On the Theoretical Status of Base and Reduplicant in Northern Atlantic

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1 Introduction

Two aspects of reduplication that have been of central importance to recent research on the phenomenon are the morphological or prosodic shape of the reduplicant and the problem of so-called backcopying, whereby the base is altered to more closely resemble the reduplicant. The work of McCarthy and Prince (1995) and subsequent studies in that vein posit a formal relationship of phonological correspondence between base and reduplicant (BR correspondence) to account for the ways in which they resemble each other. Other approaches, including Hyman, Inkelas and Sibanda (1999), Inkelas & Zoll (2000, 2005), and Pulleyblank (to appear), reject the BR correspondence account of backcopying and focus more closely on morphological aspects of reduplication. For Inkelas and Zoll (2000, 2005) reduplication is morphological doubling, while Pulleyblank (to appear), shows that reduplicative patterns in Yoruba support Kiparsky's (1986) proposal that total reduplication is akin to compounding, also argued for by Downing (2003), while partial reduplication is akin to affixation.

This paper is a case study of reduplication in three related northern Atlantic (Niger-Congo) languages, Wolof, Pulaar and Seereer-Siin. These languages differ from each other along two parameters with regard to reduplication: first, the shape of the reduplicant, which can be defined by either prosodic or morphological factors or, in the case of Pulaar patronymic reduplication, both; and second, the way in which reduplication interacts with stem-initial consonant mutation, the most salient feature of the morphophonology of these languages. Backcopying occurs to varying degrees in all three of the northern Atlantic languages, and systematically targets the mutating consonant: the initial consonant of the base appears to copy the grade (or homorganic alternant) of the initial consonant of the reduplicant, as the examples in (1-3) show:

(1) Wolof (Ka 1994:119)
     fas   'to tie or knot'
     pas-pas   'knot'

(2) Pulaar (Mc Laughlin 2005)
     kan   'Kane' patronym
     han-hanɓe   'those of the last name Kane'

(3) Seereer-Siin (Mc Laughlin 2000a)
     riw   'to weave'
     o-tii-tiw   'weaver'

Analyses of reduplicant shape and backcopying constitute two of the most important areas of recent research in reduplication, and the array of data from the northern Atlantic languages presents some unique problems that a theory of reduplication should be able to account for. In this study I will question the notion of the base and argue that at least for some languages, and perhaps for all, the notion of base and reduplicant have no theoretical status. Concretely, in the Wolof example in (1), although the reduplicated nominal form *pas-pas* is in some sense morphologically derived from the verb *fas*, this does not mean that *fas* is necessarily a base, in the phonological sense, in the reduplicative construction. Although I argue against the theoretical status of base and reduplicant, I will nonetheless retain the terms as useful descriptive ones.

2 The shape of the reduplicant

The northern Atlantic languages present a range of reduplicant shapes that are constrained by either prosodic or morphological factors, or both. In Wolof there are no special prosodic constraints on the shape of the reduplicant: the reduplicant is defined morphologically as a stem, resulting in total reduplication. In Seereer-Siin the reduplicant is defined prosodically as a bimoraic syllable without regard to morphological make-up. Pulaar admits two different types of reduplicative morphemes, one of which is defined morphologically as a stem, while the other must be both a stem *and* a bimoraic syllable. If the stem is not a bimoraic syllable, the form fails to reduplicate.

2.1 The reduplicant as stem in Wolof

Reduplication in Wolof is found in nominal and verbal derivation, and is also characteristic of ideophonic stems (Ka 1994:120-23). Reduplicative ideophonic stems, examples of which are given in (4), are opaque insofar as they are not morphologically derivable from an independent base; consequently, they will receive less attention than other productive types of reduplication in this discussion.

(4) Ideophonic reduplication (Ka 1994)
  nes-nes   'of brightness'
  tés-tés   'of febrile activity'
  raŋ-raŋ   'of a loud metallic noise'
  lambar-lambar   'of useless agitation'

Productive types of reduplication include verb-to-noun derivation, as in the examples in (5); and noun-to-noun derivation as in (6).

(5) xam   'know'   xam-xam   'knowledge'
  gis   'see'   gis-gis   'viewpoint'
  bëgg   'want, love'   bëgg-bëgg   'desire'
  mën   'be able'   mën-mën   'ability'
  gàkk   'be stained'   gàkk-gàkk   'stain'

(6) saalum   'Saloum region'   saalum-saalum   'person from Saloum'
  waalo   'Waalo region'   waalo-waalo   'person from Waalo'
  móodu   male name   móodu-móodu   'trader'

Reduplication may also co-occur with derivational suffixes, in which case the suffix is not copied. Examples of noun-to-verb and verb-to-verb derivations are provided in (7).

(7) gan   'guest'   gan-gan-lu   'behave as if one were a guest'
  góor   'man'   góor-góor-lu   'make a great effort'
  dof   'be crazy'   dof-dof-lu   'feign being crazy'
  mer   'be angry'   mer-mer-lu   'feign being angry'
  set   'clean'   set-set-al   'clean up'
  wis   'sprinkle'   wis-wis-ël   'rain lightly and continuously'

Similarly, such forms can be created from reduplicative ideophonic stems to form verbs, as in (8). Again, the suffix is not copied.[1]

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[1] Ka (1994) points out a single form in which the suffix is copied in a reduplicative construction, namely the noun *gaañ-u-gaañ-u*, 'wound' from a verbal base /gaañ/ plus the "reflexive neutropassive" suffix, /-u/.

(8) nes-nes-i   'shimmer'
     rex-rex-i   'laugh loudly'
     kuus-kuus-i   'try with great effort'
     pàcc-pàcc-i   'spit constantly'
     nokkos-nokkos-i   'walk slowly and with hesitation'

The reduplicant in Wolof may, then, be defined morphologically as a stem, requiring no special constraints on its prosodic shape.

   This relatively straightforward account of Wolof reduplication is substantially complicated by examples of verb to noun derivation such as the following, noted in Ka (1994:119), which exhibit stem-initial consonant mutation, and, ostensibly, backcopying:

(9) fas 'tie or knot'   pas-pas   'knot'
     sañ 'dare'   cañ-cañ   'audacity'

We will return to these forms in the discussion of consonant mutation in § 3.

2.2 The reduplicant as stem (and bimoraic syllable) in Pulaar

   Reduplication in Pulaar is a rather limited and generally unproductive process; nevertheless, some idiomatic lexical items involving noun-to-noun and verb-to-noun derivation, such as the examples given in (10), involve one of the two systematic patterns of reduplication found in the language.

(10) ʔar-de   'to come'   ngar-ʔar-di   'volunteer plant'
     hul-de   'to fear'   kul-hul-i   'frightening things'
     seer-de   'to separate'   ceer-seer-o   'divorcée'
     waalo   'Waalo region'   baal-waalo   'person from Waalo'
     kal-le   'testicles'   kal-hal-di   'bull, male animal'
     hin-ere   'nose'   kin-hin-ol   'thonged sandal'
     ceeɗ-u   'dry season'   ceeɗ-seeɗ-lu   'approach of dry season'

As in Wolof, and deferring the discussion of consonant mutation until §3, the reduplicant in these forms is determined by morphological considerations. The reduplicant is a stem, and as such is subject to the same prosodic constraints as stems.

   A second more productive and equally consistent pattern of reduplication is to be found in Pulaar patronyms. Patronymic reduplication derives a noun meaning an individual or individuals of a certain last name (eg: a Kennedy) from that last name. The resulting stems are inflected for noun class 1 (human singular) or noun class 2 (human plural), as illustrated in the examples in (11).

(11)   class 1   class 2
     'Sall'   sal   cal-sal-o   sal-sal-ɓe
     'Sy'   sih   cii-sih-o[2]   sii-sii-ɓe
     'Sow'   soh   coo-soh-o   soo-soo-ɓe
     'Watt'   wat   bat-wat-o   wat-wat-ɓe
     'Wane'   wan   ban-wan-o   wan-wan-ɓe
     'Hathie'   ʔac   gac-ʔac-o   ʔac-ʔac-ɓe
     'Agne'   ʔañ   gañ-ʔañ-o   ʔañ-ʔañ-ɓe

In this second pattern, two types of constraints govern the shape of the reduplicant. The first is morphological, and is identical to the constraint governing the reduplicative pattern seen in the examples in (10): the reduplicant is a stem. But in contradistinction to the forms in (10), the reduplicant in patronymic reduplication must *also* be a bimoraic syllable. As illustrated in (12), patronyms that are not bimoraic fail to reduplicate.

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[2] A syllable-final [h] in Pulaar is often dropped, triggering compensatory lengthening in the preceding vowel.

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(12)   class 1   class 2
    'Pam'   paam   paam-o   faam-ɓe
    'Ndiathie' njaac   njaac-o   njaac-ɓe
    'Wone'   woon   goon-o   woon-ɓe

Thus, while patronymic reduplication shares the stem requirement with other types of reduplication in Pulaar, it also subject to a second constraint, unique to that particular word formation process, that is prosodic in nature.

2.3 The prosodically defined reduplicant in Seereer-Siin

In Seereer-Siin reduplication is used in noun-to-noun and verb-to-noun derivation. A place name is reduplicated to create a stem meaning an individual associated with that place, as in (13), and an agent noun stem may be derived from a verb via reduplication, as in (14). The stems are inflected for noun class 1 (human singular) or noun class 2 (human plural).

(13)   place   class 1   class 2
    'Fatick'   fatik   o-paa-fatik   faa-fatik
    'Diakhao'   jaxaaw   o-caa-jaxaaw   jaa-jaxaaw
    'Nguès'   nGees   o-qee-xees   xee-xees

(14)   verb   class 1   class 2
    'write'   bind   o-pii-bind   bii-bind
    'work'   jal   o-caa-jal   jaa-jal
    'stutter'   gaʔ   o-kaa-gaʔ   gaa-gaʔ

The reduplicant in Seereer is defined prosodically as a bimoraic syllable. An additional constraint accounts for the emergence of a less marked, codaless syllable, so that the reduplicant is always of the shape CVV where VV is a long vowel. The shape of the reduplicant in Seereer, then, may be defined uniquely in terms of its prosodic makeup, regardless of stem shape.

2.4 Reduplication and morphological identity (or not)

Following on Kiparsky's (1986) proposal that total reduplication corresponds to compounding while partial reduplication corresponds to affixation, Pulleyblank (to appear) suggests that morphological identity such as that proposed in Hyman, Inkelas and Sibanda (1999) and Inkelas and Zoll (2000, 2002) accounts for the former but not the latter. Based on reduplicative patterns in Yoruba, Pulleyblank makes the case that although cases of total reduplication in Yoruba involve morphological identity, the same cannot be said for cases of partial reduplication in the same language. Partial reduplication can be accounted for by the affixation of some prosodic constituent (a foot in the case of Yoruba distributive reduplication) whose melodic content corresponds to the melodic content of the input. The difference between Pulleyblank's approach and that of McCarthy & Prince (1995) to which it bears striking parallels, is that the correspondence relationship holds between input and output rather than base and reduplicant. This necessarily violates the constraint INTEGRITY, since the input has two correspondents in the output, the base and the reduplicant, but this is a small price to pay for getting rid of reduplication-specific constraints that shape B-R identity.

It is perfectly possible to analyze reduplication in Wolof and Seereer-Siin within the parameters that Pulleyblank provides. Viewing Wolof reduplication as a form of compounding where the two halves of the compound must be identical is perfectly adequate and, as we will see in §3, is actually preferable to an analysis that invokes base-reduplicant identity. The same can be said of the type of total reduplication we see in Pulaar non-patronymic forms, such as those given in (10). Likewise, Seereer reduplication can quite easily be handled as prosodic affixation to a stem. But what of Pulaar patronymic reduplication that involves total stem reduplication if and only if that stem is a bimoraic syllable? If, as Pulleyblanks suggests, these two types of reduplication are qualitatively different from each other, is Pulaar patronymic reduplication an instance of morphological doubling or

prosodic affixation? In cases of total reduplication, any prosodic constraint on the reduplicant is simply a prosodic constraint on stems in general, regardless of their status as reduplicant. In Pulaar patronymic reduplication this is not the case. Reduplicating forms are always bimoraic, but there are plenty of patronyms that are not bimoraic, as the examples in (12) show; they just fail to reduplicate. Bimoraicity is clearly a property of the reduplicant rather than the base. Given these facts, it is difficult to maintain the hypothesis that there are two qualitatively different types of reduplication. Rather, what the Atlantic data support is a continuum, with a morphologically defined reduplicant at one end, and a prosodically defined reduplicant at the other, but leaving room in the middle for cases like Pulaar patronymic reduplication which involve aspects of each.

3 Consonant mutation and backcopying

Consonant mutation is one of the most salient characteristics of the northern Atlantic languages, and one that permeates the derivational and inflectional morphology of much of the sub-family. Within reduplication, the alleged backcopying effects illustrated in §1, always appear on mutating consonants, thus an understanding of this interaction is crucial to any theory of reduplication. The various systems of consonant mutation have been well documented elsewhere, thus only a brief discussion of the phenomenon, adequate to outlining its behavior in reduplication, will be presented here.

3.1 Mutation in Wolof derivation

Consonant mutation in Wolof occurs both stem initially and stem finally in verbs and nouns and accompanies derivational morphological processes. Stem-initial consonant mutation involves a switch between grades (homorganic members of a single mutation set) such as f/p or b/mb, while stem-final mutation, which will not be discussed here, may also involve gemination and degemination. The present discussion will focus on stem-initial consonant mutation in verb-to-noun derivation, since that is the main area of the grammar in which mutation interacts with reduplication.

Consider the examples in (15). Here, verb stem-initial continuants alternate with stops in the nominal form, while verb-initial stops alternate with prenasalized stops in similar environments. Mutation may be the sole marker of the derivation, as in (15a-d) or it may co-occur with another derivational morpheme, as in (15e-f).

(15)　　V　　　　　　　　　　　N
　　a.　fo　　'play'　　　　　　po　　　　'game'
　　b.　suub　'dye'　　　　　　cuub　　　'dyed cloth'
　　c.　bokk　'have in common'　mbokk　　'relative'
　　d.　daje　'meet'　　　　　ndaje　　'meeting'
　　e.　jar　'be worth'　　　　njariñ　　'worth, use'
　　f.　bëgg　'like, want'　　　mbëggeel　'love, affection'

The homorganic stem-initial mutation sets in Wolof are given in (16). Wolof exhibits only a two-way distinction in stem-initial mutation, as opposed to the three-way distinction found in Pulaar and Seereer-Siin.

(16)

f	s	ø		b	d	j	g
p	c	k		mb	nd	nj	ng

Although consonant mutation is not as prevalent in Wolof in general, and in Wolof reduplication in particular, as it is in the other two languages, there are at least a few examples, such as those in (17) that exhibit the interaction of consonant mutation with reduplication.

(17) Ka (1994:119)

    fas 'tie'   pas-pas 'knot'

    sañ 'dare'   cañ-cañ 'audacity'

Within the parameters of the current discussion there are two main ways in which the reduplicative forms in (17) can be analyzed. First, we can posit *fas* and *sañ* as the bases from which the reduplicative forms are derived. By a process of nominalization the reduplicant is prefixed to the base and required to be stop-initial. The base also becomes stop-initial to avoid violating BR identity. This is the correspondence theory account of Wolof reduplication. Conversely, following Hyman, Inkelas & Sibanda (1999) and Inkelas and Zoll (2000, 2005), we might analyze the forms as instances of doubling or compounding or juxtaposition of nominal stems which are required to be stop-initial, in which case BR identity is meaningless.

    While either analysis works equally well, although Pulleyblank provides important arguments that would favor the doubling analysis, the important point to be made about Wolof is that, in either case, we must postulate a morpheme constraint that requires nominal stems to be stop-initial. Pulaar and Seereer-Siin provide more convincing evidence that this is, in fact, the case.

3.2 Consonant mutation in Pulaar

    Stem-initial consonant mutation in Pulaar and many other dialects of Fula occurs in nominal and verbal stems and is conditioned primarily by noun class, number and focus.[3] Nominal stems alternate in their initial consonant between up to three homorganic variants, a continuant, a stop, and a prenasalized stop, while verb stems normally exhibit a two-way alternation between a continuant and a prenasalized stop. The full range of Pulaar mutations is given in (18), and two sample nominal paradigms are given in (19).

(18) Pulaar gradation sets

	LABIAL		CORONAL		DORSAL			
a. cont	w	f	r	s	y	h	y	w	ʔ
b. stop	b	p	d	c	j	k	g	g	g
c. nasal	mb	p	nd	c	nj	k	ng	ng	ng

(19) 'blind person'   'woman'

    gum-ɗo   debb-o   singular

    wum-ɓe   rew-ɓe   plural

    ngum-kon   ndew-on   diminutive plural

Most studies of Pulaar and other Fula dialects (Anderson 1976; Churma 1986; Paradis 1987; and Niang 1997), with the exception of Skousen (1972) and Elzinga (1996), agree that continuant-initial forms are basic in noun stems, a hypothesis that is supported by the behavior of loan words from French, where stop-initial forms may be derived, in the morphological sense, from continuant-initial forms, but not the other way around (Mc Laughlin 2000b). Following other autosegmental analyses of the Fula dialects, I assume that featural noun class affixes are responsible for consonant mutation, an issue to which I will return in §4.

    Most reduplicative forms in Pulaar are well-behaved with respect to consonant mutation, exhibiting only the expected word-initial mutation which does not extend to the base, thereby avoiding backcopying. But there are, nonetheless, some apparently anomalous forms like the example in (20).

(20) kan   'Kane' patronym

    han-han-ɓe   'those of the last name Kane'

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[3] In addition to stem-initial consonant mutation, Pulaar also has stem-final consonant mutation which will not be discussed here. Consonant mutation in Fula has been very well documented. See, for example, Anderson 1976, Arnott 1970, Churma 1986, Klingenheben 1927, Lieber 1987, Paradis 1987, Skousen 1972, *inter alia*.

As we shall see in §4, anomalous forms of this type support an analysis that involves morpheme constraints.

3.3 Consonant mutation in Seereer-Siin

There are two types of consonant mutation in Seereer-Siin (Mc Laughlin 2000a), of which one, presented in (21), is similar in some aspects to the Pulaar pattern in which the homorganic variants consist of a continuant, a stop, and a prenasalized stop. The second type involves an alternation between homorganic plain voiced stops, plain voiceless stops and prenasalized stops, and is given in (22).

(21) Continuancy mutations

	LABIAL		CORONAL		DORSAL		
a. continuant	w	f	r	s	w	x	h
b. stop	b	p	t	c	k	q	k
c. nasal	mb	mb	nd	nj	ng	nG	ng

(22) Voicing mutations

	LABIAL		CORONAL				DORSAL
a. voiced	b	ɓ	d	ɗ	j	ʃ	g
b. voiceless	p	ɓ̥	t	ɗ̥	c	ʃ	k
c. nasal	mb	ɓ̥	nd	ɗ̥	nj	ʃ	ng

Any given stem will undergo only one type of consonant mutation. Examples of nominal paradigms in Seereer-Siin are given in (23). Note that the stem for 'woman' undergoes continuancy mutation while that for 'man' undergoes voicing mutation.

(23)

'woman'	'man'	
otew	okoor	Class 1: human singular
rew	goor	Class 2: human plural
ondew	ongoor	Class12: augmentative singular

For nominal stems that undergo continuancy mutation, the continuant forms is basic, as it is in Pulaar mutations. Class prefixes containing either the unlinked feature [-continuant] or [nasal] trigger mutation, the former conditioning plain stops and the latter prenasalized stops. For nominal stems that undergo voicing mutation, the voiceless stop form is basic and mutation is the result of the affixation of a class prefix containing either the unlinked feature [+voice] or [+nasal]. The first yields plain voiced stops, the latter prenasalized stops.

 With regard to backcopying, there are two distinct patterns of reduplication in Seereer-Siin linked to the two types of mutation. Reduplicative forms involving voicing mutation never exhibit backcopying effects, as illustrated in (24), while those involving continuancy mutation show free variation between forms that exhibit backcopying and those that do not, as illustrated in (25).

(24)	gaʔ	'stutter'	o-kaa-gaʔ *o-kaa-kaʔ	'stutterer
	bikol	place name	o-pii-bikol *o-pii-pikol	'one from Bikol'

(25)	war	'to kill'	o-baa-war ~o-baa-bar	'killer'
	xoox	'to cultivate'	o-qoo-xoox ~o-qoo-qoox	'farmer'
	fatik	place name	o-paa-fatik ~o-paa-patik	'one from Fatick'

In my (2004) analysis of these facts, I show that the backcopying effects are due to a double linking of the feature [-continuant], which is part of the noun class prefix, to the initial consonant of the two juxtaposed stems that form the reduplicative construction. If the backcopying effects we see in (25) were attributable to BR correspondence, it would be almost impossible to rule out such effects in the examples in (24) since BR correspondence would, ostensibly, have the same effect on those forms. Backcopying is ruled out in the forms in (24) because there is no prefix containing the [–voice] feature that can link to the juxtaposed stems. Nominal stems that undergo voicing mutation are underlyingly voiceless.

   Viewed in this light, there is nothing anomalous about these forms. Consider, however, the example in (26).

(26)   nGees   place name   o-qee-xees   'one from Nguès'

While we might reasonably assume that the nominal form meaning 'one from Nguès' is morphologically derived from the place name, how do we account for the initial consonant of the base which shows up as a continuant?

4   Constraints governing consonant mutation

   In this section I propose that consonant mutation in the Northern Atlantic languages can be explained by two distinct parameters: morpheme constraints and featural affixation, and that the facts of reduplication in these language support my position. Having established the patterns of 'well-behaved' reduplication in the three languages under discussion, I will now turn to the 'anomalous' forms presented for each language in order to discuss them in more depth.

   Beginning with Pulaar, where the interaction of consonant mutation and reduplication is generally unproblematic, reduplicative derivatives of the patronym Kane are anomalous, as illustrated in (27). The starred ungrammatical forms are, in fact, the expected ones.

(27)   kan   patronym
        kan-han-o   'a Kane'
        *kan-kan-o
        han-han-ɓe   'Kanes'
        *han-kan- ɓe

The apparent anomaly does not occur in the reduplicant (the leftmost member of the reduplicative construction), but rather in the base, which is continuant-initial while the patronym itself is stop-initial. In what sense, then, can the patronym be considered a base in the reduplicative construction? I propose that nominal (and verbal) stems in Pulaar are subject to a morpheme constraint that requires them to be continuant-initial. A nominal stem that is morphologically derived from the patronym Kane, would thus be h-initial: /han/. If we consider reduplication to be the result of morphological doubling, we end up with the following reduplicative stem: /han-han/ to which a class prefix, in the form of a [-continuant] feature, attaches, yielding the grammatical form, kan-han-o.

   Reduplicative forms involving mutation in Wolof may be analyzed in the same way. In the derivation from *fas* 'to knot' to *pas-pas* 'a knot,' and from *sañ* 'to dare' to *cañ-cañ* 'audacity,' a morpheme constraint requires the nominal stem to be stop-initial. There is no inflectional morphology on Wolof nouns that marks noun class (Mc Laughlin1997), thus the reduplicative stem remains unchanged.

   In Seereer-Siin there is also evidence of a morpheme constraint at work that requires a nominal stem to be continuant initial. In deriving an agentive noun from the place name nGees, we get the following forms:

(28) nGees   place name
     o-qee-xees~   'one from Nguès'
     o-qee-qees
     *o-qee-nGees
   xee-xees   'those from Nguès'
     *xee-nGees

The morpheme constraint ensures that the nominal stem be continuant-initial, namely /xees/; morphological doubling (with prosodic requirements on the reduplicant) gives us /xee-xees/, and the affixation of the singular human class prefix which contains the floating feature [-continuant], gives us the grammatical form o-qee-xees. The only problem now remaining is the variation that occurs in the singular form.

   Recall that only stems that undergo continuancy mutation in Seereer-Siin exhibit this type of free variation. Those undergoing voicing mutation never exhibit so-called backcopying effects. In order to explain this discrepancy, in McLaughlin (2000) I attributed it to separate BR faithfulness constraints for different features: the faithfulness constraint governing the feature [+/-continuant] outranks that governing the feature [+/-voice]. But as I point out in McLaughlin (2004), that analysis misses an important generalization about the morphological status of the feature that gets copied. The only transferred feature in Seereer reduplication, [-continuant], is the exponent of a class prefix. No other feature, including [-voice], the relevant feature for our discussion, is ever 'transferred.' What this implies is that a phonological account of backcopying is not appropriate to the facts of Seereer, since it should predict backcopying across the board, not just in stems that undergo continuancy mutation.

4.1 Formalizing the analysis

Following the approach taken by Hyman, Inkelas & Sibanda (1998) and Inkelas & Zoll (2000, 2005), that reduplication is the result of stem juxtaposition or morphological doubling, the basic reduplicative construction may be represented as follows:

(29) The reduplicative construction

$$
\begin{array}{ccc}
 & \text{R(eduplicative)-Stem} & \\
\diagup & & \diagdown \\
\text{Stem 1} & \text{Stem 2} & \text{morphology}
\end{array}
$$
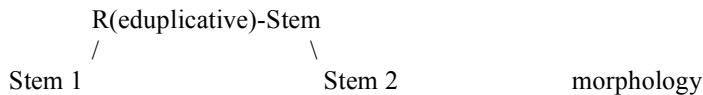
Reduplication in Wolof can easily be captured by this model, as illustrated in the example in (30), involving the reduplicative form *pas-pas* 'knot' from the verb *fas* 'to tie.'
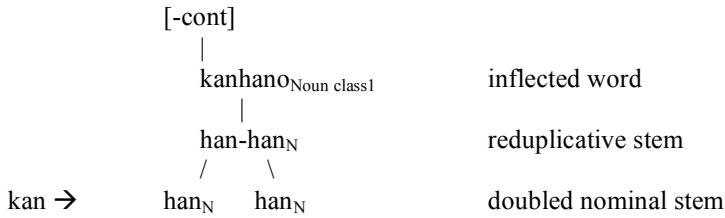
(30) fas 'tie$_V$' → pas-pas 'knot$_N$'

$$
\begin{array}{lccl}
 & \text{pas-pas}_N & & \text{word} \\
 & | & & \\
 & \text{pas-pas}_N & & \text{reduplicative stem} \\
 & \diagup \quad \diagdown & & \\
\text{fas}_V \rightarrow & \text{pas}_N \quad \text{pas}_N & & \text{doubled nominal stem}
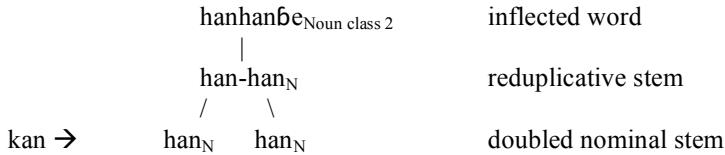\end{array}
$$

The verbal stem, *fas*, serves as the input (but not the base) for the reduplicative construction. The related stop-initial stem, *pas*, is doubled as per the demands of the reduplicative construction. There is no affixation of any noun class marker in Wolof.

   Turning now to Pulaar, the derivative forms of the patronym *kan* 'Kane' are not problematic if the patronym is not considered to be the base, but only the input. The nominal stem is required to be continuant-initial, and it is this form that is doubled according to the demands of the reduplicative construction. The noun class 1 prefix, consisting only of the feature [-continuant] accounts for the singular form in (31), while the form in (32) requires no further modification in its initial consonant since there is no class prefix for noun class 2.
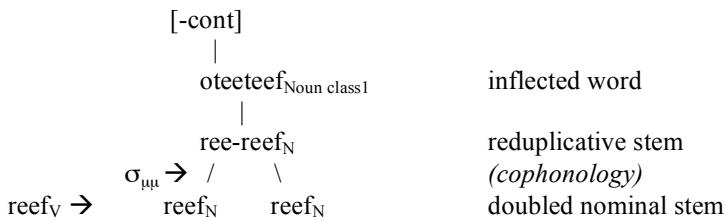
(31) kan(patronym) → kanhano 'a Kane'

```
              [-cont]
                 |
              kanhano_Noun class1        inflected word
                 |
              han-han_N                  reduplicative stem
              /    \
kan →      han_N   han_N                 doubled nominal stem
```

(32) kan(patronym) → hanhanɓe 'Kanes'

```
              hanhanɓe_Noun class 2      inflected word
                 |
              han-han_N                  reduplicative stem
              /    \
kan →      han_N   han_N                 doubled nominal stem
```
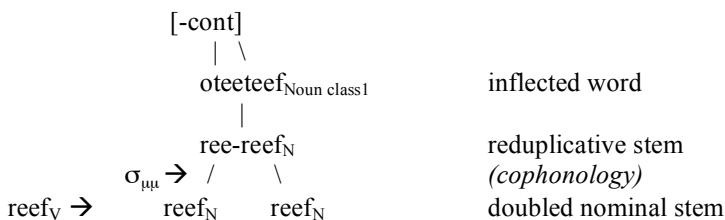
In Seereer-Siin the situation is slightly more complex but nonetheless systematic. The variation in reduplicative words that undergo continuancy mutation is illustrated by derivatives of the verbal input *reef* 'follow' in examples (33) and (34). The initial consonant of the nominal stem is required, as in Pulaar, to be continuant-initial. The cophonology of the reduplicant ensures that it is a codeless bimoraic syllable, and the affixation of the class 1 prefix, which consists of the overt segment [o] and the feature [-continuant] which links to the stem-initial consonant, yields the form in (33).

(33) reef 'follow' → oteereef 'follower'

```
              [-cont]
                 |
              oteeteef_Noun class1       inflected word
                 |
              ree-reef_N                 reduplicative stem
         σ_μμ →  /     \                 (cophonology)
reef_V →      reef_N    reef_N           doubled nominal stem
```

Double linking of the [-continuant] feature to both stem-initial consonants yields the "backcopied" form in (34).[4]

(34) reef 'follow' → oteeteef 'follower'

```
              [-cont]
                 | \
              oteeteef_Noun class1       inflected word
                 |
              ree-reef_N                 reduplicative stem
         σ_μμ →  /     \                 (cophonology)
reef_V →      reef_N    reef_N           doubled nominal stem
```
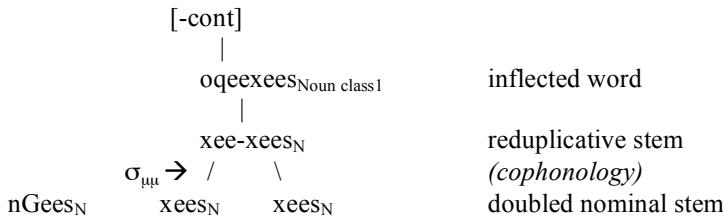
Finally, the derivative of the place name nGees 'Nguès,' in which the reduplicative form meaning 'one from Nguès' does not contain the initial prenasalized stop of the noun from which it is derived, provides further evidence of the phonological and morphological autonomy of the reduplicative construction. The nominal stem derived from the place name, like any other nominal stem that
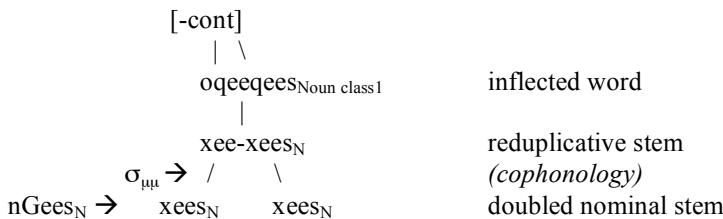
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[4] For an OT analysis of variation in Seereer-Siin backcopying see Mc Laughlin 2004).

undergoes continuancy mutation, is required to be continuant-initial. The [-continuant] feature that is part of the class 1 prefix is linked once in the form in (35) and twice in the 'backcopied' form in (36).

(35) nGees (place name) → oqeexees 'one from Nguès'

```
              [-cont]
                 |
              oqeexees_Noun class1        inflected word
                 |
              xee-xees_N                  reduplicative stem
        σ_μμ →  /    \                    (cophonology)
   nGees_N    xees_N    xees_N            doubled nominal stem
```

(36) nGees (place name) → oqeexees 'one from Nguès'

```
              [-cont]
               | \
              oqeeqees_Noun class1        inflected word
                 |
              xee-xees_N                  reduplicative stem
        σ_μμ →  /    \                    (cophonology)
   nGees_N →  xees_N    xees_N            doubled nominal stem
```

Evidence from the Northern Atlantic languages, Wolof, Pulaar, and Seereer-Siin, thus supports a theory of reduplication as stem juxtaposition or morphological doubling where a cophonology constrains the shape of the reduplicant (Hyman et al. 1998, Inkelas & Zoll 2000, 2005). Backcopying in these languages cannot be analyzed as the result of B-R identity (McCarthy & Prince 1995), nor can the qualitative difference between total and partial reduplication (Kiparsky 1985, Pulleyblank (to appear)), be maintained. Patterns of consonant mutation show that derivational consonant mutation is the result of morpheme constraints, while inflectional consonant mutation is the result of featural affixation.

References

Anderson, Stephen R. 1976. On the description of consonant mutation in Fula. *Studies in African Linguistics* 7(1):93-136.

Arnott, David W. 1970. *The nominal and verbal systems of Fula*. Oxford: Oxford University Press.

Churma, Donald G. 1986. Fula consonant mutation as a segmental phonological process: The unexpurgated version. ms. Stanford University.

Downing, Laura J. 2003. Compounding and tonal non-transfer in Bantu languages. *Phonology* 20: 1-42.

Hyman, Larry M., Sharon Inkelas, and Galen Sibanda. 1988. Morphosyntactic correspondence in Bantu reduplication. ROA 437-0601.

Inkelas, Sharon and Cheryl Zoll. 2005. *Reduplication: doubling in morphology*. Cambridge: Cambridge University Press.

Inkelas, Sharon and Cheryl Zoll. 2000. Reduplication as morphological doubling. ROA 412-0800.

Ka, Omar. 1994. *Wolof phonology and morphology*. Lanham, MD: University Press of America.

Kiparsky, Paul. 1986. The phonology of reduplication. ms. Stanford University.

Klingenheben, August. 1927. Die Laute des Ful. *Zeitschrift für eingeborenen Sprachen* 9. Berlin: Reimer.

Lieber, Rochelle. 1984. Consonant gradation in Fula: An autosegmental approach. In M. Aronoff & R.T. Oehrle, eds. *Language and sound structure*. Cambridge: MIT Press.

McCarthy, John J. and Alan S. Prince. 1995. Faithfulness and reduplicative identity. In Beckman, et al., eds. *Papers in Optimality Theory*. Amherst: GLSA. 249-384. ROA 60-0000.

Mc Laughlin, Fiona. 2005. Reduplication and consonant mutation in the northern Atlantic languages. In Bernhard Hurch, ed. *Studies on reduplication*. Berlin: Mouton de Gruyter. 111-133.

Mc Laughlin, Fiona. 2000a. Reduplication and consonant mutation in Seereer-Siin. *Phonology 17*(3):333-363.

Mc Laughlin, Fiona. 2000b. Consonant mutation in Pulaar. In M.M.T. Henderson, ed. 1999 *Mid America Linguistics Conference Papers*. 295-309.

Mc Laughlin, Fiona. 1997. Noun classification in Wolof: when affixes are not renewed. *Studies in African Linguistics* 26(1):1-28.

Niang, Mamadou O. 1997. *Constraints on Pulaar phonology*. Lanham, MD: University Press of America.

Paradis, Carole. 1987. Glide alternations in Pulaar (Fula) and the theory of Charm and Government. *Current Approaches to African Linguistics* 4:327-338.

Pulleyblank, Douglas. To appear. Patterns of reduplication in Yoruba. In K. Hanson & S. Inkelas, eds. *The nature of the word: Essays in honor of Paul Kiparsky*. MIT Press.

Skousen, Royal. 1971. Consonant alternation in Fula. *Studies in African Linguistics* 3(1):77-96.

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