Submitted for the Oxford Encyclopedia of Morphology

Morphology in Niger-Congo languages

Denis Creissels

Abstract. This chapter is an overview of the structure of words belonging to the major lexical categories (nouns and verbs) in Niger-Congo languages. The language groups that constitute the core of the Niger-Congo phylum are distinguished from those whose Niger-Congo affiliation is uncertain, and particular attention is paid to the morphological patterns typically found in the core Niger-Congo languages commonly considered as relatively conservative in their morphology: rich systems of verb morphology, both flectional and derivational, and systems of gender-number marking with a relative high number of genders, and no possibility to isolate number marking from gender marking. Systematic relationships between nominal lexemes mainly rely on gender alternation, and compounding is relatively marginal. However, the Niger-Congo phylum also includes languages with reduced inflectional morphology and productive compounding patterns. A salient feature of Niger-Congo morphology is the morphological role of tone: tonal morphology is not equally important in all Niger-Congo languages, but all the functions commonly fulfilled by affixation can also be fulfilled by tonal alternations, at least in some of them. The main body of the chapter divides into 3 sections. Section 2 discusses formal aspects of the structure of words. Section 3 is dedicated to the categories expressed in the inflectional morphology of nouns and verbs. Section 4 is devoted to constructional morphology, or word formation (derivation and compounding).

Keywords: Niger-Congo, morphology, inflection, derivation, compounding.

1. Introduction

The name Niger-Congo, introduced in 1955 by Joseph H. Greenberg, is now used for the putative language phylum designated by Greenberg himself as Niger-Kordofan – see Greenberg (1955) and Greenberg (1963). The Niger-Congo phylum is commonly presented as a language family with the following branches: Mande, Kordofanian, Atlantic, Ijoid, Kru, Kwa, Benue-Congo (including Bantu), Dogon, Gur, Adamawa, and Ubangian, with a total of approximately 1500 languages. The validity of some of these groups of languages as genetic units within Niger-Congo remains controversial. To take just two examples among many others, the Mel languages, initially included in the Atlantic branch, are now considered a distinct branch of Niger-Congo, and the status of Senufo as a sub-branch of Gur or as a separate branch is controversial. Moreover, there are serious doubts about the inclusion of some of the groups of languages listed above in the Niger-Congo phylum. As discussed in detail by Dimmendaal (2008 & 2011), the inclusion of Mande, Ijoid, Dogon, and Ubangian into Niger-Congo is particularly problematic, and many specialists accept the view that it is safer to consider them as independent language families whose Niger-Congo affiliation cannot be considered as established.

This question has a direct impact on this chapter, since the main reason for setting apart Mande, Ijoid, Dogon, and Ubangian is that the language groups that constitute the core of the Niger-Congo phylum show particularly clear evidence supporting the hypothesis of a genetic relationship in two morphological subsystems: the gender-number system, and the system of verb-to-verb derivation (the so-called 'verb extensions'), whereas in Mande, Ijoid, Dogon, and Ubangian, cognates of the gender-number markers and verb extensions found in core Niger-Congo languages have not been identified with certainty.

This chapter focuses on the morphological characteristics of the major lexical categories (nouns and verbs) in the Niger-Congo languages whose morphology seems to best maintain patterns that already existed in the proto-language, even if their concrete morphological material may have been more or less deeply renewed. Such languages are particularly frequent in the Bantu and Atlantic groups. Some indications will however be provided about the morphological characteristics of the languages in which the morphological structure that can be reconstructed for the ancestor(s) of the core Niger-Congo languages, if it ever existed, has undergone radical changes.

The chapter is organized as follows. Section 2 discusses formal aspects of the structure of words in Niger-Congo languages. Section 3 is dedicated to the categories expressed in the inflectional morphology of nouns and verbs. Section 4 is devoted to constructional morphology, or word formation (derivation and compounding).

2. Formal aspects of the structure of words

2.1. Isolation vs. synthesis

Extreme cases of radically isolating languages, or of languages with an extremely high morpheme to word ratio, are not attested among Niger-Congo languages. The morpheme to word ratio is however not uniform across Niger-Congo languages, and as a rule, verb forms are morphologically more complex than noun forms.

2.1.1. Isolation vs. synthesis in nominal morphology

In the Niger-Congo languages that have the particular type of gender-number system traditionally referred to as 'noun class system', noun forms typically consist of a stem and an obligatory affix (either prefix or suffix) expressing (a) the singular vs. plural distinction, and (b) the distinction between semantically related lexemes sharing the same stem but differing in their agreement properties. For example, in Tswana, the stem **-tɬʰàrì** is shared by **lì-tɬʰàrì** pl. **mà-tɬʰàrì** (gender 5/6) 'leaf' and **sì-tɬʰàrì** pl. **dì-tɬʰàrì** (gender 7/8) 'tree', but **-tɬʰàrì** alone cannot constitute a word.[1] In the languages in question, the same morphological structure with an obligatory gender-number marker is shared by pronouns and adnominals. In some of the language groups included in the Niger-Congo phylum (Bantu, Atlantic), the languages that depart from this situation are exceptional,

By contrast, monomorphemic noun forms are very common in some other language groups (Kwa, Western Benue-Congo). For example, Baule (Kwa) has no nominal inflection *stricto sensu*. Underived nouns such as **wàkă** 'tree' or **ǹnyâ** 'leaf' are unsegmentable forms. In such

[1] In descriptions of Bantu languages, agreement classes of noun forms are designated by numbers that refer to the reconstructed Proto-Bantu gender-number marking system (the gender-number markers that characterize Tswana class *x* are reflexes of the gender-number markers of Proto-Bantu class *x*). The numbering of Proto-Bantu classes is arbitrary, but classes 1 and 2 typically include the singular (class 1) and the plural (class 2) of human nouns. Genders are designated by the class pairs to which nouns belong in the singular and the plural (for example, human nouns typically belong to gender 1/2). On the reconstruction of Proto-Bantu morphology, see Meeussen (1967). Unfortunately, this numbering system cannot be extended to all Niger-Congo languages that have a gender-number marking system cognate with the Bantu system, since the Niger-Congo gender-number system has only been partially reconstructed so far. In this article, outside Bantu, agreement classes of nouns are designated by letters or combinations of letters that evoke the phonological form of the markers (cf. 3.1.1).

languages the expression of categories such as number or definiteness typically involves markers that systematically occur at the right edge of noun phrases, not necessarily in contact with the head noun.

It is however interesting to observe that, in the nominal morphology of Niger-Congo languages, derivation and compounding tend to be more developed in the languages that have very reduced systems of noun inflection than in those that have rich systems of noun inflection.

2.1.1. Isolation vs. synthesis in verbal morphology

Among Niger-Congo languages, the highest degree of synthesis in verb morphology is found in Bantu. Bantu languages typically have the kind of complex verb morphology consisting of a stem and a number of affixes, both inflectional and derivational, whose ordering must be stipulated through the use of position class morphology, or a template.

A Bantu verb form typically consists of a *root* (irreducible lexical element) together with an obligatory suffix (the *final vowel*, or simply *final*) and a variable number of other affixes whose presence depends on a variety of factors, each affix having its position in the string. The root may be immediately followed by derivational suffixes that modify its meaning without altering its valency. The part of the verb form constituted by the root and such derivational suffixes can be referred to as the *extended root*.

For example, in Tswana (Creissels 2006), taking the extended root as the zero point, the verbal template can be described as a sequence of positions numbered from –4 (the leftmost possible position) to +5 (the rightmost possible position):

- Position –4 can be occupied by a negation marker.
- Position –3 remains empty in the imperative. In the infinitive, which shows a mixture of nominal and verbal properties, it is filled by the class 15 prefix. In all the other cases, it is obligatorily filled by a subject index.
- Position –2 can be filled by affixes expressing (or contributing to the expression of) various TAM-polarity values.
- Position –1 can be occupied by object indexes and by the reflexive marker. Up to three successive affixes can be found in this position.
- Position +1 can be filled by one or more affixes encoding valency operations: causative, applicative, anticausative, reciprocal.
- Position +2 can only be occupied by the perfect positive marker.
- Position +3 can only be filled by the passive marker.
- Position +4 is the only one that can be left empty in no circumstances. The 'final (vowel)' filling this position contributes to the identification of the individual tenses, but does not carry any syntactic or semantic information of its own, since with the exception of **e** ~ **ɪ** (found in the perfect positive only), each final is shared by a set of forms impossible to define straightforwardly as sharing a particular set of syntactic or semantic features.
- Position +5 ('postfinal') can be filled by the imperative plural marker, the relative marker, or the clitic form of the interrogative pronoun 'what'.

Hyman (2003) is an important reference on the templatic morphology of Bantu verbs.

The opposite situation, with a very low degree of synthesis in verb morphology, can be found in Mande (a language family whose inclusion in the Niger-Congo phylum is however controversial). For example, Mandinka (Mande) has just one inflectional affix of verbs: **-ta** (incompletive intransitive),[2] and the only other affixes that can be found within Mandinka verb forms are two suffixes characteristic of non-finite verb forms, and a causative suffix.

In most Niger-Congo languages, the degree of synthesis in verb morphology lies somewhere between these extremes. Interestingly, in northwestern Bantu languages (geographically close to languages with a much lower degree of synthesis in verbal morphology), it is possible to observe the development of maximality constraints resulting in the loss of derivational affixes of verbs (Van de Velde 2009).

Interestingly, contrary to the tendency observed in nominal morphology, among Niger-Congo languages, verbal derivation tends to be more developed in the languages that also have relatively rich systems of verb inflection.

2.2. Allomorphy, zero marking, sandhi

As a rule, Niger-Congo languages have no salient feature with respect to phenomena traditionally considered characteristic of 'fusional' as opposed to 'agglutinative' morphology, such as the use of suppletive allomorphs, the avoidance of zero marking, and the tendency to blur the boundaries between adjacent formatives. Such phenomena are not uncommon among Niger-Congo languages, but in comparison to other language families, they are not particularly systematic.

2.3. Types of affixes

Both prefixes and suffixes are common in Niger-Congo languages, with however a more or less marked predominance of either prefixes or suffixes in some language groups. For example, gender-number markers are prefixed in some language groups (Benue-Congo, Atlantic), suffixed in others (Gur, Kru).

Circumfixes (in particular, circumfixed gender-number markers) are sometimes mentioned in descriptions of Niger-Congo languages, but in most cases, as discussed by Creissels (To appear) for Seereer (Atlantic), a closer look at the data leads to the conclusion that they are best analyzed as the combination of two distinct morphemes.

In traditional descriptions of Bantu languages, the term 'infix' designates non-initial prefixes, but to the best of my knowledge, real infixes (i.e. affixes inserted within roots) have not been signaled in Niger-Congo languages.

2.4. Cumulative vs. separative exponence

In the languages of the world, the universal default is to express each morphological category by a dedicated formative. In Niger-Congo languages too, monoexponential (or separative)

[2] In Mande languages, grammaticalized TAM distinctions are typically expressed by so-called predicative markers rather than by means of verb morphology. The predicative markers of Mande languages are grammatical words that, in Mande clauses, occupy a fixed position immediately after the subject NP, and consequently are not necessarily adjacent to the verb, since the constituent order of Mande clauses is *Subject – Object – Verb – Obliques*.

formatives are more common than polyexponential (or cumulative) formatives, i.e. formatives which simultaneously code more than one category. Some types of cumulative formative are however very common, in particular unsegmentable gender-number markers in noun morphology, and unsegmentable TAM-polarity markers in verb morphology. Other types of cumulative formatives occur sporadically. For example, in Basari (Atlantic), unsegmentable markers simultaneously code subject and object indexation. Fulfulde (Atlantic) is an extreme case, with unsegmentable verb endings conflating information on voice (active / passive / middle), TAM, polarity, and the information structure of the clause

2.5. Multiple exponence

Multiple (or extended) exponence (the occurrence of multiple realizations of a single morphological feature or bundle of features in a single word) is typically found in the languages that have the kind of templatic morphology evoked in 2.1.1 for Tswana. For example, in Tswana verb morphology, as illustrated in (1), the expression of the *present* vs. *perfect* and *positive* vs. *negative* distinctions in conjoint verb forms involves 5 of the 9 positions available for verb affixes. In other words, none of the formatives occupying one of the 5 positions in question can be straightforwardly identified as the exponent of 'perfect', or of 'negation'.

(1) Tswana (Bantu): multiple exponence in the expression of TAM and polarity

–4	–3	–2	–1	0	+1	+2	+3	+4	+5	
	ʊ́-			**rɛ́k**				**-á/à**		'(s)he buys / is buying'
χà-	**á-**			**rék**				**-ɪ́**		'(s)he does not buy / is not buying'
	ʊ́-			**rék**		**-íl**		**-é/è**		'(s)he has bought'
χà-	**á-**	**à-**		**rɛ́k**				**-á**		'(s)he has not bought'

2.6. Reduplication

Total or partial reduplication is widespread as a morphological process among Niger-Congo languages, often with its usual iconic functions of expressing notions such as plurality, iterativity, distributivity, or approximation, but also sometimes with less expected functions.

In Seereer (Atlantic), partial reduplication is used to derive the designation of persons living in a given place (as in **o-paa-fatik** 'resident of Fatik'), names of places occupied by a given family or by a given kind of plants (as in **a-nju-juuf** 'place where members of the Juuf family live', or **ɓaasi** 'sorghum' > **o-ɓaa-ɓasi** 'sorghum field'), and agent nouns (as in **jal** 'work' > **o-caa-jal** 'worker') – Faye (1979).[3] The use of reduplication in the formation of agent nouns is also found a.o. in Yoruba (Benue-Congo).

[3] In the Seereer forms quoted here, **a-** and **o-** are gender-number markers.

In Ewe (Kwa), verbs may be nominalized by reduplication, as in **dzo-dzó** 'leaving', adverbs may be formed from other word classes by reduplication, many adjectivals are derived by the reduplication of an intransitive verbal stem, and in verbal inflection, intransitive verbs are reduplicated to express the progressive aspect – Ameka (1991).

In Ganja (Atlantic), causative verbs may be derived by reduplication, and in verbal inflection, the expression of verb focus involves reduplication of the stem – Creissels & Biaye (2016).

2.7. Non-concatenative morphology

2.7.1. Segmental alternations

Stem-internal vowel alternations (such as English **write** vs. **wrote**) are not common among Niger-Congo languages. By contrast, stem-initial consonant alternations, similar to those found in Celtic languages, are common in several groups of Niger-Congo languages (and also in Mande languages, whose Niger-Congo affiliation is however controversial). For example, an important characteristic of several languages belonging to various subgroups of the northern branch of the Atlantic family (Fula, Seereer, etc.) is that gender-number marking on nouns and gender-number agreement marking crucially involve not only affixes, but also stem-initial alternations, as illustrated in (2).

(2) Seereer (Atlantic – Creissels 2015)

go-	**faam**	'donkey'
a-	**paam**	'donkeys'
ga-	**mbaam**	'big donkey'

As illustrated by this example, as a rule, stem-initial alternations contributing to the expression of class distinctions in Atlantic languages typically involve a division of stem-initial consonants into three series, do not affect the place of articulation of the stem-initial consonant, and operate on features such as ±stop, ±fortis, or ±prenasalized.

2.7.2. Prosodic alternations

The overwhelming majority of Niger-Congo languages have tone,[4] and the importance of tonal alternations that cannot be straightforwardly analyzed as the result of interaction between tones underlyingly belonging to adjacent formatives is a hallmark of Niger-Congo morphology. Tonal morphology is not equally important in all languages, but all the functions commonly fulfilled by affixation can also be fulfilled by tonal alternations.

Kulango (Gur) illustrates the extreme case of a tone language in which tone has no lexical function (all lexemes belonging to a given category have the same tone pattern) but plays an important morphological role. For example, all Kulango verbs have the tone pattern HL in the

[4] Toneless languages are mainly found among the Atlantic languages spoken in the western part of Senegal (including Wolof), and among the Bantu languages spoken in the eastern part of Kenya and Tanzania (including Swahili).

completive aspect in clause-internal position, LL in the incompletive aspect, LH in the imperative, and HH in the completive aspect in clause-final position (Kra 2016).

In the description of morphological operations manifested in tonal alternations that have no straightforward explanation in terms of tonal interaction between adjacent formatives, a distinction must be made between the following three possibilities:

(a) complexification of the lexical tone pattern, which can be accounted for by positing an *additive morphotoneme*;

(b) simplification of the lexical tone pattern;

(c) replacement of the lexical tone pattern by a fixed contour, attributable to the action of a *replacive morphotoneme*.

For example, in the verbal morphology of many Bantu languages, the expression of some TAM-polarity values involves a modification of the tonal contour of the stem analyzable as resulting from the addition of a grammatical H tone (called 'melodic H' in many recent descriptions), and in the subjunctive, the verb stem has a fixed LH contour, irrespective of its lexical contour – cf. Odden & Bickmore (2014) and the other articles included in Africana Linguistica 20). Creissels & al. (1997) is a book-length description of the tonal morphology of the verb in Tswana, a language with a particularly intricate system of tonal alternations in verbal inflection.

In Bantu languages, even the manifestation of tones whose analysis as underlyingly belonging to a particular formative is uncontroversial may involve long-distance spreading or shifting mechanisms that have no equivalent in segmental morphology, and greatly complexify the analysis of tonal systems. Such phenomena, which incidentally played a major role in the emergence of autosegmental morphology some decades ago, are typically found in eastern and southern Bantu languages. Elsewhere in Niger-Congo, interactions between tones underlyingly belonging to different formatives tend to be only 'local'.

For example, in Swati (Bantu), the verb form **basebentelána** 'they work / are working for each other (cj.)', with a single H tone on the penult, is the realization of the following underlying string of formatives:

bá-	**sébent**	**-el**	**-an**	**-a**
subject index	'work'	applicative	reciprocal	final[5]

Two of the formatives that constitute this word are inherently H-toned, but the surface form includes a single H tone associated to a vowel belonging to another formative. In this particular case, no special morphological operation is at play, since the relationship between the two underlying H's and the single surface H can be described as the result of general tone spreading / shifting processes that operate in Swati irrespective of the morphological structure of words.

[5] In the terminology of Bantu linguistics, 'final' designates a verbal inflectional formative that contributes to the identification of the individual tenses, but as a rule does not carry any syntactic or semantic information of its own, since most finals are shared by forms impossible to characterize straightforwardly as sharing a particular set of syntactic or semantic features.

As a rule, in Niger-Congo languages, tonal alternations are particularly important in verbal morphology. In quite a few languages belonging to various branches of Niger-Congo, nominal lexemes may be distinguished by tone only, but verbs do not have lexical tone, and the tone pattern of verb forms is entirely determined by their grammatical value. This situation is found, among others, in Balant (Atlantic), Baule (Kwa), Urhobo (Benue-Congo), Gbaya (Ubangian).

3. Inflectional morphology

3.1. Noun inflection

3.1.1. Gender-number marking in so-called noun class systems

In the Niger-Congo languages whose nominal system is traditionally described in terms of 'noun classes', gender and number are expressed by means of portmanteau morphs etymologically opaque, for which there is no evidence that they were ever segmentable into a gender marker and a number marker. In Niger-Congo linguistics, 'noun class' refers to the division of noun forms into subsets according to their behavior in agreement mechanisms that operate in the combination of nouns with various types of modifiers, in the use of pronouns, and in the indexation of arguments on the verb. Noun forms typically include an affix (either a prefix or a suffix) expressing number and also related to their agreement behavior, but the correspondence between the gender-number markers attached to nouns and the agreement class to which they belong is not always one-to-one. In a given language, the number of distinct agreement classes for nouns is typically comprised between 10 and 15, but systems distinguishing 30 classes or so can be found among Atlantic languages.

The correspondence between the agreement properties of a given singular form, and those of the corresponding plural form, may be complex. This is precisely the reason why many descriptions of Niger-Congo gender-number systems do not emphasize the possibility of dividing noun *lexemes* into *genders*, but rather start from a division of noun *forms* into *classes* in which the singular form and the plural form of a given noun are treated as two distinct units; in this approach, a gender may be subsequently defined as a pair of classes that include the singular and plural forms of the same lexemes.

For example, in Jóola Banjal (Atlantic), as illustrated in (3), the singular form **fʊ-mangɔ** 'mango' belongs to a class that can be labeled class F, whose characteristics include a prefix **fʊ-** ~ **fu-** ~ **f-** for nouns (depending on the presence/absence of a consonantal onset, and on vowel harmony), and the same prefix **fʊ-** ~ **fu-** ~ **f-** for attributive adjectives. The plural form **gʊ-mangɔ** 'mangoes' belongs to another class, labeled class G, whose characteristics include a nominal prefix **gʊ-** ~ **gu-** ~ **g-** (or for some nouns the lexically conditioned variant **ga-**), and the same prefix **gʊ-** ~ **gu-** ~ **g-** for attributive adjectives. Similarly, **e-be** 'cow' as a noun form belongs to class E, whose characteristics include a prefix **e-** ~ **ɛ-** ~ **y-** for nouns and the same prefix for attributive adjectives, and **si-be** 'cows' belong to class S, whose characteristics include a prefix **sɪ** ~ **si-** ~ **s-** for nouns and the same prefix for attributive adjectives. As regards lexemes, **fʊ-mangɔ** is also the quotation form of a lexeme that has two inflected forms (**fʊ/gʊ-mangɔ**) and belongs to gender F–G, whereas **e-be** 'cow' is also the quotation form of a lexeme that has two inflected forms (**e/si-be**) and belongs to gender E–S.

(3) Jóola Banjal (Atlantic)

(3a) **fʊ-mangɔ** **f-ɐmɐk**
CLf-mango CLf-big
'big mango'

(3b) **gʊ-mangɔ** **g-ɐmɐk**
CLg-mango CLg-big
'big mangoes'

(3c) **e-be** **y-ɐmɐk**
CLe-cow CLe-big
'big cow'

(3d) **si-be** **s-ɐmɐk**
CLs-cow CLs-big
'big cows'

In the description of Niger-Congo noun class systems, the regularity of agreement generally makes it easy to establish the number of classes into which noun forms divide (i.e., the number of possible agreement patterns); by contrast, the idiosyncrasies shown by many nouns in the singular-plural correspondence and the variation observed in plural formation often make it very difficult to decide how many genders must be recognized, if genders are defined as sets of nominal lexemes with the same agreement properties both in the singular and in the plural.

In (4), the division of Tswana noun forms into 12 classes is illustrated by the agreement between nouns and adjectives in the 'noun + attributive adjective' construction.[6]

(4) Tswana (Bantu)

a.	cl. 1	**mò-sádì**	**jó**	**mò-ʃá**	'new woman'
b.	cl. 2	**bà-sádì**	**bá**	**bà-ʃá**	'new women'
c.	cl. 3	**mò-lìmɔ̀**	**ó**	**mò-ʃá**	'new medicine'
d.	cl. 4	**mì-lìmɔ̀**	**é**	**mì-ʃá**	'new medicines'
e.	cl. 5	**lì-sàká**	**lé**	**lì-ʃá**	'new cattle kraal'
f.	cl. 6	**mà-ràká**	**á**	**mà-ʃá**	'new cattle kraals'
		mà-lwàpá	**á**	**mà-ʃá**	'new courtyards'
		mà-dʒàŋ́	**á**	**mà-ʃá**	'new grasses'
g.	cl. 7	**sì-kólò**	**sé**	**sì-ʃá**	'new school'
h.	cl. 8-10	**dì-kólò**	**tsé**	**dìɲ̀-tʃʰá**	'new schools'
		dì-qʰósì	**tsé**	**dìɲ̀-tʃʰá**	'new chiefs'
		dì-kwálɔ̀	**tsé**	**dìɲ̀-tʃʰá**	'new books'
i.	cl. 9	**qʰósì**	**é**	**ɲ̀-tʃʰá**	'new chief'

[6] In Tswana and other Southern Bantu languages, this construction involves an obligatory linker preceding the adjective and also expressing gender-number agreement. Historically, this linker is the reflex of a former demonstrative that has lost its semantic content and has become a purely formal element of the construction.

j.	cl. 11	**lɔ̀-lwàpá**	**ló**	**lɔ̀-ʃá**	‘new courtyard’
		lɔ̀-kwálɔ̀	**ló**	**lɔ̀-ʃá**	‘new book’
k.	cl. 14	**bɔ̀-dʒàŋ̀**	**dʒó**	**bɔ̀-ʃá**	‘new grass’
l.	cl. 15-17	**χɔ̀-lìmà**	**mó**	**χɔ̀-ʃá**	‘new way of cultivating’

(4) also illustrates the regular singular-plural pairings (or major genders) of Tswana: 1/2 (**mò-sádí / bà-sádí**), 3/4 (**mò-lìmɔ̀** / **mì-lìmɔ̀**), 5/6 (**lì-sàká** / **mà-ràká**), 7/8-10 (**sì-kóló / dì-kóló**), 9/8-10 (**qʰósí / dì-qʰósí**), 11/6 (**lò-lwàpá / mà-lwàpá**), 11/8-10 (**lò-kwálɔ́ / dì-kwálɔ́**), and 14/6 (**bɔ̀-dʒàŋ̀ / mà-dʒàŋ̀**).

3.1.2. The emergence of plural markers dissociated from gender markers

The phenomenon described in this section, which constitutes a major deviation from the Niger-Congo prototype of noun class systems, can be observed among others in Ñun languages (Atlantic). In Ñun languages, some nouns follow the typical Niger-Congo pattern according to which the singular vs. plural distinction is expressed by a change in gender-number prefix of the noun and in its agreement properties, but others express the plural by the addition of a dedicated plural marker. As a rule, with nouns taking the dedicated plural marker, modifiers show the same agreement marks in the singular and in the plural, but in the plural, they take an additional affix expressing plural agreement – Ex. (5).

(5) Guñaamolo (Ñun, Atlantic – Creissels 2015)

(5a) **ka-taama** **kɐ-denn**
CLka-river CLka-big
‘big river’

(5b) **ka-taama-aŋ** **kɐ-denn-eŋ**
CLka-river-PL CLka-big-PL
‘big rivers’

As regards the historical origin of the development of dedicated plural markers dissociated from the noun class system, there is evidence that they result from the reanalysis of an associative plural marker (i.e., a marker that typically combines with individual names of persons to express ‘*x* and associates’) as an ordinary additive plural marker, and its gradual extension to nouns other than those likely to combine with an associative plural marker.

3.1.3. Plural marking in genderless languages

As a rule, the Niger-Congo languages that do not have a synchronically active gender-number system of the type presented in 3.1.1, have a single plural marker placed at one of the edges of the noun phrase rather than attached to the head noun.

3.1.4. Definiteness marking

Bound morphemes expressing definiteness (either affixes or clitics) are relatively common in Niger-Congo languages. Diachronically, demonstratives are the main source of definiteness markers, which explains why, in languages in which demonstratives express gender-number agreement with their head, definiteness marking normally implies additional gender-number marking, as in Ex. (6).

(6) Jóola Fóoñi (Atlantic)

(6a)	**ku-ñiil**	**f-al**	**bu-ruŋ**	**si-yen**
	CLbk-child	CLf-river	CLb-road	CLs-dog
	‘children’	‘river’	‘road’	‘dogs’
(6b)	**ku-ñiil-a-k**	**f-al-a-f**	**bu-ruŋ-a-b**	**si-yen-a-s**
	CLbk-child-D-CLbk	CLf-river-D-CLf	CLb-road-D-CLb	CLs-dog-D-CLs
	‘the children’	‘the river’	‘the road’	‘the dogs’

As discussed by Greenberg (1978), such definiteness markers play an important role in the renewal of gender-number morphology, since they very often tend to lose their function of definiteness markers and to become obligatory elements of noun forms. When this evolution is achieved, the only function of the former definiteness markers is to contribute to gender-number marking, which in many cases compensates the tendency of ‘older’ gender-number markers to become more and more eroded.

3.1.5. Case

Case defined as a morphological category of nouns involved in the contrast between core arguments (which does not necessarily imply that one of the cases is straightforwardly assigned to subjects, and another one to objects) is very rare in Niger-Congo. Apart from some Kordofanian languages (geographically separated from the remainder of Niger-Congo, and spoken in an area where case inflection of nouns is widespread) and Dogon languages (whose Niger-Congo affiliation is controversial), the only Niger-Congo languages that have morphological case are a group of Bantu languages found in a compact geographical area from Gabon to Angola. In the Bantu languages in question, a tonal distinction originally expressing a definiteness contrast has been reanalyzed as expressing a case contrast – cf. Blanchon (1999), Schadeberg (1986).

Morphological marking of nouns in genitive or locative function is less rare, although not very common either. Note that in many cases, genitive markers are not easy to characterize as true affixes or more loosely attached clitics.

In central Bantu languages, locative marking (i.e. the morphological characteristics of phrases specifying the location of an event, or the direction or source of movement with movement verbs) is fully integrated into the noun class system, which constitutes a rare typological feature. The languages in question typically have three locative classes. A very limited number of nominal stems can combine directly with locative class prefixes (often just one, which in combination with locative class prefixes yields the hypernymic term ‘place’),

but the locative class prefixes can also be freely added to noun forms including the prefix of another class, as in Lega **mwĭnò** (class 3) 'village' (**mù-ínò**) > **mùmwĭnŏ** (**mù-mù-ínò**) 'in the village', where the first **mù** is the prefix of the locative class 18, and the second one the prefix of class 3. Forms with a stacked prefix of locative class govern locative class agreement rather than agreement of the class to which the noun belongs inherently, although there is some variation in this respect, as illustrated by Lega **mùmwĭnò gúmòzị̀ mwăbò** 'in one of their villages', where 'one' agrees in class 3, and 'their' in class 18.

3.1.6. Possessive marking

In some Niger-Congo languages, adnominal possessors can be pronominalized by means of possessive affixes attached to the possessed noun, encoding the person of the possessor. Possessive marking is often restricted to a subclass of nouns, typically kinship terms.

3.1.7. Construct marking

The term 'construct marking' refers here to forms of nouns that are obligatory in the presence of a given type of modifier, but (in contrast to possessive markers) do not cross-reference the modifier in question. Such forms are found in languages belonging to various branches of Niger-Congo (including language groups whose Niger-Congo affiliation is controversial: Mande and Dogon) – cf. Creissels (2009).

For example, in Yoruba (Western Benue-Congo), nouns have a special form used when they are followed by a genitival modifier beginning with a consonant, or by an enclitic possessive pronoun. This form is marked by the suffixation of a copy of the last vowel. The vowel copy acting as a construct form marker invariably has a mid tone if it is followed by a noun in the role of genitival modifier (as in **fìlà-ā Túndé** 'Tunde's cap', **ọ̄mọ̄-ọ̄ Táíwò** 'Taiwo's child', **īlé-ē Bísí** 'Bisi's house'), whereas with enclitic possessive pronouns, its tone is low in the 1SG and 2SG (as in **ọ̄mọ̄-ọ̀ mī** 'my child'), mid in the other persons (as in **īléē wá** 'our house') – Rowlands 1969: 45-46.

3.1.8. Predicative marking of nouns

Some Bantu languages have a special 'predicative' form of nouns, marked by a tonal alternation, fulfilling the function of equative predicate without the addition of a copula. For example, in Cuwabo, the predicative form of **nígágádda** 'dry cassava' is **nigagádda** 'it is dry cassava' (Guérois 2015).

3.7.9. Distributivity / indefinite free choice

Many West-African languages belonging to various branches of Niger-Congo have noun forms expressing distributivity and indefinite free choice formed by reduplication, often with the insertion of a segmental morpheme. In Yoruba, distributivity is expressed by partial reduplication of the nominal lexeme (as in **ìrì-ìrọ̀lẹ́** 'every evening'), and indefinite free choice by full reduplication and insertion of **-kí-** (as in **fìlà-kí-fìlà** 'any type of cap') – cf. Pulleyblank 2009.

3.2. Verb inflection

3.2.1. Agreement/indexation

In many Niger-Congo languages, finite verb forms include an obligatory subject index, analyzable therefore as an agreement marker. Obligatory subject indexation is the rule in some of the language groups included in the Niger-Congo phylum, it is less common in some others.

As regards object indexation, I am aware of no Niger-Congo language in which object indexation would be obligatory with all kinds of objects. Object indexation is common, but it is always restricted either to topical objects, or to some semantic types of objects (definite, or human).

In most of the languages that have object indexation, verb forms include a single morphological slot for object indexes, but in some Bantu languages, a verb form can include two or three successive object indexes (Tswana), sometimes even more (Kinyarwanda).

3.2.2. TAM

Among Niger-Congo languages, Bantu languages are famous for the complexity of their TAM-marking systems. In addition to cross-linguistically common TAM categories, they illustrate more 'exotic' types of TAM distinctions, in particular the degree of remoteness from the reference point, both in the past (typically hodiernal / hesternal / remote), and in the future. Nurse (2008) is the main reference on Bantu TAM systems.

A general characteristic of Niger-Congo languages is that, in addition to the TAM values expressed through verb inflection, they have large inventories of more or less grammaticalized auxiliary verbs expressing meanings commonly taken up by adverbial expressions in European languages, i.e. auxiliary verbs with meanings such as 'to do first', 'to do again', 'to do often', 'to have previously done', 'to have done the day before', 'not to have done yet', etc. Diachronically, such auxiliaries constitute a major source of enrichment or renewal of verb inflection.

3.2.3. Polarity

In Niger-Congo languages, polarity (positive vs. negative) is commonly expressed through verbal inflection rather than by means of more or less autonomous particles, and unsegmentable formatives conflating TAM and negation are not rare. In some languages, negation interferes with the other categories coded by verb inflection in a particularly intricate way, as illustrated by Ex. (1) above.

Moreover, the semantic distinctions expressed by negative verb forms do not always parallel those expressed by positive verb forms. Some semantic distinctions (for example, the distinction between perfect and narrative past) may be neutralized in the negative paradigm, but negative verb forms may also express meanings (for example, 'not yet') that have no counterpart in the positive paradigm.

3.2.4. Verbal inflection and the expression of interclausal dependencies

In Niger-Congo languages, it is very common that verbal inflection contributes to the expression of inter-clausal dependencies, with forms occurring specifically in clause-chaining (i.e., in constructions functionally equivalent to clause coordination in European languages), in relative clauses, or in particular types of adverbial subordination.

Two types of dependent verb forms can be distinguished. Some of them ('balanced' in Stassen's (1985: 76-83) terminology), although morphologically distinct from independent verb forms, are found in subordinate clauses having the same internal structure as independent clauses, and express the same categories as independent verb forms. Others ('deranked' in Stassen's terminology, 'non-finite' in a more traditional terminology) project a phrase whose structure is not entirely similar to that of an independent clause (for example, by lacking a subject), and may also differ from independent verb forms in the categories they express. Among Niger-Congo languages, subordination involving verb forms distinct from those found in independent clauses but showing no evidence of deranking is quite common, and infinitives are the type of deranked verb form most commonly found. In the languages that have a gender-number system of the type commonly found in the Niger-Congo phylum, infinitives typically show the prefix or suffix of some noun class, like deverbal nouns, and manifest the corresponding agreement properties, if they occupy syntactic positions in which they can act as agreement controllers. They however differ from deverbal nouns both in the structure of the phrase they project, but also typically in their morphological structure, which may for example include TAM and polarity markers. Other types of deranked verb forms (participles, converbs) are less common, but for example Jóola Fóoñi (Atlantic) has a participle used for subject relativization, and a converb used in temporal subordination.

3.2.5. Verbal inflection and the expression of information structure

Among the semantic distinctions less commonly expressed through verbal inflection, a remarkable feature of Sub-Saharan languages in general (including Niger-Congo languages) is the relatively high proportion of systems of verbal inflection that directly express distinctions relating to various types of focus phenomena, or interfere with other focus-marking devices. Such systems of verbal inflection are very rare in other parts of the world.

Ex. (7) illustrates the distinction found in Makhuwa (Bantu) between 'disjoint' verb forms, which imply no particular relationship with the following phrase (and can be found in clause-final position), and 'conjoint' verb forms, obligatorily followed by a phrase interpreted as focalized. In this particular case, focus marking in the verb form is redundant with the use of a special 'predicative' form of the noun (**nramá** vs. **nrámá**), but this is not always the case.

(7) Makhuwa (Bantu – van der Wal 2011: 1735)

(7a) **Nthíyáná o-c-aalé nramá.**
CL1.woman SI.CL1-eat-PRF.CJ CL3.rice
'The woman ate RICE.'

(7b) **Nthíyáná o-hoó-cá (nrámá).**
CL1.woman SI.CL1-PRF.DJ-eat CL3.rice
'The woman ate (rice).'

In Jóola languages (Atlantic), an inflected form of the verb formed by reduplication expresses the combination of values 'completive aspect, verb focus'. This form, incompatible with the focalization of other terms of the clause, contrasts with another form expressing the same aspectual value 'completive', but compatible with the focalization of NPs or adverbs. In Jóola languages, it is also possible to use the verb forms typically found in relative clauses to unambiguously mark NP focalization in independent clauses (Hopkins 1995).

4. Constructional morphology (word formation)

4.1. Verb-to-verb derivation

The Niger-Congo languages whose morphological patterns are commonly viewed as relatively conservative typically have rich inventories of suffixes known as 'verb extensions', used to derive verbs from verbs with a variety of functions: verb extensions may increase the valency, decrease the valency, (re-)orient the action, or introduce aspectual specifications.

In addition to the use of verb extensions, reduplication is widely attested in the formation of deverbative verbs, most often with an iterative or pluractional meaning, but sometimes also with more unexpected functions. For example, as already mentioned in 2.5, reduplication is used in Ganja to derive causative verbs.

In some cases, the stems to which extensions attach are not attested, and the justification for segmenting the extension is the possibility of substituting other extensions, or the fact that the same ending is found in a series of verb stems sharing a common element of meaning. For example, Tswana has no verb ***àpà**, but comparing **àpàrà**[7] 'dress (oneself), put on top garments' with **àpòlà** 'undress, take off garments' makes it possible to identify in these two verbs an abstract stem **àp-** combined with the contactive extension **-ar-** and the separative extension **-ʊl-**.

As discussed in more detail in Hyman (2007), the following verb extensions have been reconstructed for Proto-Bantu[8] and have also been proposed for a reconstruction at Proto-Niger-Congo level by Voeltz (1977): applicative, causative, contactive/tentive, passive, reciprocal, reversive/separative (transitive), reversive/separative (intransitive), stative/neuter, stative/positional.

The applicative extension typically increases the valency by licensing an additional term in the syntactic role of object referring to a participant that otherwise could only be encoded as an adjunct, or could not be mentioned at all. The objects licensed by applicative derivation (commonly termed *applied objects*) may have a variety of semantic roles, but the use of applicative derivation to encode beneficiaries (as in Tswana **rɛ́ká** 'buy' > **rɛ́k-ɛ́l-á** 'buy for

[7] In most Bantu languages, verb forms end with a vowel that must be analyzed as an inflectional ending, since its variations contribute to the identification of the tenses that constitute the verbal paradigm. In particular, Tswana verbs are quoted in a form (the infinitive) that must be segmented as 'verb stem + final vowel **a**'. For example, the stem of the verb quoted as **àpàrà** is **àpàr-**, and the stem of **àpòlà** is **àpòl-**.

[8] For a detailed presentation of the derivational processes reconstructed for Proto-Bantu (in particular, verb extensions), see Schadeberg (2003).

s.o.') is particularly common. For recent and detailed analyses of the functions of Bantu applicatives (including non-canonical ones), see Jerro (2016), Pacchiarotti (2017).

The causative extension increases the valency by introducing a causer in subject role, whereas the subject of the non-derived verb is demoted to object, as in Tswana **ɔ́pɛ́lá** 'sing' > **ópéd-ís-à** 'cause to sing, conduct (a choir)'.

The contactive (or tentive) extension is a non-productive extension found in verbs that have in common the meaning of actively marking firm contact (Schadeberg 2003), as Tswana **àp-àr-à** 'put on top garments' (cf. **àp-ɔ̀l-à** 'undress').

The passive extension decreases the valency by demoting the subject and promoting the object in subject role, as in Tswana **rómá** 'send' > **róŋ-w-á** 'be sent'.

The reciprocal extension, in addition to the reciprocal meaning it expresses with semantically bivalent verbs (as in Tswana **rátá** 'love' > **rát-án-á** 'love one another'), is often found with an associative meaning ('do s.t. together', as in Tswana **bópɛ́χá** 'take shape' > **bópáχ-án-à** 'fuse') in combination with monovalent verbs. It may also express repetitive actions, which is reminiscent of the range of meanings characteristic of so-called 'pluractional' markers. Among Bantu languages, antipassive uses of this extension are common, as in Rundi **tuka** (transitive) 'insult' > **tuk-an-a** (intransitive) 'insult one another' (reciprocal) or 'insult people' (antipassive).

The reversive (or separative) extensions imply movement out of some original position, as in Swahili **zib-a** 'block' > **zib-u-a** 'unblock'. Bantu languages typically have two distinct separative extensions for spontaneous movement (intransitive) and caused movement (transitive), as in Tswana **ám-á** 'touch' / **ám-ólóχ-à** 'become separated' / **ám-ólól-à** 'separate'.

The so-called 'stative' or 'neuter' extension converts transitive verbs into intransitive verbs expressing an anticausative meaning, as in Tswana **síŋá** 'spoil' > **síŋ-ɛ́χ-á** 'become spoilt' or **bɔ́ná** 'see' / **bɔ́n-ál-á** 'be visible, appear'

The stative / positional extension is found in verbs expressing 'be in a position', as in Tswana **bótʰ-á** 'repose' / **bótʰ-ám-á** 'repose comfortably, lie at ease'.

The 'impositive' extension, which is not mentioned in the list above but is reconstructed for Proto-Bantu, is functionally a variety of causative involving direct causation as well as a locative element of meaning ('put something into some position'); it constitutes the transitive counterpart of the 'stative/positional' extension, as in Tswana **sík-ám-á** 'lean against (intr.)' / **sík-ɛ́χ-á** 'lean against (tr.)'.

For the detailed analysis of a particularly rich system of verbal extensions encoding valency changes in an Atlantic language, cf. Nouguier-Voisin (2002).

Among the verb extensions that do not modify valency, reversive (or separative) is particularly common. For example, in Jóola Banjal (Atlantic), **eppeg-ul** 'open' derives from **ɛppɛk** 'shut' in the same way as **efog-ul** 'dig up' from **ɛfɔk** 'bury' – Bassène (2007: 69). Itive / ventive extensions expressing centripetal / centrifugal movement (as in Wolof **sàcc** 'steal' / **sàcc-i** 'go and steal' / **sàcc-si** 'come and steal'), although not mentioned in the list above, are also relatively common.

Although there is no logical relationship between these two phenomena, the Niger-Congo languages in which the noun class system has been drastically reduced (or even completely lost) also have reduced systems of verb-to-verb derivation. Causative derivation is the type of verb-to-verb derivation most commonly found in the languages that have very reduced inventories of verb extensions.

4.2. Noun-to-verb derivation

A very general characteristic of Niger-Congo languages, in particular (but not only) those having morphological patterns close to the Niger-Congo prototype, is the marginality of noun-to-verb derivation. For example, Tswana (Bantu) has denominal verbs such as **χálí-f**(**-á**) 'become angry or fierce' < (**bò-**)**χálí** 'fierceness', but the productivity of the Tswana affixes involved in noun-to-verb derivation is very low. [9]

4.3. Noun-to-noun derivation

If inflection is defined as the part of morphology directly involved in syntactic rules, the class markers of nouns in Niger-Congo languages are unquestionably inflectional. However, noun class systems tend to blur the inflection vs. derivation distinction in the sense that, in the Niger-Congo languages that have synchronically active noun class systems, many types of semantic relationships between nominal lexemes commonly expressed cross-linguistically by means of the addition of derivational affixes are rather expressed by means of class/gender alternations. In such cases, the semantically related lexemes share a common stem, and differ only in the class/gender to which they are assigned. The semantic relationships commonly encoded in this way typically include trees and their fruits, individual vs. collective, concrete vs. abstract, animate entity vs. behavior (people vs. language, etc.), and dimension (diminutive, augmentative).

(8) Tswana (Bantu)

(8a)	cl. 1 / cl. 2	**mò-sádi** pl. **bà-sádí**	'woman'
	cl. 7	**sì-sádí**	'feminine behavior'
	cl. 9	**tsʰádí**	'group of women'
	cl. 11	**lò-sádí**	id.
	cl. 14	**bò-sádí**	'womanhood'

(8a)	cl. 3 / cl. 4	**mò-rɛ́tɬwá** pl. **mì-rɛ́tɬwá**	'tree of the sp. moretlwa'
	cl. 9 / cl. 10	**tʰɛ́tɬwá** pl. **dì-tʰɛ́tɬwá**	'fruit of the moretlwa tree'
	cl. 11	**lò-rɛ́tɬwá**	'thicket of moretlwa trees'

Ex. (9) illustrates gender alternations expressing diminutive and augmentative in Jóola Banjal (Atlantic) – (Bassène 2007).

(9) Jóola Banjal (Atlantic – Bassène 2007)

cl. E / cl. S	**ɛ-jɔba** pl. **sʊ-jɔba**	'dog'
cl. J / cl. M	**jʊ-jɔba** pl. **mʊ-jɔba**	'small dog'
cl. G / cl. B	**ga-jɔba** pl. **ba-jɔba**	'big dog'

[9] In the examples quoted in this section, the formatives within parenthesis are inflectional markers present in the quotation form of lexemes: 'final' (cf. Footnote 4) for verbs, gender-number markers for nouns.

The Niger-Congo languages whose noun class system has been drastically reduced (or even completely lost) tend to express the same semantic relationships by means of either derivational affixes, or compounding. For example, names of fruits are often formed by compounding the name of the tree with the noun 'child', and diminutive suffixes originating from the grammaticalization of the same noun 'child' are common.

In fact, such mechanisms also operate, although in a less systematic way, even in languages that have synchronically active noun class systems. For example, Tswana, like the other Southern Bantu languages, does not form diminutives by gender shift, and has a diminutive suffix cognate with the noun 'child' (in present-day Tswana, **ŋw-àná** pl. **b-àná**), as in **tàw-áná** 'lion cub' < **tàú** 'lion'. A little productive feminine / augmentative suffix **-χádí** < Proto-Bantu ***kádí** 'woman' is also found in Tswana, as in **qʰósí** 'king, chief' > **qʰósí-χádì** 'queen', 'chief's wife', or **tàú** 'lion' > **tàú-χádí** 'lioness' or 'big lion'.

Tswana also has a very productive prefix **rá-** (from **ɾrá** 'father') 'owner of', 'responsible for', 'expert on', as in **rá-mótsí** 'mayor' < **mòtsì** 'town', or **rá-mótɬàkásí** 'electrician' < **mòtɬàkásí** 'electricity'.

4.4. Verb-to-noun derivation

In the Niger-Congo languages whose morphological patterns are commonly viewed as relatively conservative, verb-to-noun derivation typically involves two elements: the addition of a derivational suffix, and the addition of class morphology manifesting the assignment of the derived noun to a particular gender, as in Jóola Banjal (Atlantic) **-ffaŋ** 'close' → (**e-**)**ffɐŋ-um** (pl. (**si-**)**ffɐŋ-um**) 'key', where **-um** is a derivational suffix used to derive nouns of instruments from verbs, and **e- / si-** are class markers.

It may also happen that no overt derivational element is present, and the deverbal noun is formed by the mere addition of class morphology to a verb stem, as in Jóola Banjal **-mbal** 'fish (V)' → **ɛ-mbal** (pl. **sɪ-mbal**) 'fish-trap'. In such cases, the gender to which such nouns are assigned may be crucial for the identification of their meaning.

Among the nouns resulting from verb-to-noun derivation processes, the following functional types are particularly widespread: action nouns (as in Tswana **lìm(à)** 'plough' > **tìm-ɔ̀** (9/10) 'ploughing'), result nouns (as in Tswana **bíts(á)** 'call' > **píts-ɔ́** (9/10) 'meeting'), agent nouns (as in Tswana **lìm(à)** 'cultivate' > (**mɔ̀**)**lìm-ì** (1/2) 'farmer'), instrument nouns (as in Tswana **àpàr(à)** 'dress (oneself) > (**sì**)**àpàr-ɔ̀** (7/8) 'garment'), place-of-action nouns (as in Tswana **tɬʰàb(à)** 'slaughter' / (**mà**)**tɬʰàb-èlɔ̀** (6) 'abattoir'), and manner nouns (as in Tswana **àpàr(à)** 'dress (oneself) > (**mɔ̀**)**àpàr-ɔ̀** (3/4) 'garment'). Note that, with the exception of agent nouns (which are generally formed in a way that cannot be used for other semantic types of deverbal nouns), the general tendency is that a given morphological formation may be used for more than one semantic type of deverbal noun, and conversely, variation may occur in the expression of a given semantic type of deverbal noun.

The Niger-Congo languages whose noun class system has been drastically reduced (or even completely lost) may have productive ways of forming deverbal nouns via affixation, but they may also use compounding instead. For example, agent nouns may be formed by compounding verbal lexemes with the noun 'man', names of instruments by compounding verbal lexemes with the noun 'thing', etc. In such cases, there is often evidence that the nouns in question are on their way to being grammaticalized as derivational affixes.

4.5. Nominal compounding

The formation of complex nominal lexemes via compounding (either by combining nominal lexemes, as Mandinka **jàtá** 'lion' + **kùlú** 'skin' > **jàtà-kúlù** 'lion skin', or by combining a nominal lexeme and a verbal lexeme, as Mandinka **mŏo** 'person' + **făa** 'kill' > **mòo-fáa** 'murder'), is extremely productive in Mande languages, a group of languages whose Niger-Congo affiliation is uncertain – cf. among others Creissels (2004) on compounding in Bambara. Mande languages also have very productive patterns of word formation involving both compounding and derivational affixes, as Mandinka **mŏo** 'person' + **făa** 'kill' + **-laa** (derivational suffix) > **mòo-fáa-láa** 'murderer'.

Nominal compounding is also productive in languages whose Niger-Congo affiliation is uncontroversial, but in which the noun class system has ceased to be active, leaving only more or less frozen relics. By contrast, in the languages that have synchronically active noun class systems, noun compounding is never very productive, and may be extremely marginal. As regards Bantu, Basciano & al. (2011) observe that in Bantu languages, the 'N + N > N' compounding pattern is completely unproductive, and restricted to a few semantic fields, typically kinship terms and phytonyms. As regards the 'N + V > N' compounding pattern, in some Bantu languages (for example, Bemba), it is completely unproductive too, whereas in some others (for example, Swahili), it has some productivity in the formation of agentive or instrumental nouns.

4.6. Verbal compounding

As a rule, in Niger-Congo languages (including the languages groups whose Niger-Congo affiliation is uncertain), the formation of complex verbal lexemes by combining two (or more) verbal lexemes is either totally unknown, or extremely marginal. Igbo (Western Benue-Congo) is an exception. The relatively productive 'V + V > V' compounding pattern of Igbo can be illustrated by **nyà** 'twist' + **gbù** 'kill' > **nyà-gbú** 'strangle', or **cè** 'think' + **fù** 'lose' > **cé-fù** 'forget' – Onumajuru (1985: 239-242). The so-called serial verb constructions commonly found in Western Benue-Congo and Kwa languages are complex predicates that largely involve lexicalization phenomena typically found in compounds rather than in syntactic combinations of words. They nevertheless cannot be viewed as instances of *morphological* compounding, since the verbal lexemes involved in a serial construction are not necessarily adjacent to each other.

In the language groups that constitute the core of the Niger-Congo phylum, the formation of complex verbal lexemes by combining a verbal lexeme and a nominal lexeme (incorporation) is either totally unknown, or extremely marginal. By contrast, among the language groups whose Niger-Congo affiliation in uncertain, more or less productive incorporation patterns can be found in some Mande languages. In Soninke, two incorporation mechanisms are fully productive: object incorporation, in which the verb is marked as detransitivized (as in **kónpè** 'room' + **séllà** 'sweep' > **kónpó-séllè** 'do room sweeping'), and similative incorporation (as in **hèrê** 'donkey' + **kétú** > **hèrì-n-kétú** 'beat (s.o.) like a donkey'. On incorporation in Soninke, see Creissels & Dramé (to appear).

Abbreviations

CJ: conjoint, CL: noun class, D: definiteness marker, DJ: disjoint, H: high (tone), L: low (tone), N: noun, NP: noun phrase, PL: plural, PRF: perfect, SG: singular, SI: subject index, TAM: tense-aspect-modality, V: verb.

References

Ameka, Felix. 1991. *Ewe: Its grammatical constructions and illocutionary devices*. PhD dissertation. Australian National University.

Basciano, Bianca, Nancy Kula & Chiara Melloni. 2011. Modes of compounding in Bantu, Romance and Chinese. Rivista di linguistica 23-2. 203-249.

Bassène, Alain-Christian. 2007. *Morphosyntaxe du Jóola Banjal*. Cologne: Rüdiger Köppe.

Creissels, Denis. 2004. Le nom composé en bambara. In Pierre Arnaud (ed.), *Le nom composé : données sur 16 langues*. Lyon: Presses Universitaires de Lyon.

Creissels, Denis. 2006. Tswana verb morphology and the Lexical Integrity Principle. *Lingue e linguaggio* 5-1. 49-66.

Creissels, Denis. 2009. Construct forms of nouns in African languages. *Proceedings of Conference on Language Documentation & Linguistic Theory 2*, Edited by Peter K. Austin, Oliver Bond, Monik Charette, David Nathan & Peter Sells. SOAS, London, November 13-14 2009. 73-82

Creissels, Denis. 2015. Typologie des systèmes de classes nominales dans deux groupes de langues atlantiques. In Denis Creissels & Konstantin Pozdniakov (eds.), *Les classes nominales dans les langues atlantiques*. Cologne: Rüdiger Köppe. 7-55.

Creissels, Denis. To appear. Noun class systems in Atlantic languages. In Friederike Lüpke (ed.), *The Oxford guide to the Atlantic languages of West Africa*. Oxford University Press.

Creissels, Denis, Anderson Chebanne and Heather Nkhwa. 1997. *Tonal morphology of the Setswana verb*. Munich: Lincom Europa.

Creissels, Denis & Danièle Godard. 2005. The Tswana Infinitive as a mixed category. Dans Müller S. (éd.) *Proceedings of the HPSG05 Conference*. Stanford: CSLI Publications. 70-90.

Creissels, Denis & Seckou Biaye. 2016. *Le balant ganja : phonologie, morphosyntaxe, liste lexicale, textes*. Dakar : IFAN CH.A.DIOP.

Creissels, Denis & Djibril Dramé. To appear. Transitivity and incorporation in Soninke. In Rose-Juliet Anyanwu (ed.), *Transitivity in African languages*. Frankfurter Afrikanistische Blätter 26.

Dimmendaal, Gerrit. 2008. 'Language Ecology and Linguistic Diversity on the African Continent'. *Language and Linguistics Compass* 2/5. 840–858.

Dimmendaal, Gerrit. 2011. *Historical Linguistics and the Comparative Study of African Languages.* Amsterdam and Philadelphia: John Benjamins.

Faye, Waly. 1979. *Etude morphosyntaxique du sereer singandum (région de Jaxaw-Ñaaxar).* PhD dissertation. University of Grenoble.

Guérois, Rozenn. *A grammar of Cuwabo (Mozambique, Bantu P34)*. PhD dissertation. University of Lyon.

Greenberg, Joseph H. 1955. *Studies in African linguistic classification*. New Haven, CT: Compass Publishing.

Greenberg, Joseph H. 1963. *The languages of Africa*. Bloomington, IN: Indiana University. (International Journal of American Linguistics 29.1, Part II).

Greenberg, Joseph. 1978. How does a language acquire gender markers? In J. Greenberg et al. (eds.), *Universals of human language, vol. 3: Word structure*. 47-82. Stanford: Stanford University Press.

Hopkins, Bradley. 1995. *Contribution à une étude de la syntaxe diola-fogny*. PhD dissertation. Dakar: Université Cheikh Anta Diop.

Hyman, Larry M. 2007. 'Niger-Congo verb extensions: overview and discussion'. In Doris L. Payne & Jaime Peña (eds.), *Selected Proceedings of the 37th Annual Conference on African Linguistics*. 149-163. Somerville, MA: Cascadilla Proceedings Project.

Hyman, Larry & Jenneke van der Wal (eds.). 2017. *The conjoint/disjoint alternation in Bantu*. Berlin: de Gruyter Mouton.

Jerro, Kyle Joseph. 2016. *The syntax and semantics of applicative morphology in Bantu*. PhD thesis. University of Texas at Austin.

Kra, Kouakou Appoh Enoc. 2016. *Le koulango, langue gur de Côte d'Ivoire et du Ghana.* Paris: L'Harmattan.

Meeussen, A. E. 1967. Bantu grammatical reconstructions. *Annales du Musée Royal de l'Afrique Centrale* 61.

Nouguier Voisin, Sylvie. 2002. *Relations entre fonctions syntaxiques et fonctions sémantiques en wolof*. PhD thesis. University of Lyon.

Nurse, Derek. 2008. *Tense and aspect in Bantu*. Oxford: Oxford University Press.

Odden, David & Lee Bickmore. 2014. Melodic tone in Bantu: overview. *Africana Linguistica* 20. 3-14.

Onumajuru, Emeka Michael. 1985. Le système verbal de la langue Igbo (parler d'Orlu). PhD dissertation. University of Grenoble.

Pacchiarotti, Sara. 2017. *Bantu applicative construction types involving *-ɪd: forms, functions and diachrony*. PhD dissertation. University of Oregon.

Pulleyblank, Douglas. 2008. Patterns of reduplication in Yoruba. In Kristin Hanson & Sharon Inkelas (eds.), *The nature of the word: Studies in honor of Paul Kiparsky*. MIT Press. 311-357

Schadeberg, Thilo C. 2003. 'Derivation'. In Nurse, Derek & Gérard Philippson (eds.), *The Bantu languages*. 71-89. London: Routledge.

Stassen, Leon. 1985. *Comparison and universal grammar*. Oxford: Basil Blackwell.

Van de Velde, Mark. 2009. Eton tonology and morphosyntax. A holistic typological approach. In Patience Epps & Alexandre Arkhipov (eds.), *New challenges in typology. Transcending the borders and refining the distinctions*. De Gruyter. 35-60.

Van der Wal, Jenneke. 2011. Focus excluding alternatives: Conjoint/disjoint marking in Makhuwa. *Lingua* 212-11. 1734-1750.

Voeltz, Erhard. 1977. *Proto Niger-Congo extensions*. Doctoral dissertation. University of California, Los Angeles.