

## **Distributed Morphology (DM) Applicability in the Kinyarwanda Lexicon**

**Emmanuel Uwambayinema**

University of Rwanda, College of Education, P.O. BOX 5039, Kigali, Rwanda  
[manucasual1974@yahoo.fr](mailto:manucasual1974@yahoo.fr)

### **Abstract**

This paper considers one of the main theories of Distributed Morphology (DM) which stipulates that a language's "lexicon is a set of roots that lack category, as well as phonological form and that may be semantically underspecified to varying degrees; those roots then acquire a category by being inserted in particular syntactic configuration". It then shows that on the one hand, a part of Kinyarwanda lexicon straightforwardly supports this theory whereas on the other hand, there is another part of the lexicon which does not follow the same track proving to have very meaningful roots. I propose that the nouns which straightforwardly support the DM in its tenet under discussion in this paper are those with a one-word root (lack meaning and category) and those which do not fall under this tenet have more than one word in their roots (They are hence meaningful) and show metonymic derivation when merged with different CM instead of changing their meaning completely.

**Keywords:** Distributed Morphology, Kinyarwanda, Noun Class, Root

## 1. Introduction

Various studies have so far dedicated their efforts to Distributed Morphology (DM) in its different codes of belief (Halle & Marantz 1993; Marantz 1997; OltraMassuet 1999; Harris 1999; Embick&Noyer 1999; Embick& Halle, 2005; Acquaviva 2008).

This study, considers one of the main tenets of DM which stipulates that a language's "*lexicon is a set of roots that lack category, as well as phonological form and that maybe semantically underspecified to varying degrees. Those roots then acquire a category by being inserted in particular syntactic configuration*" (Marantz 1997; Acquaviva 2008).

I show that on the one hand, apart of Kinyarwanda lexicon straight forwardly supports this theory, but on the other hand, there is another part of the lexicon which does not follow the same track proving to have very meaningful roots. In fact, I show that the part of the lexicon that supports this theory is made up of nouns which have monosyllabic root, hence lack full meaning and category. Words in this part of the lexicon acquire meaning and category once merged with various class markers (CM). Additionally, the part which does not follow the above path, has polysyllabic roots. Words in this part of the lexicon prove to have full meaning and show metonymic derivation when merged with different Class Marker (CM) instead of changing their meaning fully.

This paper is articulated in three parts. The first part presents all the sixteen noun classes (NC) of Kinyarwanda and their agreement with all possible modifiers. The second part gives illustrative examples always trying to include one noun with a monosyllabic root and another with polysyllabic root where possible for each NC.

The very part also explains in more details the reasons behind the class membership for different nouns and gives a brief description of how Kinyarwanda nouns work as far as their internal structure is concerned. The third part, discusses the two parts of the Kinyarwanda lexicon vis-a vis the DM theory to highlight its relevance as far as Kinyarwanda lexicon is concerned and the last part serves as a conclusion to this paper.

## 2. Kinyarwanda Noun Class System

According to Van de Velde (2009), noun classes are defined as groups of nouns that induce the same agreement pattern. He goes on stating that noun class assignment in the Bantu languages is

shown by means of a noun class prefix or class marker (CM).

Conventionally, Bantuists use numbers, and not labels such as ‘feminine’, ‘masculine’ or “neuter,” to refer to individual noun classes. Numbers are assigned to classes in individual languages on the basis of cognacy. Odd numbers are used for classes that contain singular nouns and even numbers for plural classes, with some exceptions like class 12 (SG) which pluralizes in class 13 (PL). Bantu languages specialists call this singular and plural class pairings ‘genders’.

See the table below for Kinyarwanda noun classes.

Kinyarwanda has sixteen noun classes. Modifiers (adjectives, demonstratives, numerals, possessive setc.) agree with the head noun by taking its CM. In some cases, however, the modifier takes a different type of prefix depending on whether it is an adjective, a verb, an object pronoun, a quantifier or a possessive.

See the table above.

The numbers 1-16 correspond to traditional conventional Bantu noun classification (NC).

**Table 1** *Kinyarwanda Noun Class System and Agreement*

<i>CMpref</i>	<i>Adj</i>	<i>Subj</i>	<i>Obj</i>	<i>Dem</i>	<i>Poss</i>
1. mu-	mu	a	mu	u	wa
2. ba-	ba	ba	ba	ba	ba
3. mu-	mu	u	wu	u	wa
4. mi-	mi	i	yi	i	i
5. ri-	ri	ri	ri	ri	ri
6. ma-	ma	a	ya	a	a
7. ki-	ki	ki	ki	ki	ki
8. bi-	bi	bi	bi	bi	bi
9. n-	n	i	yi	i	i
10. n-	n	zi	zi	zi	zi
11. ru-	ru	ru	ru	ru	ru
12. ka-	ka	ka	ka	ka	ka
13. tu-	tu	tu	tu	tu	tu
14. bu-	bu	bu	bu	bu	bu

---

15. ku-	ku	ku	ku	ku	ku	ku
16. ha-	ha	ha	ha	ha	ha	ha

---

**Notes:** Adapted from Kimenyi (1980)

As an example to show how modifiers agree with the CM of the head noun, let's use the root of the noun –gore 'woman' which belongs to NC 1 for singular and NC 2 for plural and, –jumba 'potato' which belongs to NC 7 and pluralizes by taking NC 8 marker.

(1)

gore 1/2 'woman/wife' noun: umugore 'woman'/abagore 'women'

Adj. → **umugore mugufi** 'a short woman'/**abagore bagufi** 'short women' Subj.pr.  
→ **umugore araje** 'the woman comes'/**abagore baraje** 'the women come' Obj.pr. →  
baramukunda 'they love her'/barabakunda 'they love them'  
Dem. → **uriyamugore** 'that woman'/**bariyabagore** 'those women'

Poss. → umugore **wanjye** 'my woman'/wife abagore **banjye** 'my women/wives'

(2)

jumba 7/8: noun ikijumba 'potato'/ibijumba 'potatoes'

Adj. → **ikijumbakinini** 'a big potato'/**ibijumbabinini** 'big potatoes'  
Subj.pr. → **ikijumbakirahiye** 'the potato is ready'/**ibijumbabirahiye** 'the potatoes are ready'  
Subj.pr. → **barakirya** 'they eat it'/**barabirya** 'they eat them'  
Dem. → **kiriyakijumba** 'that potato'/**biriyabijumba** 'those potatoes' Poss.  
→ **ikijumbacyanjye** 'my potato'/**ibijumbacyanjye** 'my potatoes'

## 2.1. Examples for Each Noun Class

Class 1 and Class 2: -mu-/-ba-

(3)

-ntu, 1/2. umuntu → abantu 'person/people' /-gabo, umugabo → abagabo 'man/men'

Class 3 and Class 4: -mu-/-mi-

(4)

---

-ti,3/4umuti→imiti‘medicine/medicines’-gozi,3/4umugozi→imigozi‘rope/ropes’

Notethatboth-mu-ofClass1and-mu-ofClass3,changeto -mw-ifthestemstarts  
withavowel.Classmarker2-ba-changesto-be-ifthestemstartswiththeletter-i-and Class marker -  
mi- Class 4 changes to -my- if the stem starts with a vowel.

Class5 andClass 6:-ri-/-ma-(with a loss of-ri-for the singular partfor NC 5)

(5)

-zuru,5/6izuru/amazuru‘nose/noses’5/6Class6:-zi,6amazi‘water’

Class 7 and Class 8: -ki-/-bi-

(6)

-ti,7/8igiti/ibiti‘tree/trees’-tuza,7/8igituza/ibituza ‘chest/chests’

Theclassmarker-ki-changesto-gi-becauseofDahl’slaw:that isifthestemstarts with a voiceless  
consonant. It becomes -cy- if the stem starts with a vowel. The class marker -bi- changes to -by-  
also if the stem starts with a vowel.

Class9andClass10: -n-/-n-

(7)

inka/inka‘cow/cows’-tama,9/10intama/intama‘sheep/sheep’(pluralitywillbe linked to the  
context)

Class11andClass10: -ru-/-n-

(8)

-kwavu,11/10urukwavu/inkwavu‘rabbit/rabbits’-syo,11/10urusyo/insyo ‘grinding  
stone/grinding stones’

Theclassmarker-ru-asexamplesshowchangesto-rw-ifthestemstartswitha vowel.

Class12andClass13:-ka-/-tu-

(9)

-bari,12/13akabari/utubari‘bar/bars’-zi,12/13akazi/utuzi‘work/works’;‘job/jobs’

Both-ka-and-tu-also undergo Dahl’slaw, becoming-ga-and-tu-respectivelyif the stem starts with  
a voiceless consonant. The morpheme -ka- can also change to -

ke-because of vowelcoalescence,and-tu-becomes-tw-ifthestemstartswithavowel. Class 14: -bu-

(10)

---

-saubusa 'nothing'-kire, 14ubukire 'wealth'

The allomorph *-bu-* is *-bw-* if the stem starts with a vowel. No pairing is possible here.

Class 15 and Class 6

(11)

-boko, 15/6 ukuboko/amaboko 'arm/arms' -twi, 15/6 ugutwi/amatwi 'ear/ears'

There are very few words found in Class 15. The class marker changes to *-kw-* if the stem begins with a vowel.

Class 16

(12) -ntu, 6 ahantu 'place'

The word *ahantu* is the only one found in this class. Others temporal and locative words are **i/ku** meaning "at" and **mu** meaning "in"

A large number of nouns in Kinyarwanda belong to what might be said as their natural classes. For instance, what is referred to by Bantuists as class 1/2 marked by the prefixes *-mu-*/*-ba-*, respectively is, in all Bantu languages, restricted to human beings only. Most of plant names belong to class 3/4 and are marked by the respective prefixes *-mu-* and *-mi-*

Class 5, which is marked either by the lack of classifier (-) or the prefix *-ri-* is found with some nouns referring to body parts. Other nouns referring to body parts are found in 15 NC whose marker is the morpheme *-ku-* although other classes such as 3/4 or 7/8, have them. Most of mass nouns such as liquids or nouns referring to other uncountable objects belong to class 6 which is marked by the prefix *-ma-*

Nouns referring to inanimate objects or dangerous animals are found in class 7 and class 8 whose respective class markers are *-ki-* and *-bi-* for singular and plural.

The majority of nouns referring to the animal world (animals, reptiles, birds, insects...) are found in classes 9 and 10. The class marker is *-n-* or *-ø-* before a fricative:

A lot of non-countable nouns are also found in class 11. The CM for this category is the prefix *-ru-*:

Class 14 marked by the prefix *-bu-* includes also non-countable nouns and names referring to countries or Rwandan provinces or to time expressions. The majority of names of rivers and hills belong to class 12 and take the prefix *-ka-*:

Class 16 which is marked by the prefix *-ha-* is exclusively for locative and temporal expressions.

The majority of these class markers occur in pairs 1/2; 3/4; 5/6; 7/8; 9/10; 9a/10a

11/10;12/13,15/6.,tomarkingsingularityandplurality,respectively.Class14 hasfew words which pluralize in class 6. Class 16 doesn't have a pair.

The nouns in Kinyarwanda consist of a root, a prefix and a preprefix or augment. The augment which is realized as a vowel, usually resembles the vowel of the prefix vowel. These prefixes are also known in Bantu languages as class markers (CM).

There are two types of nouns in Kinyarwanda, nominal nouns (NN) and deverbal nouns (DN), derived from verbs. A regular Kinyarwanda noun consists of a preprefix (PPX) or augment (AU), a class marker (CM) and a stem or root. A deverbal noun consists of a preprefix or augment, a class marker (CM), a verb, an optional lexical extension (LE), an optional grammatical extension (GE) and a nominalizer (NR), like in the examples below:

NN=Au-CM-Root.

- (13) -gore, 1 'woman' → u-mu-gore → umugore (30)-  
gozi, 4 'ropes' → i-mi-gozi → imigozi
- (31) -ezi, 15 'moon' → u-ku-ezi → ukwezi DN=  
Au-CM-Verb Stem-(LE)-(GE)-NR
- (32) -kino, 3 'game' → u-mu-kin-o → umukino AU-  
CM3-play-NR
- (34) -funguzo, 11 'key' → u-ru-fung-ur-y-o → urufunguzo

.....AU-CM11-open-LE-GE-NR

- (35) -kozi, 3 'worker' → u-mu-kor-y-i → umukozi AU-  
CM3-work-GE-NR

### 3. DM Theory and its Relevance in a Visthe Lexicon of Kinyarwanda

As I mentioned in the introductory section, this study considers one of the DM tenets suggesting that the lexicon of a language consists of "a set of roots that lack category, as well as phonological form and that may be semantically underspecified to varying degrees. Those roots then acquire a category by being inserted in particular syntactic configuration" (Marantz 1997; Acquaviva 2008) and tries to confront this theory with the lexicon of Kinyarwanda, a Bantu language spoken in Rwanda and its neighboring countries.

In fact, Kinyarwanda lexicon seems to be divided into two parts, one part supporting the theory and an other one showing other behaviors that are to be discussed in this study. I propose that the nouns which straightforwardly support the DM in its tenet under discussion here are those with a one-word root (lack meaning and category) and those which do not fall under this tenet have more than one word in their roots (They are hence meaningful) and show metonymic derivation when merged with different C. Minstead of changing their meaning completely. Kimenyi (1980).

It hence seems that the idea that the lexicon consists of roots that lack both category and phonological form is motivated by the nature of the root itself which can prove to be meaningful and susceptible to have category in one instance (polysyllabic roots) and the opposite situation in the other instance (monosyllabic roots.)

### 3.1. Nouns with Monosyllabic Roots (Supports DM)

Noun class 1/2:

(36) Umuntu → u-(AU)-mu-(CM)-ntu (monosyllabic root)

(37) Umugore → u-(AU)-mu-(CM)-gore (polysyllabic root)

Let's merge the set of nouns with different CM to check the relevance or not of the DM's tenet under investigation as far as Kinyarwanda is concerned:

(38) Umuntu → NC 1 → Person/people

(39) Ahantu → NC 16 → Place

(40) Ubuntu → NC 14 → Generosity

(41) Ukuntu → NC 15 → Knowhow (manners)

(42) Ikintu → NC 8 → Thing

(43) Akantu → NC 11 → Embarrassing situations.

---

(44) Uruntu(runtu)withreduplicationsometimes →suspicion

By merging this root  $\sqrt{\text{ntu}}$  with different CM, we come up with six words that share the same root and have some meaning in common but are not related to each other in any meaningful way, because they are separate lexical items. On the semantic side all these lexical items seem to be vaguely related to a global concept of people, human being, humanity etc. meaning a set of things, entity and event that are conceived of as bearing a direct relationship with humanity.

Through this operation it so comes out that roots are chosen from the lexicon and are then incorporated or inserted into syntactic structures thus becoming heads of the new derived word. It is this head movement that makes possible this incorporation and shows how elements are related to each other in terms of hierarchical power. If for example we want this root  $\sqrt{\text{ntu}}$  to function as a predicate we assign it the required category by merging it with functional projection headed by the functional head V itself chosen from the lexicon. In the case of Kinyarwanda it must either be “ku” or “gu” applying the Dahl’s law for the smooth pronunciation of the new derived word which will be a verb in this particular case. The root head then raises-adjoins to  $V^0$  thereby acquiring verbal features.

For the sake of checking the consistency of the theory let’s take another word in noun class 5:

**Noun class 5:**

(45) amazi →a-(AU)-ma-(CM)-zi (monosyllabic root) →water. Let’s try to merge it with different CM. We will have:

(46) Uruzi (analyzable as above) → NC 11 →river

(47) Umuzi (analyzable as above) → NC 3 →plant root

(48) Akazi (analyzable as above) → NC 12 →work

**Noun class 7**

(49) igititi (Dahl’s law) →i-(AU)-ki-(CM)-ti-(monosyllabic root) →tree. Let’s merge it with different CM:

(50) Uruti → (analyzable as above) → NC 11 →handle (spear)

(51) Umuti → (analyzable as above) → NC 3 → medicine/drug

(52) Inti → i-(AU)-n-(CM)-ti(monosyllabicroot)→truncoplant

### **Noun class 6**

(53) amapfa → a-(AU)-ma-(CM)-pfa(monosyllabicroot)→drought

(54) Umupfa → (analyzableasabove) →NC 11→widow/widower  
(Just add

(55) gupfa(infinitive) →to die

(56) umupfa(pfa) (Reduplication) →Irresponsibleperson

(57) Ipfa→i-AU-ri(CM)-pfa →curiosity

Almost all Kinyarwanda words with monosyllabic root (Which is the sinequanone condition for a word to support this DM theory) seem to straight forwardly support the DM theory in question apart from some exceptions like:

(58) Umunsi→u-(AU)-mu-(CM)-nsi(monosyllabicroot)→ ‘day’

(59) amabya →analyzableasabove → ‘testicles’

(60) urunyo →asabove → ‘worm’

(61) amata →asabove → milk

(62) amabyi →asabove → human excrement

### **3.2. Nouns with Polysyllabic Roots (Do not support DM)**

(63) Umugore→ u-(AU)-mu-(CM)-gore(polysyllabicroot)→woman/wife

If we merge this polysyllabic root with different CM we will get the following data:

(64) Akagore →smallwoman/wife

(65) Ikigore →bigwoman/wife

(66) Ubugore →womanhood

This type of words (with polysyllabic root) do not support the DM theory we are discussing here because these words prove to have complete meaningful root. In fact when

---

you look at the root “√gore” you directly establish the meaning of the linguistic entity being referred to without waiting for merging it with some heads to assign it the meaning. By looking at the root “√gore” we automatically realize it is a female human being who is involved. When this kind of roots is merged with various CM they prove to produce some new words or new lexical items which have a metonymic relationship (semantic association) with the initial nouns they are derived from. This association between the basic lexical item and the new derived one can be that of cause and effect; possessor and possessed; container and content. Kimenyi (1980)

On the other hand, when you look at the root √ntu you realize that there is neither meaning nor category which can be associated with it in isolation. It naturally needs to be merged with one of the functional head N or V to gain meaning and hence refer to some possible entity in the world. And again it is clear that the word derived from the monosyllabic roots are somehow very different one from another (separate lexical item) whereas the nouns derived from polysyllabic roots are closely related because they refer to the same encyclopedic reality. It is pretty much easy and possible to assign meaning to the √gore type roots in isolation which is impossible for the √ntu type roots.

Let's now check what happens with a deverbal noun (DN). Remember that umugore is a nominal noun (NN) meaning that it is not derived from a verb. The noun “umukino” meaning “a play or a game” is derived from the verb “gukina” “to play”. The root or the stem for this noun umukino is √kino which displays all the characteristics of a polysyllabic root because the analysis of the noun is as follows:

(67) umukino → u-(AU)-mu-(CM)-kin-(verbRoot)-o-(NR)

When we merge this polysyllabic root with different CM we come up with derived nouns which show metonymic relationship. They are very closely related and somehow refer to the same linguistic entity as follows:

(68) Umukino → a game/play

(69) Umukinnyi → player

(70) imikino → sports

It is hence clear that on the one hand, all Kinyarwanda nouns with polysyllabic root (both NN and DN) do not support the DM theory we are discussing in this paper since their roots prove to have full and complete meaning and category. When you take those roots in isolation you can automatically figure out what they mean and what is their category:  $\sqrt{\text{Kino}}$  will obviously be a noun in itself has the NR –o.  $\sqrt{\text{Kinaw}}$  will easily take your mind to the verb category because of the –a verb ending etc.

On the other hand, another part of Kinyarwanda nouns straight forwardly support this DM theory. Those are the nouns with monosyllabic root. The  $\sqrt{\text{nturo}}$  root types are very morphologically poor to tell a reader anything about any possible linguistic entity they can refer to in isolation. They hence need to be merged with some functional head to acquire meaning and category as the DM theory under discussion stipulates. The new derived words are then inserted into syntactic structures by the means of the functional head V or N movement as I mentioned above.

#### 4. Conclusion

This study confronted the DM theory stating that the “*lexicon is a set of roots that lack category, as well as phonological form and that maybe semantically underspecified to varying degrees. Those roots then acquire a category by being inserted in particular syntactic configuration*” with the lexicon of Kinyarwanda in order to check if Kinyarwanda nouns support or not the DM theory. It was found out that the reisa part of Kinyarwanda nouns which straight forwardly support it (those with monosyllabic roots) and another part which does not fall under the very theory (those with polysyllabic roots)

The finding above can exactly be aligned with what Kihm (2005) stated about Manjaku, a Niger-Congo language spoken in West Africa. In fact, the data from Manjaku underscore the relevance of the DM theory under discussion in this paper vis-à-vis its lexicon. To illustrate this, He used a root  $\sqrt{\text{lik}}$ , which vaguely has a meaning of something globally related to the concept “water”.

When he merges this root with different CM it results in very different lexical items as

follows:

**pë-lik** 'to draw water'; **i-lik** 'well(s)'; **m-lik** 'water', **ka-lik** 'fruit juice'.

According to him the same happens in Arabic whereby he used the root  $\sqrt{\text{ktb}}$  which is related to the global concept to f "writing", surfacing as a verb in **kataba** 'he wrote'), and as a noun **kitaab** 'book', i.e. object produced by writing). This therefore suggests that other studies are highly welcomed to check if the DM tenet discussed above may be applied in other languages.

### References

Acquaviva, P. (2009). Roots and lexicality in Distributed Morphology. In Fifth York Essex Morphology Meeting (YEMM), 9<sup>th</sup> February and 10<sup>th</sup> February 2008, Department of Language and Linguistic Science, University of York. University of York. Department of Language and Linguistic Science.

Embick, D., & Morris, H. (2005). 'On the Status of *Stems* in Morphological Theory'. In *Romance Languages and Linguistic Theory 2003*, ed. T. Geerts, I. van Ginneken and H. Jacobs, Amsterdam-Philadelphia: John Benjamins, 37-62.

Embick, D., & Marantz, A. (2006). 'Architecture and Blocking'. Ms., University of Pennsylvania and MIT.

Embick, D., & Rolf, N. (2007). 'Distributed Morphology and the Syntax Morphology Interface'. In *The Oxford Handbook of Linguistic Interfaces*, ed. G. Ramchand and C. Reis, Oxford: Oxford University Press, 289-324.

Halle, M. (1990). 'An Approach to Morphology'. In *NELS 20*, 150-184. GLSA University of Massachusetts, Amherst, 150-184.

Halle, M., & Marantz, A. (1993). Distributed Morphology and the pieces of inflection. In *The View*

*from Building 20.* Ken Hale and Samuel J. Keyser (eds.) Cambridge, Massachusetts: MIT Press, 111-176.

Halle, M., & Marantz, A. (1994). 'Some key features of Distributed Morphology.' In *MIT Working Papers in Linguistics 21: Papers on phonology and morphology*, ed. Andrew Carnie and Heidi Harley. MITWPL, Cambridge, 275-288.

Kihm, A. (2005). Noun Classes, Gender, and the Lexicon-Syntax-Morphology Interfaces: A comparative Study of Niger-Congo and Romance Languages. In *The Oxford Handbook of Comparative Syntax*, Guglielmo Cinque and Richard Kayne (eds.), Oxford: Oxford University press, 459- 512.

Kimenyi, A. (1980) Relational grammar of Kinyarwanda. University of California Publication in Linguistics (Vol. 91). University of California Press.

Marantz, A. (1997). No Escape from Syntax: Don't Try Morphological Analysis in the Privacy of Your Own Lexicon. *University of Pennsylvania Working Papers in Linguistics* 4.2, 201-225.

Oltra-Massuet, I. (1999). *On the notion of them vowel: An ew approach to Catalan verbal morphology*, MIT occasional papers in linguistics 19. Department of Linguistics and Philosophy, MIT, Cambridge, Mass.

Van de Velde, M., Bostoen, K., Nurse, D., & Philippson, G. (Eds.). (2019). *The Bantu Languages*. Routledge.