Derivation in Niger-Congo

1. Introduction

The name Niger-Congo was introduced in 1955 by Joseph H. Greenberg, but is now used for the putative language phylum designated by Greenberg himself as Niger-Kordofan – see Greenberg (1955) and Greenberg (1963). In most recent accounts, 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 this grouping remains controversial however. As discussed in detail by Dimmendaal (2008 & 2011), there is convincing evidence that a subset of the language groups enumerated above do constitute a genetically valid grouping for which the name Niger-Congo can be used, but serious doubts exist about the Niger-Congo affiliation of some others. The evidence supporting a genetic relationship between Benue-Congo, Kwa, Gur, and Adamawa is particularly solid, and these language groups can be viewed as constituting the core of the Niger-Congo phylum. By contrast, 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 on the basis of the available evidence.

This question has a direct impact on the organization of 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 morphological evidence supporting the hypothesis of a genetic relationship in two subsystems that have to do with derivation: noun classification, and so-called verb extensions, whereas in Mande, Ijoid, Dogon, and Ubangian, reflexes of the Niger-Congo noun classes seem to be lacking, and the existence of verb suffixes cognate with the Niger-Congo verb extensions is problematic.

This means that the ancestors of the language groups that constitute the core of Niger-Congo shared a particular type of derivation system and that, in a historical perspective, the departures from this prototype observed in present-day languages are innovations. Particularly conservative systems are common among Bantu and Atlantic languages.

For lack of space, this chapter is limited to a presentation of derivational processes involving the major lexical categories (nouns and verbs) in Niger-Congo languages whose derivation system is close to the Niger-Congo prototype. There is no real unity in the derivation systems of the languages in which the Niger-Congo system of noun classes and verb extensions has been more or less eroded. The only generalization that can be proposed is that the loss of the Niger-Congo derivational devices that will be presented in the following sections tends to be compensated by a development of compounding (which is rather marginal in typical Niger-Congo systems), and also, in the case of V→V derivation devices, by the development of serialization. This however does not imply any uniformity in the word formation systems of the languages in question, since subsequent grammaticalization phenomena may have resulted in the creation of various functional types of derivational processes whose detailed presentation would require much more space than is available here. As regards Mande, Ijoid, Dogon, and Ubangian, these language families show derivation systems that are not particularly close to the Niger-Congo prototype, and would therefore require separate presentations.

A very general characteristic of Niger-Congo languages with derivational systems close to the Niger-Congo prototype is the marginality (or even inexistence) of noun-to-verb derivation. This explains why the rest of this chapter is organized into three sections only, devoted to verb-to-verb derivation (Section 2), noun-to-noun derivation (Section 3), and verb-to-noun derivation (Section 4).

2. Verb-to-verb derivation

Niger-Congo languages typically have 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, most often with an iterative meaning.

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 *apa, but comparing *apara*[1] 'dress (oneself), put on top

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[1] 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

garments' with *apola* 'undress, take off garments' makes it possible to identify in these two verbs an abstract stem *ap-* combined with the contactive extension *-ar-* and the separative extension *-ol-*.

As discussed in more detail in Hyman (2007), the following verb extensions have been reconstructed for Proto-Bantu[2] 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 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, illustrated in (1) by Tswana *apaya* 'cook' / *apeela* 'cook for someone', is particularly common. The same applicative suffix *-el-*, more or less modified by morphophonological processes, is further illustrated in examples (2) - (12) (in which the applied object is boxed) in a variety of other uses.[3]

(1) a. *Lorato   o-apay-a   bo-gobe.*

      CL1.Lorato   CL1-cook-FV CL14-porridge

      'Lorato is cooking porridge.'

    b. *Lorato   o-ape-el-a*   *b-ana*   *bo-gobe.*

      CL1.Lorato   CL1-cook-APPL-FV CL2-child CL14-porridge

      'Lorato is cooking porridge for the children.'

(2) a. *Kgosi   e-atlhol-ets-e*   *mo-nna* *bo-godu*.

      CL9.king CL9-condemn-APPL.PRF-FV CL1-man CL14-theft

      'The king condemned the man for theft.'

    b. *Kgosi   e-atlhol-ets-e*   *mo-nna* *lo-so*.

      CL9.king CL9-condemn-APPL.PRF-FV CL1-man CL11-death

      'The king condemned the man to death.'

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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 *apara* is *apar-*, and the stem of *apola* is *apol-*.

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

[3] The following abbreviations are used in the glosses of the Tswana examples: APPL = applicative, CLX (X a number between 1 and 17) = noun class marker of class X, DEM = demonstrative, FV = final vowel, GEN = genitive, PASS = passive, PRF = perfect, SG = singular.

(3)   *Kitso   o-berek-el-a   tiego*.

CL1.Kitso CL1-work-APPL-FV   CL9.delay

'Kitso is working in order to make up lost time.'

(4)   *Ma-godu   a-bola-ets-e   mo-nna ma-di*.

CL6-thief   CL6-kill-APPL.PRF-FV   CL1-man CL6-money

'The thieves killed the man for money.'

(5)   *Mpho   o-j-ets-e   Kitso   di-nawa*.

CL1.Mpho   CL1-eat-APPL.PRF-FV   CL1.Kitso   CL10-bean

'Mpho ate the beans to Kitso's detriment.'

(to be understood as 'Mpho ate the beans that were intended for Kitso.')

(6)   *Ke-lebog-el-a   Kitso   ma-di*.

1SG-thank-APPL-FV CL1.Kitso CL6-money

'I am thanking Kitso for the money.'

(7)   *Mo-sadi   yo   o-ak-el-a   ralebentlele*.

CL1-woman   CL1.DEM   CL1-lie-APPL-FV   CL1.shopkeeper

'This woman is telling lies about the shopkeeper.'

(8)   *Ma-bele   a-alaf-el-w-a   thsupa*.

CL6-sorghum CL6-treat-APPL-PASS-FV   CL9.tshupa

'The sorghum is treated against *tshupa* (a kind of worm).'

(9)   a. *Mo-sadi   o-bil-ets-a   b-ana   di-jo*.

CL1-woman   CL1-call-APPL-FV   CL2-child CL10-food

'The woman is calling the children to eat (lit. 'for food').'

   b. *Mo-sadi   o-bil-ets-a   b-ana   ngaka.*

CL1-woman   CL1-call-APPL-FV   CL2-child   CL9.doctor

'The woman is calling the doctor for the children.'

(10) a. *Ke-f-ets-e   ngwana-ke   baesekele   ma-di.*

1SG-give-APPL.PRF-FV   CL1.child-1SG   CL9.bicycle   CL6-money

'I gave money to my son for a bicycle.'

   b. *Ke-f-ets-e   malom-e   di-kgomo   le-tswai.*

1SG-give-APPL.PRF-FV   CL1.uncle-1SG   CL10.cow   CL5-salt

'I gave salt to the cows for my uncle.'

(11) *Mo-setsana   yo   o-fos-ets-a   ba-tsadi.*
      CL1-girl   CL1.DEM CL1-be_wrong-APPL-FV   CL2-parent
      'This girl behaves badly towards her parents.'

(12) *Ke-gakgamal-el-a   bo-pelokgale   jw-a-ngw-ana yo.*
      1SG-be_impressed-APPL-FV CL14-courage   14-GEN-1-child CL1.DEM
      'I am impressed by the courage of this child.'

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 *opela* 'sing' / *opedisa* '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, as in Tswana *apara* 'put on top garments' (see above).

The passive extension decreases the valency by demoting the subject and promoting the object in subject role, as in Tswana *roma* 'send' / *rongwa* 'be sent'.

The reciprocal extension, in addition to the reciprocal meaning it expresses with semantically bivalent verbs (as in Tswana *rata* 'love' / *ratana* 'love one another'), is often found with an associative meaning ('do s.t. together', as in Tswana *bopega* 'take shape' / *bopagana* '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' / *tukana* (intransitive) 'insult one another' (reciprocal) or 'insult people' (antipassive). In some Bantu languages, the reciprocal use of this extension tends to become obsolete, and the reciprocal function tends to be taken over by the reflexive object index or by the so-called 'neuter' extension (anticausative).

The reversive (or separative) extensions imply movement out of some original position, as in Swahili *ziba* 'block' / *zibua* 'unblock'. Bantu languages typically have two distinct separative extensions for spontaneous movement (intransitive) and caused movement (transitive), as in Tswana *ama* 'touch' / *amologa* 'become separated' / *amolola* 'separate'.

The so-called 'stative' or 'neuter' extension converts transitive verbs into intransitive verbs expressing an anticausative meaning, as in Tswana *senya* 'spoil' / *senyega* 'become spoilt' or *bona* 'see' / *bonala* 'be visible, appear'

The 'stative/positional' extension is found in verbs expressing 'assume a position, be in a position', as in Tswana *botha* 'repose' / *bothama* '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 *sekama* 'lean against (intr.)' / *sekega* 'lean against (tr.)'.

Among the verb extensions that do not modify valency, reversive (or separative) is particularly common. For example, in Jóola Banjal (Atlantic), *eppég-ul* 'open' derives from *eppek* 'shut' in the same way as *efóg-ul* 'dig up' from *efok* '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.

To give an idea of the variety observed in the inventories of verb extensions, in the rest of this section, I briefly present the verb suffixes used with a valency-changing function in Wolof (Atlantic). The data are taken from Nouguier Voisin (2002).

In Wolof, the valency changes systematically coded by means of verb suffixes can be classified into six types: middle, causative, applicative, co-participation (including reciprocal), antipassive, and possessive. A puzzling feature of the coding of valency changes in Wolof is that, as shown by the following chart, similar valency changes may be coded by different suffixes, and the same suffix may code different valency changes, as summarized in Table 1.

type of valency change	possible markers
middle	*-u*
causative	*-e, -al, -le, -lu, -loo*
applicative	*-e, -al*
co-participation	*-e, -oo, -ante, -andoo*
antipassive	*-e*
possessive	*-le*

Table 1. Valency change types and valency change markers in Wolof

Note that Wolof has no passive extension. Some uses of the middle marker *-u* can be considered as quasi-passive, but constructions combining object topicalization and subject focalization are more commonly used in Wolof with a function similar to that fulfilled by passive constructions in other languages.

Middle -*u*, illustrated by (13) - (15), is typically used to express a reflexive or anticausative meaning.[4]

(13) a. *Jigéen   j-i   sang na   xale b-i.*

woman   CL-DEF   wash PRF.3SG child CL-DEF

'The woman washed the child.'

b. *Xale b-i   sang-u   na.*

child CL-DEF   wash-MID   PRF.3SG

'The child washed.'

(14) a. *Tëj   naa   bunt b-i.*

close PRF.1SG door   CL-DEF

'I closed the door.'

b. *Bunt-u néeg   b-i   du   téej-u   b-u   baax.*

door-H   room   CL-DEF NEG.EMPH.3SG   close-MID CL-LNK   be_good

'The door of the room does not close well.'

(15) a. *Omar   daan   na   Usmaan.*

Omar   bring_down PRF-3SG Ousmane

'Omar brought Ousmane down.', 'Omar defeated Ousmane.'

b. *Garab g-i   daan-u   na.*

tree   CL-DEF   bring_down-MID PRF.3SG

'The tree fell down.'

Causativization can be encoded by five different suffixes as illustrated in (16) - (20). They differ in semantic nuances. The clearest case is that of -*le*, specialized in the expression of sociative causation.

(16) a. *Usmaan   genn   na.*

Ousmane   go_out   PRF.3SG

'Ousmane went out.'

b. *Usmaan   genn-e   na   woto b-i.*

Ousmane   go_out-CAUS PRF.3SG car   CL-DEF

'Ousmane got out the car.'

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[4] The following abbreviations are used in the glosses of Wolof examples: ANTIP = antipassive, APPL = applicative, CAUS = causative, CL = noun class marker, DEF = definite, DEM = demonstrative, DIST = distal, EMPH = emphatic, FOC = focalization, H = head-marking, INDEF = indefinite, LNK = attributive linker, MID = middle, NEG = negation, PL = plural, PRF = perfect, PROX = proximal, RECP = reciprocal, REL = relativizer, SG = singular, SOC = sociative.

(17) a. *Xale b-i   toog   na.*
   child CL-DEF sit_down PRF.3SG
   'The child sat down.'

   b. *Jigéen j-i   toog-al   na   xale b-i.*
   woman   CL-DEF sit_down-CAUS PRF.3SG child CL-DEF
   'The woman sat the child down.'

(18) a. *Tëj naa   bunt b-i.*
   close PRF.1SG door   CL-DEF
   'I closed the door.'

   b. *Tëj-lu   naa   bunt b-i.*
   close-CAUS PRF.1SG door   CL-DEF
   'I made (someone) close the door.'

(19) a. *Góor g-i   toog   na.*
   man   CL-DEF sit_down PRF.3SG
   'The man sat down.'

   b. *Toog-loo   nañu   góor g-i.*
   sit_down-CAUS PRF.3PL man   CL-DEF
   'They made the man sit down.'

(20) a. *Xale b-i   lekk na.*
   child CL-DEF eat   PRF.3SG
   'The child ate.'

   b. *Jigéen j-i   lekk-le   na   xale b-i.*
   woman   CL-DEF eat-SOC.CAUS PRF.3SG child CL-DEF
   'The woman helped the child eat.'

As illustrated above by Tswana, languages with a single multifunctional applicative marker are very common in Niger-Congo, in particular among Bantu languages. By contrast, Wolof has two relatively specialized applicative extensions: *-al* encodes the addition of an object representing a beneficiary, as in (21), or the conversion of a comitative adjunct into an object, as in (22), whereas the objects licensed by the applicative suffix *-e* refer to instruments, means, or places, as illustrated in (23) - (24).

(21) a. *Rey nañu   a-m   xar.*
   kill   PRF.3PL INDEF-CL sheep
   'They killed a sheep.'

b. *Rey-al   nañu   gan   g-i   a-m   xar.*
   kill-APPL   PRF.3PL guest CL-DEF   INDEF-CL   sheep
   'They killed a sheep for the guest.'

(22) a. *Usmaan   séy   na   ak   Faatu.*
      Ousmane   marry   PRF.3SG with Fatou
      'Ousmane married Fatou.'

    b. *Faatu   la   Usmaan   séy-al.*
      Fatou   FOC.3SG   Ousmane   marry-APPL
      'It is Fatou that Ousmane married.'

(23) a. *Añ   nañu   ak   ceeb-u   jën.*
      lunch PRF.3PL with rice-H   fish
      'They had rice and fish for lunch.'

    b. *Añ-e   nañu   ceeb-u   jën.*
      lunch-APPL PRF.3PL rice-H   fish
      same meaning as (a)

(24) a. *Añ   nañu   c-i   teraas   b-i.*
      lunch PRF.3PL LOC-PROX terrace   CL-DEF
      'They had lunch on the terrace.'

    b. *C-i   teraas   b-i   lañu   añ-e.*
      LOC-PROX terrace   CL-DEF   FOC.3PL   lunch-APPL
      'It is on the terrace that hey had lunch.'

In contrast to languages that have a single reciprocal or reciprocal/associative (here again, a situation typically found among Bantu languages), Wolof has four verbal extensions encoding various types of co-participation: *-andoo* (sociative) (25), *-oo* (sociative/reciprocal) (26), *-e* (reciprocal) (27), and *-ante* (reciprocal) (28).

(25) a. *Xale b-i   toog   na   c-i   lal   b-i.*
      child CL-DEF sit_down PRF.3SG LOC-PROX bed   CL-DEF
      'The child sat on the bed.'

    b. *Xale y-i   toog-andoo nañu   c-i   lal   b-i.*
      child CL-DEF sit_down-SOC PRF.3PL LOC-PROX bed   CL-DEF
      'The children sat on the bed together.'

(26) a. *Sédd   naa   ko   c-i   xaalis   b-i.*
      share   PRF.1SG 3SG   LOC-PROX   money   CL-DEF
      'I gave him part of the money.'

    b. *Sédd-oo   nanu   xaalis   b-i.*
      share-SOC   PRF.1PL money   CL-DEF
      'We shared the money.'

(27) a. *Omar   gis   na   Usmaan   c-a   marse   b-a.*
      Omar   see   PRF.3SG Ousmane   LOC-DIST   market   CL-DEF
      'Omar saw Ousmane at the market.'

    b. *Omar   ak   Usmaan   gis-e   nañu   c-a   marse   b-a.*
      Omar   with   Ousmane   see-RECP   PRF.3SG LOC-DIST   market   CL-DEF
      'Omar and Ousmane met (saw each other) at the market.'

(28) a. *Rey   nañu   a-m   xar.*
      kill   PRF.3PL INDEF-CL   sheep
      'They killed a sheep.'

    b. *Rey-ante   nañu.*
      kill-RECP   PRF.3PL
      'They killed one another.'

Antipassive *-e* encodes the deletion of patients of some transitive verbs, as in (29), and recipients of ditransitive verbs (in particular, of ditransitive verbs created by applicative derivation, as in (30)).

(29) a. *Xaj-a   ko   màtt.*
      dog-FOC.3SG   3SG   bite
      'A dog bit him.'

    b. *Xaj   b-ii   du   màtt-e.*
      dog   CL-DEM NEG.EMPH.3SG   bite-ANTIP
      'This dog does not bite.'

(30) a. *Togg   naa   yàpp   w-i.*
      cook   PRF.1SG meat   CL-DEF
      'I cooked the meat.'

    b. *Togg-al   naa   la   yàpp   w-i.*

       cook-APPL PRF.1SG 2SG meat   CL-DEF

       'I cooked the meat for you.'

    c. *Togg-al-e   naa   yàpp   w-i.*

       cook-APPL-ANTIP PRF.1SG meat   CL-DEF

       'I cooked the meat for some people.'

'Possessive' *-le* is a cross-linguistically rare type of valency operator (it has so far only been found in a few Senegalese languages). It combines with verbs that express a quality attributed to their subject; the same quality is attributed to the object of the derived verb, whereas the subject of the derived verb takes the role of possessor, as in (31).

(31) a. *Woto   b-i   gaaw   na.*

       car   CL-DEF be_fast   PRF.3SG

       'The car is fast.'

    b. *Gaaw-le   naa   woto.*

       be_fast-POSS   PRF.1SG car

       'I have a fast car.'

3. Noun class systems and noun-to-noun derivation

The so-called noun class systems found in Niger-Congo languages can be viewed as a particular type of gender systems. A brief characterization of noun class systems is in order here, since in the Niger-Congo languages that have a noun class system close to the Niger-Congo prototype, gender change is a very productive way to derive nouns from nouns, whereas noun compounding as well as the use of affixes to derive nouns from nouns is marginal.

    The notion of noun class in the description of Niger-Congo languages refers to a division of nouns into subsets manifested in their behavior in agreement mechanisms. The illustrations in this section are taken from Tswana, a southern Bantu language whose noun classification system stands very close to the prototype.

    The essential feature of Niger-Congo noun class systems is that

  (a) noun forms divide into subsets (noun classes) according to their behavior in agreement mechanisms observed in the formation of noun phrases by combining a head noun with various types of modifiers, in the use of pronouns, and in the indexation of arguments on the verb,

(b) the forms involved in these agreement mechanisms (nouns, noun modifiers, pronouns and verbs) include affixes (class markers) that determine their behavior as controllers or targets of agreement, and

(c) the classification is a lexicalized classification of nouns, and not a classification of referents directly, in the sense that it is not possible to change the class of a noun in order to emphasize particular semantic features of the same referent, as typically observed in so-called classifier systems.[5]

Semantically, the most obvious function of noun class markers (but not the only one – see below) is the expression of number (singular vs. plural). An important feature of Niger-Congo classification systems in their most typical form is the absolute impossibility to isolate morphemes expressing number independently from gender. Moreover, there is generally no one-to-one correspondence between agreement classes and class markers in the singular and in the plural. This is the reason why many descriptions of Niger-Congo class 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 couple of classes that include the singular and plural forms of the same lexemes. For example, in Tswana, *mosadi* pl. *basadi* 'woman' belongs to gender 1/2, which means that its singular form *mosadi* belongs to the agreement class labeled '1', and its plural form *basadi*, to the agreement class labeled '2'.[6]

   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 variations 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.

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[5] In Niger-Congo noun class systems, a given nominal lexeme may be compatible with several class markers, but the variations express changes in the referential meaning (see below), which is an entirely different semantic operation.

[6] The numbering of classes used in Bantu studies is based on the correspondence with the reconstructed classes of Proto-Bantu; for example, in the description of Tswana, 'cl. 8-10' refers to a class that historically results from the merger of Proto-Bantu classes 8 and 10, and the absence of classes 12 and 13 means that no Tswana class is the reflex of Proto-Bantu classes 12 and 13.

The examples in (32) illustrate the division of Tswana noun forms into 12 classes on the basis of the agreement between nouns and adjectives in the attributive construction[7], and (33) illustrates Tswana noun forms of cl. 1, 5, 7 and 9 (or the corresponding plural, if meaning requires it) in combination with various types of modifiers (genitives, demonstratives, etc.).

(32) a. cl. 1   *mosadi yo moša*   'new woman'

     b. cl. 2   *basadi ba baša*   'new women'

     c. cl. 3   *molemo o moša*   'new medecine'

     d. cl. 4   *melemo e meša*   'new medecines'

     e. cl. 5   *lesaka le leša*   'new cattle kraal'

     f. cl. 6   *maraka a maša*   'new cattle kraals'

     g. cl. 7   *sekolo se seša*   'new school'

     h. cl. 8-10   *dikolo tse dintšha*   'new schools'

     dikgosi tse dintšha   'new chiefs'

     i. cl. 9   *kgosi e ntšha*   'new chief'

     j. cl. 11   *lokwalo lo loša*   'new book'

     k. cl. 14   *bojang jo boša*   'new grass'

     l. cl. 15-17   *go lema mo goša*   'new way of cultivating'

(33) a. *mosadi wa motse*   'woman of the village'

     lekau la motse   'boy of the village'

     sefofu sa motse   'blind person of the village'

     ngaka ya motse   'doctor of the village'

     b. *mosadi yole*   'that woman'

     lekau lele   'that boy'

     sefofu sele   'that blind person'

     ngaka ele   'that doctor'

     c. *mosadi ofe?*   'which woman?'

     lekau lefe?   'which boy?'

     sefofu sefe?   'which blind person?'

     ngaka efe?   'which doctor?'

     d. *mosadi osele*   'another woman'

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[7] This construction involves an obligatory linker expressing class agreement too. 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.

lekau lesele	'another boy'
sefofu sesele	'another blind person'
ngaka esele	'another doctor'

e.
mosadi ope	'no woman'
lekau lepe	'no boy'
sefofu sepe	'no blind person'
ngaka epe	'no doctor'

f.
basadi botlhe	'every woman'
makau otlhe	'every boy'
difofu tsotlhe	'every blind person'
dingaka tsotlhe	'every doctor'

g.
mosadi mongwe	'one woman'
lekau lengwe	'one boy'
sefofu sengwe	'one blind person'
ngaka nngwe	'one doctor'

h.
basadi ba le babedi	'two women'
makau a le mabedi	'two boys'
difofu di le pedi	'two blind persons'
dingaka di le pedi	'two doctors'

i. *mo-sadi   yo   ke-mo-thus-its-e-ng   maabane*
CL1-woman CL1.LNK 1SG-CL1-help-PRF-FV-REL   yesterday
'the woman I helped yesterday'

le-kau   le   ke-le-thus-its-e-ng   maabane
CL5-boy CL5.LNK 1SG-CL5-help-PRF-FV-REL   yesterday
'the boy I helped yesterday'

se-fofu   se   ke-se-thus-its-e-ng   maabane
CL7-blind CL7.LNK 1SG-CL7-help-PRF-FV-REL   yesterday
'the blind person I helped yesterday'

ngaka   e   ke-e-thus-its-e-ng   maabane
CL9.doctor CL9.LNK 1SG-CL9-help-PRF-FV-REL   yesterday
'the doctor I helped yesterday'

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 traditional inflection vs. derivation distinction in the sense that, in addition to number, commonly integrated into noun inflection, class alternations express meanings more commonly expressed by derivational morphology.

The observation of class alternations expressing 'derivational' meanings reveals semantic motivations that are not immediately apparent in the assignment of individual non-derived noun stems to genders defined on the basis of the expression of number. Noun stems may be involved in multiple class alternations, with in particular the following meanings: tree vs. fruit, individual vs. collective, concrete vs. abstract, animate entity vs. behavior (people vs. language, etc.), diminutive, augmentative.

The examples in (34) show two Tswana noun stems whose combination with class prefixes is not limited to the expression of number. Such variations in class prefixes express semantic distinctions that, cross-linguistically, tend to be expressed by means of derivational morphology.

(34) a. cl. 1   *mosadi*   'woman'

       cl. 2   *basadi*   'women'

       cl. 7   *sesadi*   'feminine behavior'

       cl. 9   *tshadi*   'group of women'

       cl. 11   *losadi*   'group of women'

       cl. 14   *bosadi*   'womanhood'

   b. cl. 3   *moretlwa*   'tree of the sp. moretlwa'

       cl. 2   *meretlwa*   'trees of the sp. moretlwa'

       cl. 9   *thetlwa*   'fruit of the moretlwa tree'

       cl. 10   *dithetlwa*   'fruits of the moretlwa tree'

       cl. 11   *loretlwa*   'thicket of moretlwa trees'

Examples (35) and (36) illustrate the regular use of class alternations to express typically derivational meanings in Tswana: *concrete human* (cl. 1) ~ *abstract* (cl. 14) and *tree* (cl. 3) ~ *fruit* (cl. 9).

(35) *mosadi*   'woman'   / *bosadi*   'womanhood'

      monna   'man'   / *bonna*   'manhood'

      moloi   'witch'   / *boloi*   'witchcraft'

(36)   *moretlwa* 'moretlwa tree' / *thetlwa*   'moretlwa fruit'

　　　morula   'morula tree'   / *thula*   'morula fruit'

　　　mmilo   'mmilo tree'   / *pilo*   'mmilo fruit'

Tswana has lost the ability to express diminutive and augmentative by means of class alternations. This very common use of class alternations is illustrated in (37) by Jóola Banjal (Atlantic) – (Bassène 2007).

(37)   *e-joba* 'dog'   pl. *su-joba*

　　(dim.)   *ju-joba* 'small dog'   pl. *mu-joba*

　　(augm.)   *ga-joba* 'big dog'   pl. *ba-joba*

4. Verb-to-noun derivation

In typical Niger-Congo languages, 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 class, as in Jóola Banjal *-ffaŋ* 'close' → *e-ffáŋ-um* (pl. *si-ffáŋ-um*) 'key', where *-úm* 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)' → *e-mbal* (pl. *si-mbal*) 'fish-trap'. In such cases, the class to which such nouns are assigned may be crucial for the identification of their meaning.

Note that, as illustrated by the Tswana examples below, the addition of class morphology to verb stems may be responsible for consonant alternations in verb-to-noun derivation, since in many Niger-Congo languages, the initial consonants of noun stems alternate depending on the class to which the noun forms belong.

Among the nouns resulting from verb-to-noun derivation processes, the following functional types are particularly widespread: action nouns (as in Tswana *lema* 'plough' / *tem-o* (cl. 9) 'ploughing'), result nouns (as in Tswana *bitsa* 'call' / *pits-o* (cl. 9) 'meeting'), agent nouns (as in Tswana *lema* 'cultivate' / *mo-lem-i* (cl. 1) 'farmer'), instrument nouns (as in Tswana *apara* 'dress (oneself) / *se-apar-o* cla; (7) 'garment'), place-of-action nouns (as in Tswana *tlhaba* 'slaughter' / *ma-tlhab-elo* (cl. 6) 'abattoir'), and manner nouns (as in Tswana *apara* 'dress (oneself) / *mo-apar-o* (cl. 3) '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, variations may occur in the expression of a given semantic type of deverbal noun.

Many languages have infinitives similar to action nouns in some respects but different from them in some others. In typical Niger-Congo languages, infinitives are morphologically similar to action nouns in the sense that their formation involves the addition of class morphology to a verb stem, and the phrases they head control class agreement in the same way as canonical noun phrases occupying the same positions in the clause. They differ from action nouns in the sense that the phrases headed by infinitives may include typical verb dependents that cannot be included in canonical noun phrases, and may be found in syntactic positions in which canonical noun phrases cannot be found. There are however important cross-linguistic and even intra-linguistic variations in the nouniness vs. verbiness of infinitives.

References

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

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.

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).

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.

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

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

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