

INFLECTION AND PHONOLOGICAL FORM IN WOLOF

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1.0 Introduction

Wolof is a member of the West Atlantic family of Niger-Congo languages, a family that is characterized by some of the most extensive and morphophonologically elaborate noun class systems found in natural language.¹ However, for various reasons, both internal and external to the language, the noun class system in Wolof has undergone a series of rapid changes in a relatively short period of time, all of which have contributed to an ongoing disintegration of the system and the proliferation of a default class. This paper examines the stages in the disintegration of the Wolof noun class system from a morphophonological perspective, focusing specifically on the emergence and disappearance of a default strategy for class assignment sometimes referred to as a copy rule.

Recent discussions of gender in natural language (Aronoff 1994; Corbett 1991) attest to instances of inflectional systems that are partially determined by phonological form. In such cases the phonological form of a given stem can be correlated with a specific gender. In Hausa, for example, there is an assignment rule by which nouns ending in the string *-aa* are assigned to the feminine gender (Corbett 1991:53), while in Yimas, nouns ending in the string *-mp* are assigned to gender *vii* (Aronoff 1994:116; Corbett 1991:56). It has long been noted (Rimbaud 1898; Delafosse 1927; Ward 1939; Senghor 1943, etc.) that in Wolof the phonological form of a noun frequently serves as the basis for determining the noun class to which it is assigned; however, unlike those instances described in the literature in which the stem and gender marker, although correlated, retain independent phonological forms, Wolof is, to my knowledge, unique in exhibiting an actual transfer of phonological form from stem to inflectional class marker: the inflectional class marker, revealed in agreement, is an actual copy of the stem-initial consonant, as the following examples show.²

(1)	Noun	Determiner (UR: /Ci/)	Gloss
	<i>góor</i> ³	<i>gi</i>	the man
	<i>jumaa</i>	<i>ji</i>	the mosque
	<i>saa</i>	<i>si</i>	the moment
	<i>waxtu</i>	<i>wi</i>	the hour

¹ These include Fula and Seereer-Siin. For a description of the former see especially Arnott 1970 and Sylla 1982; for the latter, see Mc Laughlin 1994.

² I thank Babacar Mboup for grammaticality judgments on the Wolof forms.

³ Throughout this paper I have followed standard Wolof orthography, as used in Fal, Doneux, and Santos (1990). The acute accent over a vowel (as in *góor*) stands for [+ATR], while the symbol *ɛ* has the value of schwa.

This rule no longer appears to be productive in Wolof, but there is much evidence that it was so until very recently.

The basic problem posed by the copy process in Wolof is that the postlexical or syntactic process of agreement appears to be carried out in the morphophonology. The analysis presented below accounts for the operation of the Wolof copy process within an autolexical framework (Sadock 1991), specifically the version proposed by Woodbury (1995), which permits a mismatch between the internal morphology and morphophonology of the noun. Following the analysis of the copy rule I will discuss historical motivation for the mismatch, and its role in the ongoing disintegration of the Wolof noun class system.

2.0 The Wolof noun class system

There are ten noun classes in Wolof, eight singular and two plural. A noun may belong to up to three classes: singular, plural, and diminutive singular. The most salient aspect of Wolof noun classification, and that which distinguishes it from other West Atlantic languages, is the lack of a class marker on the noun itself, except, unproductively, in a handful of restricted cases that show a stem-initial consonant change from singular to plural (e.g. *bë/gët* 'eye/eyes' and *baaraam/waaraam* 'finger/fingers') and more productively in the diminutive form of nouns beginning with certain consonants which undergo prenasalization. A noun class marker surfaces in the form of a single consonant on nominal dependents such as determiners and relative particles. Throughout this paper noun classes will be referred to by the consonant that surfaces on the dependents. The set of Wolof noun classes is listed in (2).

(2)	Singular classes	Plural classes
	k-	ñ-
	b-	y-
	g-	
	j-	
	l-	
	m-	
	s-	
	w-	

The *k*-class and its corresponding plural, the *ñ*-class, have a very restricted membership composed of only a few nouns. The *k*-class has only two members: *nit* 'person' and *këf* 'thing'; while the *ñ*-class includes *nit* and, depending on the speaker, *jigéen* 'woman', *góor* 'man', and *gaa* 'people'. Other than these four cases, however, plural nouns are always in the *y*-class. Diminutive formation in Wolof involves both a transfer to the *s*-class and stem-initial consonant mutation in stems that begin with the following consonants: *b*, *d*, *j*, *g*, *s*, *x*, and *+*; otherwise, there is no change in the stem-initial consonant. The *s*-class, however, is not uniquely a diminutive class, and many non-diminutive nouns are in that class in their singular form (e.g.: *saa* 'moment', *xorom* 'salt', and *asamaan* 'sky'). Finally, the class with the largest membership is the default *b*-class.

Classes are uniquely either singular or plural, thus a change in number involves a change in class. Given that there are no morphological class markers on a noun, singular and plural forms are indistinguishable unless they occur in a noun phrase that also includes a determiner that agrees with the noun. Examples of singular and plural forms of nouns, followed by their definite article, are presented in (3).

(3)	Class	Singular	Plural	Gloss
	k	<i>nit ki</i>	<i>nit ñi</i>	the person
	b	<i>tëgg bi</i>	<i>tëgg yi</i>	the blacksmith
	g	<i>kër gi</i>	<i>kër yi</i>	the house
	j	<i>jigéen ji</i>	<i>jigéen yi/ñi</i>	the woman
	l	<i>ngunu li</i>	<i>ngunu yi</i>	the chicken coop
	m	<i>picc mi</i>	<i>picc yi</i>	the bird
	s	<i>ndaw si</i>	<i>ndaw yi</i>	the young woman
	w	<i>waasintoor wi</i>	<i>waasintoor yi</i>	the fish scale

2.1 Class agreement

As seen in the examples in (3), class markers (other than a restricted set of diminutive markers) surface only on nominal dependents. These include proximate and distant definite articles and demonstratives, anaphora, relative pronouns, and for certain speakers the *wh*-word, 'which', the cardinal number one, and a non-generic article. Examples of the first three categories are given for the two nouns *kër* 'house' (*g*-class) and *nit* 'person' (*k*-class) in (4). Class markers on dependents are in boldface.

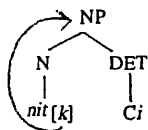
(4)	'house'	'person'	Gloss
Definite article	<i>kër gi</i>	<i>nit ki</i>	'the x' (proximate)
	<i>kër ga</i>	<i>nit ka</i>	(distant)
Demonstrative	<i>kër gi</i>	<i>nit kii</i>	'this x'
	<i>kër gale</i>	<i>nit kale</i>	'that x'
Anaphor	<i>googu</i>	<i>kooku</i>	'the aforementioned x'
Relative	<i>kër gu baax</i>	<i>nit ku baax</i>	'the x that is good'

I will assume that the presence of a class marker on nominal dependents comes about through the percolation of agreement features from the noun to the NP node, and is then distributed to the DET node by the rule in (5) adapted from Sadock (1991:40):

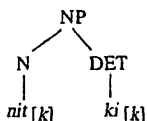
(5) NP[α CLASS] \rightarrow N[α CLASS] DET[α CLASS]

The process is illustrated for the *k*-class noun *nit*, 'person', in (6a-b):

- (6a) Percolation of class feature to NP node



- (6b) Application of rule (5)



2.2 Class assignment

There are currently two ways in which nouns are assigned to a class in Wolof: a noun may have a lexically or semantically specified class⁴, or a noun may be assigned to the default class. In the first case, we may simply say that the noun does not acquire the agreement feature, [Class x], per se, because the feature is already inherent to the noun. In the second, however, the noun has no inherent class and must therefore acquire it, since every noun is required by the grammar to belong to a class.⁵ If a noun has no inherent class, then it will undergo the default rule in (7) which will assign it to the *b*-class.

- (7)
- $N[\text{Class } \emptyset] \rightarrow N[\text{Class } b]$

3.0 The copy rule

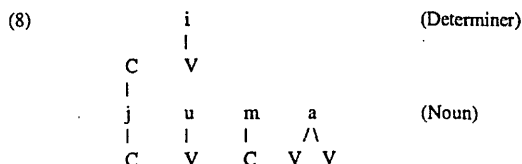
I turn now to an analysis of class assignment based on phonological form, the process that has been dubbed a copy rule and which was, until relatively recently, a productive means of class assignment in Wolof. As illustrated in (1), the process exhibits a transfer of phonological form from noun to determiner by appearing to copy the stem-initial consonant of the noun. Like those nouns assigned by Rule (7) to the *b*-class, nouns whose class was assigned on the basis of phonological form had no inherent feature to percolate to the NP node, but they did not undergo the default rule which would have assigned them to

⁴ I am ignoring for the moment the whole question of semantic content of the classes, the discussion of which is beyond the scope of this paper. For present purposes I will treat all cases of semantically assigned class as instances of inherent class.

⁵ In describing the difference between noun classes and noun classifiers Dixon (1986) defines the former as an obligatory grammatical system, while the latter are optional and discourse sensitive. The fact that every noun is required by the grammar to belong to a class has important repercussions for my argument, especially with regard to the incorporation of loanwords into Wolof, as described in 4.2.

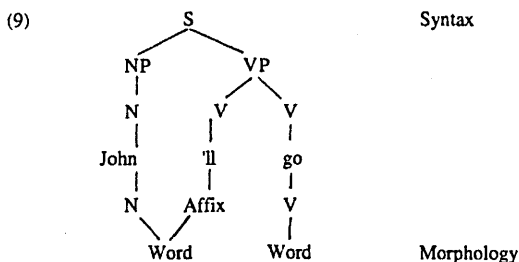
the *b*-class. Instead, a morphophonological process kicked in in order to assign the noun to a class. Since percolation is a syntactic process, and the agreement feature must be a syntactic one, it is very difficult to appeal to a morphophonological solution. How do we get phonological form into the syntax?

If there were indeed a morphophonological copy rule at work, it would have to be carried out in a manner similar to reduplication. Although this could ostensibly be done by associating the C-slot of the determiner to the melody of the stem initial consonant, as illustrated in (8) for the noun *jumaa* 'mosque', this poses two serious problems: first, it would be difficult to justify reduplication occurring across a word boundary; and second, in cases of anaphora that show agreement, there is no local antecedent to supply the phonological form to be copied.



3.1 An autolexical solution

Within an autolexical framework, an expression is not required to have isomorphic representations in each component of the grammar in order to be well-formed, as long as they obey the constraints of the interface which coordinates the representations.⁶ Thus, the English sentence 'John'll go' is organized along different grounds in the syntax and the morphology, as illustrated in (9).



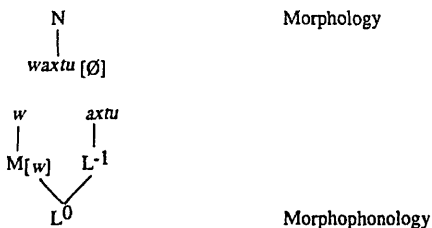
⁶ The reader interested in the components of an autolexical framework is referred to Sadock (1991).

Within the version of Autolexical syntax found in Woodbury (1995), the morphology, which deals with hierarchical notions such as headedness and subcategorization, is distinct from the morphophonology, which deals uniquely with form and is governed by the rules of Lexical phonology. Woodbury's version provides the framework for my analysis.

I propose that the internal structure of Wolof nouns assigned to a class on the basis of phonological form is organized differently in the morphophonology and the morphology. Crucially, the morphophonological component interprets a string such as *jumaa* 'mosque' as being composed of two parts: a stem and a prefix, where the latter consists of the initial consonant of the string. Within the morphology, however, the noun is a simplex form with no internal structure. As we shall see in 4.1, such an interpretation is historically well-motivated.

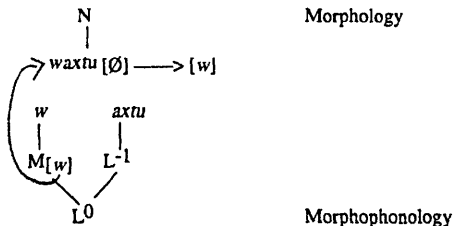
The representation of the noun *waxtu* 'hour' in (10), which is assigned to the *w*-class on a phonological basis, illustrates the first part of the analysis.⁷

(10)



When the noun, along with its determiner, enters a noun phrase, the determiner is required by the morphology to be inflected for class. The class feature associated with the stem-initial consonant in the morphophonology spreads freely across the modular interface to the morphology,⁸ as illustrated in (11).

(11)

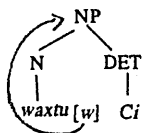


⁷ The L⁻¹ and L⁰ nodes roughly represent a stem or root level, and a word level respectively. M represents a morph or morphological process.

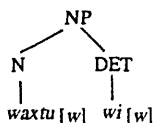
⁸ The spread of features across the modular interface is discussed by Sadock (1991:39-41).

The inflectional process is then carried out in the same manner as in (6), as illustrated in (12a-b).

(12a) Percolation of class feature to NP node



(12b) Application of rule (5)



The advantage of positing a mismatch between the morphological and morphophonological representations of nouns that were assigned to a class on a phonological basis is that it allows a phonological form (the stem-initial consonant) to be rewritten as an agreement feature in the syntax, mediated through the morphology. In 4.1 I will provide further evidence for my position by showing that the origins of the mismatch have an empirical basis in the recent history of Wolof noun classification.

4.0 The diachronic perspective

At the outset of this discussion I mentioned that it is unlikely that the process I have just analyzed in 3.1 is still productive in Wolof: nouns that have no inherent class feature are now assigned to the *b*-class by the default rule in (7). The myriad of forms such as those in (1), where the class marker is identical to the stem-initial consonant, are the result of lexicalization of a once productive process which no longer operates in the language. In this section I will show briefly that the copy rule was a default rule that preceded the current default rule that assigns nouns to the *b*-class.

4.1 The evolution of West Atlantic class markers

Greenberg's (1978) schema of the evolution of class markers in the West Atlantic languages, given in (13), includes four stages towards the development of a class prefix.

- | | | |
|------|---------|---|
| (13) | Stage 1 | no class marker on the noun (demonstrative) |
| | Stage 2 | definite article that shows class |
| | Stage 3 | non-generic article showing class |
| | Stage 4 | class prefix |

Within this perspective, the Northern West Atlantic languages, Wolof, Fula, and Seereer, show varying degrees of post-stage 4 development. The original prefix has in some instances become a suffix, and there is also evidence of both prefix and suffix existing or having existed simultaneously. The different kinds of morphological marking are shown in (14a-c) via the set of cognates for the word for 'man.'

(14a) Pulaar

	n.	det.	
i.	<i>gor-ko</i>	<i>oo</i>	'the man'
ii.	<i>wor-be</i>	<i>bee</i>	'the men'
iii.	<i>ngor-on</i>	<i>kon</i>	'the men' (diminutive)

(14b) Seerer-Siin

	n.	det.	
i.	<i>o-koor-oxe</i>		'the man'
ii.	<i>Ø-goor-we</i>		'the men'
iii.	<i>o-ngoos-onGe</i>		'the man' (diminutive)

(14c) Wolof

	n.	det.	
i.	<i>góor</i>	<i>gi</i>	'the man'
ii.	<i>góor</i>	<i>yi</i>	'the men'
iii.	det. <i>as</i>	n. <i>ngóor</i>	'a (certain) man' (diminutive)

In Pulaar, the Senegalese dialect of Fula, which has twenty-one classes, the prefix has been reduced to stem-initial consonant mutation; in addition, there is a class suffix on the stem, so the noun is actually doubly marked for class. The determiner, which strongly resembles the class suffix, is an independent word.

In Seereer, which appears to be morphologically a little more archaic than Pulaar, some of the class prefixes (ten out of fifteen) are retained. In both cases, overtly prefixing and non-prefixing classes, there is consonant mutation, so in a sense class is again doubly marked on stems with overt prefixes.⁹ The determiner is an enclitic in Seereer, rather than standing as an independent word as in Fula.

Now we come to Wolof, which differs from the other languages in that other than diminutive formation there is generally no morphological class marking on the noun itself,

⁹ Elsewhere (Mc Laughlin 1994) I have analyzed the floating autosegment responsible for consonant mutation as constituting part of the prefix if there is one, so at that level of abstraction, stems would not be doubly marked.

except in a very few cases which show what appears to be lexicalized consonant mutation (e.g. those already mentioned in 2.0: *bët/gët* 'cyc/eyes' and *baaraam/waaraam* 'finger/fingers'). Although there are just a handful of these examples in the language, their interest lies in the fact that they suggest that Wolof had a productive consonant mutation system like Secreer or Fula, which served as a class marker at some point in its history.

4.2 The copy rule as a default strategy

The morphological changes described in 4.1 obviously do not account for the disintegration of the noun class system in and of themselves, but when linked with external factors that have put pressure on the language, a convincing argument can be made that the so-called copy rule was a default strategy that preceded the default strategy that assigns nouns without classes to the *b*-class.

The external factors to which I have alluded have affected the noun class system in terms of borrowing on a massive scale, first from Arabic as a result of the influence of Islam, and then from French as the result of colonization and its aftermath. Every noun that is borrowed has to be assigned to a class, and various strategies were available to speakers. In addition, two indigenous external factors have also contributed to the disintegration in interesting ways: the caste system in which elaborate verbal behavior (eg. using the right noun class) is associated with low caste behavior (described by Irvine 1978); and wolofization, or the spread of Wolof as Senegal's lingua franca, which means that a very large number of Wolof speakers speak it as a second language.

It appears to be quite certain that semantic factors were operative in noun classification at a period when the Wolof first came in contact with the Portugese, in the early sixteenth century. Thus, a very early loan like *biiñ* 'wine' from Portugese *vinho*, was assigned to the liquids or *m*-class, whereas a very recent loan from French such as *koka* 'Coca-Cola' which also refers to a liquid, is simply assigned to the default *b*-class, indicating that the semantic basis of class assignment is no longer productive.

Loans from Arabic follow two patterns: they are either assigned to the *j*-class which may have encompassed some semantic field such as concepts associated with Islam, or [j] may have been the default consonant. The second pattern that Arabic loans follow is the copy rule. The copy rule method of class assignment illustrates the crucial reversal from a system in which a noun has lexically inherent class to one in which the noun has no inherent class; since it still has to be assigned to a class, the burden of assigning class shifts to the morphophonological shape of the noun where the copy rule kicks in as a default strategy.

Early French loans followed this pattern, which soon gave way to a disintegration of that particular mechanism for dealing with class assignment, probably due to the fact that the set of possible classes was a lot smaller than the possible set of stem-initial consonants found in loans, even those that conformed to Wolof phonology. The evolution of class assignment strategies is schematized in the chart in (15).

(15)

<u>External factors</u>	<u>Loan source</u>	<u>Classification basis</u>	<u>Examples</u>
a. Portugese contact	Portugese	semantic	<i>biiñ mi</i> 'wine'
b. Islam	Arabic	semantic?	<i>jumaa ji</i> 'mosque'
		copy rule	<i>ilimaan ji</i> 'imam'
			<i>jumaa ji</i> 'mosque'
			<i>malaaka mi</i> 'angel'
			<i>saa si</i> 'moment'
			<i>waxtu wi</i> 'hour'
c. Colonization --> Urban Wolof	French	copy rule	<i>suukar si</i> 'sugar'
			<i>salaat si</i> 'lettuce'
			<i>galaas gi</i> 'ice'
		default class	<i>frigoor bi</i> 'refrigerator'
			<i>koka bi</i> 'Coca-Cola'
			<i>màrsandiis bi</i> 'merchandise'
d. Wolofization		default class	<i>waxtu bi</i> 'hour'
			<i>jigéen bi</i> 'woman'

5.0 Summary and conclusion

In this paper I have presented an analysis of the Wolof copy rule, and focused specifically on its role in the ongoing disintegration of the Wolof noun class system. The autolexical analysis presented in 3.1 addresses the problem of how phonological material can be transmitted to the syntax by positing a mismatch between the morphological representation of nouns that undergo the copy rule and their morphophonological representation. In the morphology they are simplex forms unspecified for class; in the morphophonology they are duplex forms, consisting of a prefix and stem. The prefix is correlated with a certain class, which is then read by the morphology, which requires a class specification, and subsequently enters the syntax.

Within the diachronic perspective, the mismatch in representations reflects two distinct stages in the evolution of the Wolof noun class system. The morphological representation reflects the later stage in which there is no class marker on the noun. The morphophonological representation reflects the earlier stage in which class was marked by stem-initial consonant mutation. We may assume that the initial consonant was retained as the locus of class marking, thus giving rise to the copy rule, since in Wolof there is complete isomorphism between gender and inflectional class.

The copy rule as a default strategy in the classification of loanwords provided the crucial link in the disintegration of the noun class system, because it clearly shows a reversal from a system in which lexically specified class conditions the shape of class markers, to one in which the morphophonological shape of a noun becomes the basis of class assignment.

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