and those things that the Gusii people do to earn a livelihood as well as those they do as part of their culture. Therefore, the singular and plural prefixes and their semantic characteristics naturally qualify the nouns into this class. There is phonetic regularity in both the singular and plural forms since attachment of the plural prefix to the stem does not show any phonetic modification both on the stem and the prefix.



Man-made objects/ parts of the body/augmentatives

Noun Class 5/ 6 represented by the singular prefix [*e-ri-*] and plural prefix [*a-ma-*] constitute nouns that denote tools, parts of the body and augmentative names of things.

Singular	Plural	Gloss		
(7) a. rii-timo	[ri:timo]	a-ma-timo	[amatimo]	‘spears’
b. e-ri-ino	[eri:no]	a-ma-ino	[amaino]	‘many teeth’
c. rii-saacha	[ri:saaca]	a-ma-saacha	[amasa:ca]	‘huge men’

The term *riitimo* refers to a spear used to fight an enemy or dangerous animals. *Amaino* refers to many teeth and *amasaacha* is the augmentative of *omosaacha* ‘man’. The augmentative form is used with some metaphorical meaning especially when the person referred to is not morally upright. So its usage is accompanied by some contempt and hatred. It should be noted that the nouns in this nominal class can either take a pre-prefix or not depending on the level of specificity that the speaker conveys and the knowledge the hearer has about the term. The pre-prefix is eliminated in cases where both the hearer and the listener have common knowledge about the object as illustrated in Example (7) a) and c) above.

Cultural objects

The nouns under this category are classified in Noun Classes 7 and 8. Nouns in singular have the prefix [*e-ke-*] while those in the plural are marked with [*e-bi-*]. Sample data is presented below.

Singular	Plural	Gloss		
(8) a.e-ke-buse	[ekeβuse]	e-bi-buse	[eβiβuse]	‘clay’
b. e-ke-rogo	[ekeroyo]	e-bi-rogo	[eβiroyo]	‘chairs’

The names in this class denote various objects as shown in (28a-b) above. The Noun Class prefix is used to refer to actual names of things as used in the language without expressing smallness for example (8a-b) above. There were no phonetic alternations that were noted in this class.

Animal names/ sociocultural objects

Noun Class 9/ 10 nouns that were collected had the singular and plural concepts denoted by the prefix [*e-*] in singular and [*ci-*] in plural. These nouns are presented in Example (9) below.

Singular	Plural	Gloss		
(9) a. e-sese	[esese]	chi-sese	[cisese]	‘dogs’
b. e-tuba	[etuβa]	chituba	[cituβa]	‘files’

Data indicated that most words in this class do not display phonetic changes in formation of plural nouns. Noun Class 9 and 10 consists of names animals and tools as shown by examples (9a-b) above.



Animal names/ food stuffs

These nouns are classified in Noun Class 9a and 10a and they refer to animals and foodstuffs. They are characterized by the prefix [*e-n-*] in the singular and [*ci-n-*] prefix in plural.

	Singular	Plural	Gloss	
(10) a. e-n-gote	[eŋgɔ te]	chi-n-gote	[ciŋgɔ te]	'bunch of bananas'
b. e-m-bori	[embori]	chi-m-bori	[cimbori]	'goats'
c. e-ng'-ondi	[eŋondi]	chi-ng'-ondi	[ciŋondi]	'many sheep'

Data indicate that these nouns are characterized by a nasal prefix marker in both the singular and plural. The nasal can be represented as either [*n*] or [*m*]. The nasal prefix and the initial consonant of the base are articulated as a single prenasalized consonant since the nasal of the prefix assimilates to the point of articulation of the consonant that follows it. The nasal prefix triggers hardening of the initial consonant of the base both in the singular and plural. For instance, the obstruents [*g*] and [*b*] in [*ng*] and [*mb*] in (10a-b) above are observed only when they are in form of prenasalized consonants or when preceded by the nasal prefix. They do not exist as independent consonant sounds in Ekegusii.

Sociocultural objects

Most nouns in this category are nouns that denote things that the Abagusii use in their daily life. Other nouns that denote cultural objects have been presented in Examples (8) and (9). Additional cultural nouns that are grouped in Noun Class 11 and 10a are presented Example (11) so as to assess if the class prefix triggers phonological changes. Sample data from Noun Class 11 and 10a nouns are presented below.

	Singular	Plural	Gloss	
(11) a. o-ro-gena	[oroɣena]	chi-n-gena	[ciŋgena]	'grinding stone'
b. o-ro-sa:na	[orosana]	chi-n-sa:na	[cinsa:na]	'forests'
c. o-ro-che	[oro:ce]	chi-n-dooche	[cindo:ce]	'rivers'

The sample data show that the nouns in this class denote natural things like forests, varieties of stones and rivers. The plural prefix [*ci-n*] takes the position of the singular prefix [*o-ro-*] where the nasal prefix merges with the initial consonant to form a prenasalized consonant.

Diminutives

Diminutive nouns were identified in Noun Classes 12 and 8 and 12 and 14. First, Noun Class 12/8 nouns are formed by attaching the prefix [*a-ka-*] to the base while the plural prefix [*e-bi-*] replaces the singular prefix in pluralization. The following are some of the nouns in the class.

	Singular	Plural	Gloss	
(12) a. a-ga-saiga	[ayasaiya]	e-bi-saiga	[eβisaiya]	'small boys' huts'
b. a-ka-riikwa	[akari:kwa]	e-bi-riikwa	[eβiri:kwa]	'workers'



Nouns in this category refer to things in relation to their size. The speaker's attitude matters a lot when talking about that person or thing. The diminutive plural prefix means many small things/ people. The referent *ebiriikwa*, as commonly used to refer to workers in tea estates and privately owned farms, is derogatory since the workers are assigned low economic status as compared to the use of the term *omoriikwa* 'worker' which is respectable. So, anything referred to using nouns in this noun class is demeaned or abused.

Second, Noun Class 12 and 14 diminutives are formed when the singular prefix [a-ka-] is attached to a base and plurals are formed when the prefix [o-bo-] combines with a base. This Noun Class constitutes the following nouns:

Singular		Plural		Gloss
(13) a. a-ka-mbeba	[akambeβa]	o-bo-mbeba	[oβombeβa]	'small rats'
b. a-ga-ita	[ayaita]	o-bo-ita	[oβoita]	'small gates'

Noun Class 12 nouns' bases combine with Noun Class 14 prefix to form plurals. Things are referred to non-pejoratively. Jurafsky (1996) observes that the aspect of meaning in diminutives in world languages arises from their origin in words meaning 'child' and the meaning small represents an extension of the meaning child or young one of high animals. The data above represent nouns with the meaning small which is used when referring to a thing using the prefix [a-ka-] / [o-bo-]. This implies that there are bigger things than the one talked about. This is evident in Example (13a) above where talking of *obombeba* refers to many young ones of rats.

The sampled data reflect that number in nouns is distinguished in Ekegusii basically by use of the singular and plural prefixes. Number, therefore, is marked on the noun though there are nouns which are not morphologically marked for number both in the singular and plural. Nouns with plural concepts have been presented in order to show the phonetic changes that accompany formation of plural nouns. The researcher gives data further attention by describing the phonetic changes, processes and constraints involved in formation of plural nouns in the following section.

Morphophonological operations and constraints in Ekegusii noun formation

Pluralized nouns are discussed further in this section. Formation of nouns is associated with a number of both vowel and consonant changes which shall be explained in this section. The Transderivational Antifaithfulness constraints are formulated in tableaux as proposed in OT together with rankings in relation to how nominal pluralization trigger the morphologically motivated phonology. The morphophonological changes that were observed are discussed below.

Vowel lengthening

Vowel lengthening is a phonological change of vowels experienced in pluralization of nouns in Ekegusii. Personal nouns in Noun Classes 1 and 2 display long vowels in their bases. The nouns presented in Example (14a-b) below are derived from the underlying imperative verb forms /yen.da/ and /ran.di/ which have a total of two syllables. The surface long vowels are short in the underlying representation before derivation.



Singular	Plural	Gloss
(14) a. /omo+ɣenda/	a-ba-geend-i	[aβaye:ndi] 'travellers'
b./omo+randi/	a-ba-raand-i	[aβara:ndi] 'preachers'

Vowel length is motivated by resyllabification of the nasal from coda to onset in order to form a prenasalized consonant. As presented in Example (14 a-b) above, long vowels precede nasal consonants. Clements (1986) explains that vowel lengthening occurs when a nasal is reassigned from coda to onset as prenasalization leaving behind an unoccupied space which is then filled by lengthening of a vocalic nucleus. After lengthening, the short vowel changes its form and it becomes a long vowel observed in the surface form of nouns in Noun Class 1 in Ekegusii. The nasal is syllabified from coda to onset so as to form a preferred CVV.C syllable structure and not the CVC. CV syllable structure.

In Optimality Theory, the outputs in (14) above are unfaithful to the input and they are products of the interaction of markedness constraint NLV (no long vowels) which prohibits long vowels and faithfulness constraint PARSE- μ which requires that all moras are parsed into syllables (Prince & Smolensky 1993, McCarthy & Prince 1993, 1995). Vowel length as a result of resyllabification leads to violation of NLV and satisfaction of PARSE- μ so that PARSE- μ >> NLV as illustrated in Table 4 below.

Table 4: Vowel Lengthening

Derivative	PARSE- μ	NLV	IO-IDENT[vowel]
/o-mo-+ɣɛ.nda/			
+i. omogeendi		*!	**
ii. omogenda	*!		

Output (i) is the acceptable form of the plural form in Ekegusii. It satisfies the high ranked PARSE- μ faithfulness constraint and violates NLV markedness constraint. The conflict between the constraints results in vowel lengthening. TAF theory could not explain vowel lengthening in Ekegusii since there are no constraints for the same and that is why the researcher explained the data using OT as shown in Table 4 above.

Consonant changes in derivation and pluralization

The consonant changes that were observed in this study are similar in both derivation and pluralization. Formation of the noun is accompanied by mutation of the initial consonant of the base. They are explained below using Transderivational Anti-Faithfulness Theory.

Consonant mutation

Mutation refers to the stem internal phonetic change that is conditioned by word-formation processes. Consonant mutation in this study is manifested in two stages: post nasal hardening and nasal assimilation. These stages are discussed below.

Nouns grouped in Noun Class 10a denote sociocultural objects. They form their plurals with the prefix [ci-n-]. The nasal in the prefix assimilates in place of articulation to the initial



consonant of the base. In addition to that, there is consonant hardening and the following are the nouns that display such mutations:

Singular	Plural	Gloss
(15) a. o-ro- bago	[oroβayo]	chi-m-bag-o [cimbayo] ‘fences’
b. o-ro-reria	[ororeria]	chi-nderia [cinderia] ‘family lines’

In Example (15a-b) above, the fricative [β] in the singular changes to [b] in plural and the flapped liquid [r] is realized as the obstruent [d] in plural when both consonants are preceded by the nasal prefix [-n-] also [-m-]. Pluralization of Noun Class 10a in Ekegusii mutates the initial consonant of the base which is consequently prenasalized. Silverman (1995) explains that Bantu languages prefer to realize nasal and oral consonant sequences as nasal stops through synchronic alternations. These changes result from the combination of the nasal prefix and the base in formation of plurals.

Hyman (2005) and (2003) observes that nasal assimilation changes the quality of the consonants such that they are uttered with a burst after a nasal in Bantu languages like Kikuyu, Bemba, Kwanyama and many more. Where there is total assimilation, the expected realization is C2C2 rather than C1C1. The consonant C is realized differently after N. Thus the consonant C becomes C' only after N as shown by the above data in example (15a and b). Other Bantu languages display post nasal hardening as indicated by findings from Kwanyama (R.21) and Kikuyu (E.50) by Tirronen (1977) and Armstrong (1940) respectively as cited in Hyman 2003. The two studies show that when the nasal prefix [n] precedes both the fricative [β] and the liquid [l], the consonants change to stops [b] and [d] respectively.

Homorganic nasal assimilation

Homorganicity refers to a process where the nasal prefix preceding the stops [b] and [d] are articulated at the same point with the stops after consonant hardening. Nasal assimilation in Ekegusii involves a nasal prefix assimilating to the point of articulation of the initial consonant of the base it precedes.

Homorganic consonants also occur in Noun Class 10a only in their plural forms. Noun Class 10a prefix is attached to Noun Class 11 bases to form the plurals presented in Example (16 a-b) below.

Singular	Plural	Gloss
(16) a. o-ro-geend-o	[oroye:ndo]	chi-n-geend-o [ciŋge:ndo] ‘journey’
b. o-ro-ko	[oroko]	chi-n-ko [ciŋko] ‘firewood’

Example (16 a) illustrates derivation of the noun from the imperative verb [-geend-a] when combined with the prefix [o-ro-] to form the noun *orogeendo*. The imperative verb consists of the stem initial consonant [ɣ] but when the plural of the noun is formed the initial consonant of the stem becomes a prenasalized velar consonant [ŋg]. It is then assumed that the nasal prefix marker, [-n-], of Noun Class 10a [ci-n-] assimilates to the point of articulation of the initial consonant [ɣ] so that the sounds become homorganic and form a prenasalized consonant [ŋg]. In Example (16 b) above, the voiceless velar [k] in the singular changes to a prenasalized consonant [ŋk] since the nasal prefix marker assimilates to the



point of articulation of the velar and the two consonants combine to form a single prenasalised consonant.

McCarthy (1988:87) explains that nasals assimilate in place of articulation to the following consonants. He further defines place assimilation as spreading of place node rather than the individual features characterizing place distinctions. The assimilating features in (15a-b), *[b]* labial in 15a and *[d]* alveolar in 15b, and (16a-b), velar features in 16a and 16b, above spread over a wider domain such that the nasal becomes labial when it occurs before the bilabial *[b]*, alveolar before the alveolar *[d]* and velar before the velar consonants *[k]* and *[g]*.

Nasal assimilation is a common phonological process in Bantu languages like Kitharaka, Kikuyu and many more. Mberia (2002) found out that when the nasal prefix which has two variants *[m]* and *[n]* precedes a verb root beginning with a consonant in Kitharaka, a Bantu language spoken in Kenya, the nasal assimilates to the point of articulation of the following consonant. Kitharaka nasal assimilation operates in Noun Classes 9 and 10. Nasal homogeneity is a result of assimilation of the nasal prefix to the point of articulation of the following obstruent due to the adjustment of articulators in anticipation of production of the obstruents. The adjustments harmonize the point of articulation of the nasal consonant to that of the following obstruent and according to Antilla (1972), it leads to articulatory simplification. Abercrombie (1967) explains that homogeneity of two segments succeeds in reducing the efforts of articulation in English. However, Ekegusii does not have the obstruents *[d]* and *[b]* in isolation. They occur when preceded by a nasal so as to form prenasalized consonants. Therefore, the changes of these consonants from one form to another are experienced since there is a morphological process, derivation, which brings the nasal prefix and the stem together and triggers the change.

In transderivational Anti faithfulness Theory, consonant mutation occurs when TAF constraints override faithfulness constraints. Consonant mutation in pluralization is illustrated in Table 5a and b below:

Plural formation results in postnasal hardening which is base-mutating. Postnasal hardening is characterized by changing the phonetic feature of the initial consonant of the base due to prenasalization as shown below:

The table below illustrates consonant mutation in formation of the plural noun *chingena* from the singular form. Consonant mutation is explained using OT's principles as well as TAF constraints. Table 5a is presented below.

a. [oro+yena] → [cingena]

Table 5 (a) Consonant mutation in pluralization

Base	Derivative /ci-n+yena/	NOCODA	PRENASAL	-OOdom- IDENT[cont]	OOdom IDENT[cont]	IOIDENT[cont]
[yena]	+i.cingena		*		*	*
	ii.cin.yena	*		*!		



–OOdomIDENT [cont]>> OOdomIDENT [cont]

The initial fricative $[ɣ]$ of the base has the feature [+continuant] which becomes an obstruent after the nasal prefix. This can be explained as a consequence of prenasalization of the velar consonant $[ɣ]$. The prenasalized velar consonant $[ŋg]$ is formed when the plural nasal prefix and the velar fricative $[ɣ]$ come together. Output (i) *chingena* is the winning candidate since it satisfies the high ranked TAF constraint while it violates the low ranked Faithfulness constraint as illustrated by Table 5a above. Transderivational Anti-Faithfulness constraint \neg OOdom IDENT [cont] outranks the Faithfulness constraint OO-dom IDENT [cont] since the winning candidate satisfies the Anti-Faithfulness constraint which triggers consonant mutation shown in Table 5a.

The nasal of the plural prefix [ci-n-] triggers change of the stem initial consonant as shown in Table 5b below:

The table below explains formation of the plural noun *chinderia* from the base [-reri-a] when combined with the plural prefix [ci-n-]. Pluralization results in consonant hardening, that is, the flapped liquid $[r]$ changes to an obstruent $[d]$ and the change is explained as consonant mutation using constraints presented in Table (5b) below.

a. [oro+reri-a] → [cinderia]

Table 5 (b) Consonant mutation in pluralization

Base	Derivative /ci-n-+reri-a/	NOCOD A	PRENAS AL	–OOdom- IDENT[cont]	OOdom IDENT[cont]	IOIDENT[cont]
[reri-a]	+i.cinderia		*		*	*
	ii.cinreria	*		*!		

\neg OOdom-IDENT [cont]>> OOdom-IDENT [cont]

In the winning candidate, the flapped liquid $[r]$ [+continuant] changes to an alveolar $[d]$ [-continuant] in pluralization. The optimal candidate is the form that contrasts away from the base from which it is derived. In Example (15b), the alveolar consonant $[r]$ changes its characteristics when it is preceded by the nasal prefix. The nasal of Noun Class (10a) prefix assimilates to the point of articulation of the alveolar consonant $[d]$ of the base due to prenasalization. Postnasal hardening and assimilation processes are triggered by the TAF constraint \neg OOdom-IDENT [cont] which mutate the initial consonant of the base as shown in Table (5b) above. Therefore, the winning candidate, (i) *chinderia*, satisfies the TAF constraint \neg OOdom-IDENT [cont] which is ranked above the faithfulness constraint OOdom-IDENT [cont].

Consonant mutations exemplified in Table 4 and (5a-b) above occur since the nasal prefix assimilates to the place of articulation of the oral consonant which consequently leads to formation of prenasalized consonants. Surface realization of prenasalized consonants is the result of the conflict between PRENASAL and NOCODA constraints (McCarthy & Prince 1993, 1995). PRENASAL prohibits prenasalized consonants while NOCODA prohibits codas.

Morphologically motivated phonology in Ekegusii indicates that Antifaithfulness constraints are ranked above Faithfulness constraints (ANTI-FAITHFULNESS>>FAITHFULNESS). This



is so because of dominance effects of some derivational prefixes which mutate segments in the stem. Phonetic contrast between the base and the derivative occur in a morphological environment which triggers it. These findings are equivalent to those by Akinlabi (1996) who found out that morphologically conditioned phonology in Terena triggers nasalization of sonorants where the first person singular in Terena is marked with the feature [+nasal]. Additionally, Kurisu (2001) shows that affixed plural forms in German incur mutations in the base. The researcher uses Realize Morpheme constraints which require derived forms to differ in any way from the morphological bases.

Consonant deletion

A consonant is deleted at a morpheme boundary in number inflection. Deletion of the initial consonant from the base of Noun Class 10 was observed as demonstrated in (16) below:

Singular	Plural	Singular	Plural	Gloss
(17) e-ng'ombe	[eŋombe]	chi-ombe	[ciombe]	'cows'

The voiced velar nasal [ŋ] in the singular base in Noun Class 9 is deleted in plural formation when the base takes up the plural prefix [ci-] to form *chiombe*. Velar nasal deletion is shown in Table 6 that follows.

Table 6 below shows deletion of the velar nasal [ŋ] in formation of the plural *chiombe*. The table illustrates how OT and TAF constraints work out the winning candidate. Constraint ranking and violability is displayed in the table below.

[eŋombe] → [ciombe]

Table 6. Consonant deletion in pluralization

Base	Derivative /ci+ŋonβe/	ONSE T	IODEP [nasal]	¬OdomMAX[na sal]	Odom MAX[nasal]	IOMAX [nasal]
[ŋombe]	+i. Ciombe	*			*	*
	ii. Ciŋombe		*	*!		

¬Odom MAX [nasal] >> Odom-MAX [nasal]

Output (i) is the optimal output accepted in Ekegusii. The term *chiombe* is derived from the underlying morphemes /ci+ŋonβe/ through the operation of deleting the velar nasal [ŋ] at the morpheme boundary. The plural form [ci.o.mbe] displays the CV.V.CV syllable structure rather than the unacceptable form *[ciŋombe], CV.CV.CV. Velar nasal deletion is a result of the conflict between markedness constraint ONSET which requires that syllables must have onsets and faithfulness constraint DEP which is against insertion of a segment. The optimal candidate violates ONSET while it satisfies DEP constraint so that IODEP >>ONSET as in Table 6 above.

Alternatively, deletion satisfies TAF constraint ¬Odom MAX which requires obligatory deletion of the initial consonant of the base and violates the related faithfulness constraint that prohibits deletion, Odom-MAX. Transderivational Anti-faithfulness constraints determine well-formed structures in a language by requiring feature alternations. Therefore, TAF



constraint is high ranked. It dominates the faithfulness constraint i.e \neg OOdom-MAX [nasal]>>OOdom-MAX [nasal].

CONCLUSION

Data indicate that the semantic relationship between the singular and plural nouns is regular since the nouns express the same meaning or idea. What is different is the number of entities implied. The singular refers to a single unit while the plural refers to more than one entity. Findings of the study give us evidence that nouns in Ekegusii are systematically organized in the Noun Class system in the language. Class groupings are based on the type of prefix a base takes and so words which have similar prefixes are grouped together. Additionally, nouns with common semantic characteristics are grouped into a particular class where the singular Noun Class prefixes are in odd numbers while plural Noun Class prefixes are in even numbers. The dominant prefixes induce phonological operations on the base pluralization. In Ekegusii, nominal pluralization is mainly through prefixation which satisfy Transderivational Anti-Faithfulness constraints which are ranked above the OO and IO Faithfulness constraints.

RECOMMENDATIONS

There are research gaps that need to be addressed. Since Ekegusii is an agglutinating language, it is rich in linguistic aspects that need further study. It is recommended that further research is need in

1. The interaction of morphology and phonology at the phrasal level for instance the noun phrase, verb phrase and adjectival phrase.

Such a study will account for the rich phonological processes at junctural boundaries in the formation of phrases in Ekegusii.

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