

Word-Based Hypothesis: Evidence from Hausa and Fulfulde Word Formation

Abdulmalik Aminu (Ph. D)
Ahmadu Bello University, Zaria
+2348138402892; aaminu@abu.edu.ng

Abstract

Hausa, the most important and best known Chadic language of Afro-asiatic (Newman 2009: 618) and Fulfulde, the most well-known language of West Atlantic of Niger Congo (Pulleyblank 2009: 858) are adjacent speech communities, genetically unrelated and are both found in Northern Nigeria and beyond. The paper is based on theoretical linguistic research which focuses on derivational morphology of Hausa and Fulfulde languages, using word-based hypothesis. The aim of the paper is to present Hausa and Fulfulde word formation to clarify the Aronoff's (1976) notion on word-based hypothesis with the objectives of identifying the morphological typologies of each of the languages. The paper found out that language typology plays an important role on selection of morphological theory. Hence, Hausa and Fulfulde languages justify the claim about syntax and semantics of word formation more than a claim about affixation.

Keywords: *Morphological Typology Morphological Theory, Word Based Hypothesis, Word Formation.*

Introduction

The Morphology of a language means the construction in which forms appear among the constituents, whereby the resultant forms are either bound forms or words but never phrases. That is to say, morphology is the construction of words and parts of words (Bloomfield 1933: 207). Bloomfield went further to define word as a minimum free form. There are word formation processes which involve not the bound forms but the free forms to derive new forms. If the bound forms are to be affixes, then the process of such word formation is non-affixal. Hence, the free forms cut across both the affixal and the non-affixal word formation processes while the bound forms are restricted to affixal word formation processes only. Aronoff (1976:21) stated that "All regular word formation processes are word based. A new word is formed by applying a regular rule to a single already existing word. Both the new word and the existing one are members of major lexical categories." That is to say, the base form follows some morphological processes and rules peculiar to the patterns of a language (such as Hausa or Fulfulde) to derive a new form where both the base form and the derived form are members of open word classes such as noun, verb, adjective, adverb. Abubakar (2001:22) also proposes the Aronoff's hypothesis on word-based form and disposes the root-base in Hausa language. In his argument, the root has no overt semantic interpretation and therefore cannot stand to be an operand to any formative. This paper relates with Abubakar's proposal on word based hypothesis in the analysis of Hausa word formation which is driven from Aronoff (1976) that is wholly inspired by Bloomfield (1933). The morphological

typology of Fulfulde language which may differ with that of Hausa language due to their genetic unrelatedness may as well fit with word based hypothesis when tested.

Morphological Typology

The classical typology base on morphological criteria was first started by Schlegel (1818), where he gave the distinctions between analytic, synthetic, agglutinating and inflectional languages. What common features do languages share and where they vary is among the objectives of comparative linguistics and which is what universal grammar is all about. Spencer, (2006:101) stated that the search for linguistic universals is intimately connected with the search for a global typology of languages and language structures where he mentioned the earliest attempts at typological distinctions among languages in terms of their word structure, these are: isolating, agglutinating, inflectional (fusional), and polysynthetic(Noun-incorporating). These parameters that are used in morphological typologies are divided by Aikhenvald, (2007:3) into two kinds: the transparency of morphological boundaries between the morphemes within a grammatical word and the degree of internal complexity of words. These can be briefly explained with the aid of examples in the two languages as follows:

Boundaries between Morphemes within a Word:

Based on this parameter which has no difference with the classical ones, according to Aikhenvald, languages are divided into isolating, agglutinating and fusional.

Isolating: one to one correspondence between morph and a word i.e every morph is an independent word.

Example 1:

*Akwai aiki idan ya dawo 'there is work if he comes back

àkwai	aiki	ìdan	ya	daawoo
↓	↓	↓	↓	↓
There is	work	if	he	comes back

From the above sentence in Hausa, every word is an independent lexical item which is rare in the language. In Hausa language, all nouns (except proper noun) and adjectives consist of number and gender morphs, each of which cannot be an independent lexical item but must be attached with a morph. Also, all verbs belong to grading system in the language with regards to its tone and terminal suffix, that is to say, except monosyllabic verbs; all verbs are not independent lexical items. Adverbs and other lexical categories may be free.

Just like in Hausa language where nouns, adjectives and verbs are attached with bound morphs, all nouns and adjectives (except proper nouns) are attached with a class in Fulfulde language and therefore they cannot be an independent word. The Fulfulde noun classes include: 6e, dè, nge, ki, ngel, nde, dī, ngo, ko, ngum, ndi, dūm, ngol, kol, kal, ndu, nga, ngu,

o, ko, dam, ngal, ka, nga, kon. Each class in Fulfulde is attaching to a noun that belongs to it. The classes are suffixed to its stem to indicate human class, non-human class, augmentative class and diminutive class. Nominal stems must be accompanied by a nominal class suffix (McIntosh 1984:43) and it is difficult to get an inseparable word in Fulfulde because of the noun class system (Ahmed 2011). Also, all verbs consist of voice and tense markers and in some cases negative markers. Therefore, it is rare to have every morph as an independent word in the language as in the following:

Example 2:

*Taa nyam nden daan 'do not eat and sleep'

Taa	nyaam	nden	daan
↓	↓	↓	↓
Do not	eat	and	sleep

Agglutinating: one to one correspondence between morph and its meaning i.e. a word may consist of many morphs but the boundaries between them are clear-cut. The following is an example in Hausa:

Example 3

Ma-	aikat	-iyaa	-r
↓	↓	↓	↓
Agent	to work(the root)	feminine marker	feminine referential marker
ma'aikacyâr 'the female worker'			

The *ma-* prefix serves as an agent, *aikat* as the root, *iyaa* as the feminine marker and *r* as feminine referential marker. Therefore, the boundaries between the morphs within the word are clear because each morph has its own meaning, the language is said to be agglutinating. The following is an example in Fulfulde:

Example 4

Laany-	-ir	-gal
↓	↓	↓
Stair	modal marker	noun class (e.g stick)
Laanyirgal 'stirring stick'		

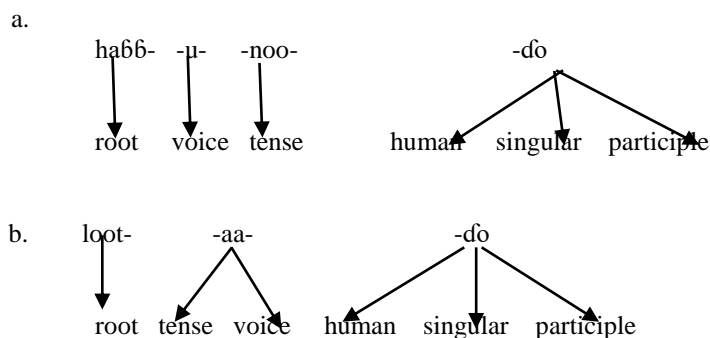
Laany is the root, *ir* is a modal verb extension marker and *gal* is a noun class. That is to say, each morph has its own meaning, the language is said to be agglutinating.

Fusional: there is no clear boundaries between morphs, and thus semantically distinct features are usually merged in a single bound form.

The following is an example in Fulfulde language:

Example 5:

- a) ha**bb**-u-noo-d**o** ‘one who has tied something’ with *-u* voice, *-noo* tense marker with *-do* suffix. The *do* is both the human class, singular class, and the participle (preterite).
- b) loot-aa-d**o** ‘one who has been washed’ with tense voice marker *-aa* and *-do* suffix. The *aa* is both past tense and passive voice, and *do* is both the human class, singular class, and participle.

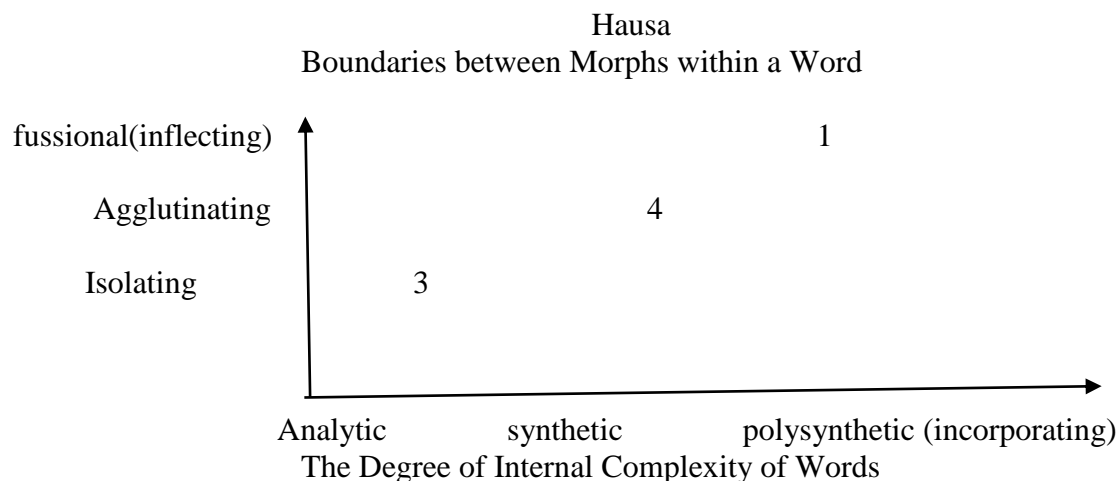


From the above two words, semantically distinct features are merged together in a single morph and therefore, the language is said to be fusional.

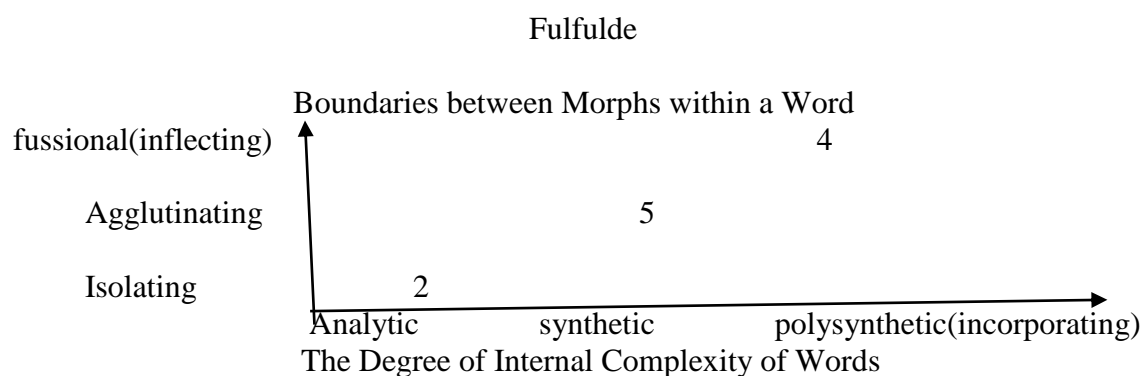
The Degree of Internal Complexity of Words

The degree of internal complexity of words consists of analytic, synthetic and polysynthetic. **Analytic:** is one to one correspondence between word and morph. The languages that have few bound morphs or none at all. **Synthetic:** is where by a word may consist of several morphs and there are lot of bound morphs. **Polysynthetic** is combining large numbers of morphs (lexical and grammatical) within one word. Isolating is analytic, agglutinating is synthetic and fusional is polysynthetic. Fusional may be called inflecting while polysynthetic may be called incorporating in some instances, but they mean one and the same. The morphological typology of the languages is deduced through observation from the pool of word entries in dictionaries of both languages, and the literature related to morphological typology. We can illustrate how the two languages can be plotted using the following:

1. Absent
2. Very rare
3. Rare
4. High
5. Very high



Hausa language has rare cases where every morph is an independent word or have few bound morphs or none at all (isolating/analytic). The language has high number of words consisting of many morphs but the boundaries between them are clear-cut (agglutinating/synthetic). The language does not permit semantically distinct features to merge in a single bound form or combine large number of morphs (lexical and grammatical) within one word (fussional/polysynthetic). Therefore, the language is agglutinating and not incorporating.



Fulfulde language has very rare cases where every morph is an independent word or have few bound morphs or none at all (isolating/analytic). The language has a very high number of words consisting of many morphs but the boundaries between them are clear-cut (agglutinating/synthetic). The language also has semantically distinct features that are usually merged in a single bound form (fussional/polysynthetic). Therefore, the language is highly agglutinating and rarely incorporating.

In terms of boundaries between morphs within a word, Hausa and Fulfulde languages are all agglutinating languages where words are consisting of morphs but the boundaries between them are clear-cut. That is to say, there are one to one correspondence between morph and its meaning. In terms of the degree of internal complexity of words, the two languages are synthetic where a word may consist of several morphs and there are lots of bound morphs.

The difference between the two languages in terms of the morphological typology is Fulfulde may be incorporating in some cases while Hausa is not.

Approaches to Morphology

There are two approaches to morphology codified by Bloomfield (1933) and termed by Hockett (1954) as Item and Arrangement and Item and Process (Aronoff 2011:49). Also there is an approach known as Word Paradigm which is an alternative to the two approaches (Crystal 2008:523). These two and the third which is Word and Paradigm approaches can be discussed in relations to the word formation of Hausa and Fulfulde as follows:

Item and Arrangement

Item and arrangement is a technique for breaking words down into their component morphs, whereby the component morphs are the items. The Item and Arrangement approach was used in the description of morphological typologies of the two languages as in 2.1 as also in the following examples:

Example 6 (Hausa):

-rubuut- (root)

ma- (agent prefix) -rubuut- (verb root) -ii (gender indicator)

ma-rubuut-ii

marubùucii 'male writer'

Example 7 (Fulfulde):

wind- (root)

bind-(verb root) -oowo (male/female agent)

bind-oowo

bindoowo 'male/female writer'

In the above examples, the words are broken down into their component morphs in an item and arrangement technique.

Item and Process

Item and process is an approach in which complex words result from the operation of processes on simpler words. This approach accommodates phonology, syntax and semantics. The affixes which are attached to the base or the base itself and the process are being realized phonologically. The changes in lexical category e.g noun, verb, adjective, and adverb are syntactic. Names, actions, and descriptions of these classes are semantically accommodated. The following examples in the two languages show how phonology, syntax and semantics are accommodated in Item and Process approach:

Example 8 (Hausa):

a) *saakàa* 'recompense' → *sàak-ayyàa* 'reward'.

The disyllabic base form with high low tone and the trisyllabic derived form with low high low tone, affixing *-ayyaa* suffix is phonological. Noun derived from verb, the two lexical categories are syntactic. The noun derived expressing mutuality or reciprocity with the *-ayyaa* suffix is semantic.

b) *koofar baayi* → *kwarbai* 'slaves gate'

is blended, where either of the words are shortened where /f/ → Ø, mid-round /o/ → labio-velar /w/) is phonological, Noun + Noun → Noun is syntactic, and the name of the 'thing' is semantic.

Example 9 (Fulfulde):

a) *semta* 'be shy' → *semt-ee-nde* 'modesty'.

The disyllabic base form and the trisyllabic derived from, with *-ee-*, *-nde*, suffixation are phonological. The lexical categories noun derived from verb are syntactic, and the noun derived are of condition or action from verbs is semantic.

b) *jawmu wuro* → *jawro*

where both first and last parts of the two words are deleted, the first word at the end while the second at the beginning is phonological, Adjective → Noun is syntactic, and 'a district head' derived from 'owner of the town' is semantic.

Despite the similarity of item and arrangement and item and process, many morphological phenomena do not fit neatly into item and arrangement (Aronoff 2001:50). In non-affixal techniques where you cannot break down words into their component morphs to form new words such as in the processes of vowel change, tonal change, stress change, initial consonant mutations, such as in Hausa and Fulfulde languages, item and process approach is the best option than item and arrangement.

Word and Paradigm

Crystal (2008:523) defines word and paradigm as a morphological model description which see the word as the basic unit of analysis, operating within a set of variables which constitute a paradigm.

Example 10 (Hausa):

dang has the paradigm of:

dangànaa 'to relate', *dangàntaa* 'to interrelate', *dàngàntakàa* 'relationship'

Example 11 (Fulfulde):

dog has the paradigm of:

dogga 'to run', *doggoowo* 'runner', *doggina* 'to make run', *dogginoowo* 'one who made it run', *dogginteedo* 'one to be made run', *doggirinoodum* 'something used for running'.

However, this model of description is faulty in linguistics arena because the aim of linguistics is to find a common factor within the paradigm to derive the variant forms using rules. From the above examples, word and paradigm approach does not give explanation on the boundaries

of morphs within a word as item and arrangement does and it does not also give explanation on the phonological, syntactic and semantic interpretations of each morph within a word as item and process approach does.

Morphological Theories

Aronoff (1976), Selkirk (1982), and Beard (1981) are pioneers of Word-based, Morpheme-Base and Separation morphological theories respectively. These theories are set of hypothetical principles forming general frame of reference to morphology. The following are the discussions on the application of such principles:

Word-Based Hypothesis

Aronoff (1976:21) stated in three sentences that “All regular word formation processes are word based. A new word is formed by applying a regular rule to a single already existing word. Both the new word and the existing one are members of major lexical categories.” Abubakar (2001) adapted Aronoff’s word-based hypothesis in his analysis of Hausa derivation. He proposes the word-based as against the root-base because the roots in the language have unpredictable interpretation possibilities and therefore they cannot be subjected to any rule to inflect or derive a word. In every rule there is exception, Aronoff (1976:88) brought some cases where regular derived words, semantically transparent, formed with affixes which are regular in their operation, which on the surface do not appear to have been derived from word example; the English word *nominate* → *nominee*, where *nomin-* supposed to be the base to form *nomin-ee* but not *nominate* as the base form. However, Aronoff (1994:7) clarifies this exception in the following statement: “I especially did not mean that the base or stem for a word formation rule had to be a complete word or free form, only that the base should be a lexeme and the stem some form of a lexeme.” In Hausa and Fulfulde languages, the base forms may not necessarily be a complete or free form but the base should be a lexeme with an overt semantic interpretation. Example of a verb base in Hausa *murɗaa* ‘twist’ with –aa ending may have the derived form *murɗaawaa*, *murɗeewaa* or *murɗiyaa* of weak verbal noun, where *murɗ-* supposed to be the stem form of *murɗiyaa* but not *murɗaa*. Fulfulde language also has some example such as a derived form *leniido* ‘sender’, or *lenaado* ‘messenger’ from the same base *lena* ‘send’.

Aronoff (1994:34) holds that “the theory of word-based morphology or word formation is a theory of lexeme-based morphology or lexeme formation and the word-based hypothesis is a claim about the semantics and syntax of word formation and morphology as much as, or perhaps more than, a claim about affixation.” Examples used in the application of word-based hypothesis in Hausa and Fulfulde are presented in 4.1 and 4.2 below respectively to show the evidence that the hypothesis by Aronoff that all regular word formation processes are word based are compiled by the two languages.

Morpheme-Based Hypothesis

Just like how words are combined to form sentences in syntactic rules are morphs combined to form words in morphological rules (Plag 2003:180). Selkirk (1982) through (Plag 2003:180-182), labelled morpheme-based approach as ‘word syntax’, that affixes are lexical items on a par with word, and affixes act as heads because they determine syntactic category of the derived word. That is to say, for example, *a, b, c, d* affixes can be noun, verb, adjective and adverb respectively, and can also be noun, verb, adjective and adverb heads as well. In this schema, if *x* is the root and *y* is the derived form, then $x^{+b} \rightarrow y^b$. Example in Hausa language: *far+ntaa* \rightarrow *faràntaa* ‘whiten’. Example in Fulfulde: *laab+ina* \rightarrow *laabina* ‘to whiten’. Consequently, the *x* roots have unpredictable interpretation possibilities in both the languages. Example *far-* might be confusing with the derived forms of *far-koo* ‘beginning’, *far-ii* ‘drought’, *far-ii* ‘white’ and *laab-* root may also be confusing with derived form of all the noun classes and all the voices and tenses in the language. Example: *laabdo* ‘clean person’, *laabdam* ‘clean water’ and so on, or *laabay* ‘will be clean’ active future’ tense’, *laabake* ‘cleaned’ middle past tense’ and so on. By and large, the morpheme-base theory is restricted to affixal word formation only, neglecting the whole part of the non-affixal. Example: the tonal change in Hausa, as in: *noomaa* (verb base form) \rightarrow *noomaa* (noun derived form) and stress change in Fulfulde as in: *jOODa* (verb base form) \rightarrow *jooDA* (noun derived form) and many other non-affixal word formation techniques are not accommodated in this theory.

Hausa Word Formation

The morphological typologies and the item and process approach have given us an assurance that the word-based is reliable in word formation of the two languages. Having known that the base forms, derived forms, word classes, tones and affixes are basic in word formation, the following schema is hereby presented in the analysis of Hausa word formation:

$$(xbf)^t \rightarrow (ydf)^{t-a}$$

Where *x* is a word class of base form, *bf* is the base form, $()^t$ is an overall tone of the base form, \rightarrow becomes, *y* is a word class of derived form, *df* is the derived form, $-a$ is an affix. Agential nouns, instrumental nouns and place names derived from verbs through *ma-* prefixation are very few among many word formation in Hausa and Fulfulde languages selected to showcase in the analyses. This is because *ma-* prefix is one among the only two prefixes in Hausa language and prefixation as a morphological process is absent in Fulfulde language, however, the same agential nouns, instrumental nouns and place names are formed in Fulfulde language through suffixation. The following are the examples in Hausa language:

Agential noun of verb derivative in Hausa

Agential noun is a person that does whatever the verb means. These include building, smithing, fishing, reading and lot more. The tone of the *ma-* prefix is always high while the tones of the subsequent morphs are determined by the number of syllables and the final morph

is always high in masculine and feminine genders. That is to say, the tone of the first and the last morphs are constantly high. Palatalization automatically occurs as a result of –ii suffixes proceeding coronal consonants. The following are the agents of such actions and how they are formed:

Example 12
(*v. bf*)^{HL(H)} → (*ag. n. df*)^{ma-L(L)-ii}

Verb base form with high low optional high tone becomes agential noun derived form with ma- prefix, low, optional low with –ii gender indicator. The optional tone refers to tone of trisyllabic base form and quadrisyllabic derived form if any.

- i. ginàa ‘to build’ → ma-ginii ‘builder’
- ii. taashii ‘grow up’ → ma-tàshii ‘adolescent’
- iii. keeràa ‘to smith’ → ma-kèerii ‘blacksmith’
- iv. suntàa ‘fishing’ → ma-sùncii ‘fisherman’
- v. kàràntaa ‘to read’ → ma-kàràncii ‘reader’
- vi. yaudàraa ‘to deceive’ → ma-yàudàrii ‘deceiver’

The disyllabic and trisyllabic base forms with HL and HLH –aa terminal vowels are all of verb grade 1.

Instrumental noun of verb derivative in Hausa

These are instruments that are used to do whatever the verb means. The ma- prefix comes with a masculine singular suffix –ii and high tone of the derived word no matter how many syllables the word contains.

Example 13
(*v. bf*)^{HL} → (*inst. n. df*)^{ma-H-ii}.

Verb base form with high low tone will become instrumental noun derived form with ma- prefix, high tone and –ii gender indicator.

- i. googàa ‘to brush’ → ma-googii ‘brush’
- ii. fiitàaa ‘cooling’ ma-fiicii ‘fan’
- iii. buudāa ‘to open’ → ma-buudii ‘key’
- iv. tseefāa ‘cumbing’ → ma-tseefii
- v. kaamāa ‘hold’ → ma-kaamii ‘weapon’

Place Name of verb derivative in Hausa

Place names are nouns indicating place where the action specified by the verb takes place. The place name and instrumental noun share common tone pattern; that is to say, their tone patterns are regular regardless of the number of syllables of the derived word. They can also be derived from verbs. The only difference is in the meaning; one for instrument and the other for place. The following are the examples of place names:

Example 14

$(v. bf)^{HL(H)} \rightarrow (n. df)^{ma-H(H)-aa/-ii}$.

Verb base form with high low optional high tone becomes noun derived form with ma- prefix, high, optional high tone with –aa/-ii gender indicator.

- i. dáb'áa 'to print' → ma-dáaba'aa 'printing press,
- ii. yankàa 'to slaughter' → mayankaa 'abattoir',
- iii. aikàtaa 'to do/work' → ma-'aikataa 'working place'.
- iv. sallàataa 'to pray' → ma-sallaacii 'mosque'
- v. karàntaa 'to read' → ma-karantaa 'school'.

Fulfulde Word Formation

The brief descriptions of typologies and approaches to morphology have given us background knowledge on the word-based word formation of the language. Just like in Hausa language, the base forms, derived forms, and word classes and affix are basic in word formation, thus, Fulfulde language has its own peculiarities as being it a noun class language and tense and voice are lumped together and attached as a bound morph, the following schema is hereby presented in the analysis of Fulfulde word formation:

$(xbf)^{(v)/cl} \rightarrow (ydf)^{(ve)cl-a}$

Where x is a word class of base form, bf is the base form, $()^{v/cl}$ is a voice or class of the base form, \rightarrow becomes, y is a word class of derived form, df is the derived form, $()^{ve cl -a}$ are verbal extension, class and affix. Voice and verbal extension do optionally occur in verb base form and verb derived forms respectively.

While Hausa language derives instrumental noun and agential noun through prefixation, Fulfulde language derives them through suffixation as follows:

Agential noun of verb derivative in Fulfulde

The –oowo suffix is attached to active verb base form to derive agential noun which refers to one who does what the verb indicates.

Example 15

$(v. bf)^{act.} \rightarrow (ag. n. df)^{-oowo}$.

Active verb base form becomes agential noun derived form with –oowo suffix.

- i. joga 'to hold' → jog-oowo 'holder',
- ii. laara 'to look' → laar-oowo 'fortune teller',
- iii. saala 'to pass' → saal-oowo 'passerby',
- iv. janga 'to read' jang-oowo 'reader'.

Based on the terminal vowel of subjunctive active voice, all the verb based forms in the above example end with –a. The derived forms suffix end with –oowo.

Instrumental noun of verb derivative in Fulfulde

An –ir suffix comes after the root, preceding any noun class which the instrument is meant to use for, in form of –*ir+n.cl.* The class must appear so as to specify the structure, texture and size of the instrument. It forms instrument that is used to do whatever the verb means.

Example 16

$(v. bf)^{act.} \rightarrow (inst. n. df)^{-ir+n.cl.}$

Active verb base form becomes instrumental noun derived form with –ir verb extension and any noun class.

- i. loota ‘to wash’ → loot-ir-de, ‘soap’,
- ii. dirba ‘to grind’ → dirb-ir-de ‘grinding stone’
- iii. laanya ‘to stir’ laany-ir-gal ‘stirring stick, laany-ir-de (horde) ‘a calabash spoon’.
- iv. wuuwa ‘to sweep’ buuw-ir-di (burdi) ‘brooms’.
- v.

nde, *ngal* and *di* are noun classes which refer to various instruments that the verb is meant to use for.

Place name of verb derivative in Fulfulde

Place name and instrumental noun do also share common verb extension –ir morph. The -ir + noun class still forms the place name in Fulfulde language, the only difference is the type of class attached. The noun classes are often –*nde* and –*ndu* classes that are attached, that determine which of the places the noun refers. The following are the examples:

Example 17

$(v. bf)^{act.} \rightarrow (pl. n. df)^{-ir+n.cl.}$

Active verb base form becomes instrumental noun derived form with –ir verb extension and any noun class.

- a) juula (V) ‘pray’ → juul-ir-de (N) ‘mosque’
- b) jangga (V) ‘read’ → jang-ir-de (N) ‘school’
- c) julna (V) ‘circumcise’ → juln-ir-du (N) ‘hut where circumcised boys remain until they are healed’
- d) ferwa (V) ‘be at rest’ → ferw-ir-du (N) ‘resting room’
- e) tiggera (V) ‘fix’ → tigg-ir-de (N) ‘a fixed place’
- f) winnda (V) ‘write’ → wind-ir-de (N) ‘an office’.

The –*de* and –*du* are the class suffixes that express a place where an action has taken place. They are morphophonemic variants of *ndu* class. They vary according to an agreement with the base forms.

Conclusion

Hausa and Fulfulde with agglutinating/synthetic typology have lot of bound morphs with clear boundaries. With this typology, item and process is the best approach to use in the analysis of the two languages, which accommodates phonology, syntax and semantics. The affixes which are attached to the base or the base itself and the process are being realized phonologically. The changes in lexical category e.g noun, verb, adjective, and adverb are syntactic. Names, actions, and descriptions of these classes are semantically accommodated as presented in examples 8 and 9 of the two languages. Evidently, the typology and the approach used in the processes of word formation in the two languages support the claim of word-based morphological theory.

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