On the seemingly opaque morphophonology of Najamba (Dogon)
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1. Najamba (Niger-Congo, Dogon, Najamba-Kindigé) is newly documented language variety that has received little theoretical attention. Heath's (2009) grammar is incomplete but contains much data on the language's noun classes. The grammar discusses unpredictable and problematic patterns of suffixation for number in nouns. The current paper contends that suffixation is, in fact, entirely predictable in this language simply by considering that nouns may have one of two types of stems, namely vowel-final (V-final) or consonant-final (C-final).

2. Drawing on this proposal, we illustrate that for suffixing nouns, V-final stems exhibit simple affixation of a sonorant-initial suffix to the stem. C-final stems behave in one of two ways:

   i) Sonorant-final stems permit simple affixation
   ii) Obstruent-final stems necessitate vowel epenthesis to avoid bad syllable contact.

3. Najamba nouns fall into three main classes: two suffixing and one mutating. The two suffixing noun classes contain animate and inanimate nouns, respectively. We focus first on inanimate nouns and related adjectives, where the plural is unmarked (i.e. –Ø) and the singular is marked by the suffix [-ŋgo] or [-ŋge].

	Singular	Plural	Gloss		Singular	Plural	Gloss
a.	[ɛlɛ-ŋgo]	[ɛlɛ]	'peanut'	c.	[a:l-ŋgo]	[a:le]	'rain'
b.	[uri:-ŋgo]	[uri:]	'sapling'	d.	[bur-ŋgo]	[buri:]	'tender'

4. Assuming a static representation of noun stems, as suggested by Heath, comparison of plural forms shows nearly identical stems that have entirely different singular counterparts. Singular forms in (3a-b) appear to undergo simple suffixation, while those in (3c-d) appear to lose a vowel upon suffixation. The pattern of suffixation appears unpredictable; no apparent factor conditions the removal vs. retention of a vowel

5. Entertaining an alternative where (3a-b) have V-final stems and (3c-d) have C-final stems resolves this issue.

   a. /ɛlɛ + Ø/   →   [ɛlɛ]   'peanut' (pl.)
       /ɛlɛ + ŋgo/   →   [ɛlɛŋgo]   'peanut' (sin.)

   - versus -

   b. /a:l + Ø/   →   [a:le]   'rain' (pl.)
       /a:l + ŋgo/   →   [a:lŋgo]   'rain' (sin.)

6. V-final stems undergo simple suffixation (5a). C-final stems epenthesize a vowel in the plural to avoid an impermissible word-final consonant but undergo simple suffixation in the singular (5b). This applies to all sonorant-final stems.

7. Obstruent-final stems behave slightly different – vowel epenthesis is necessary in both singular and plural. Obstruents codas are never permitted in any word position.

	Singular	Plural		Gloss
	Singular	Plural		Gloss
a.	[simba-ŋgo]	[simba]	*simbŋgo	'leaf'
b.	[dɔdɛ-ŋgo]	[dɔdɛ]	*dɔdŋgo	'ash'
c.	[masaku-ŋgo]	[masaku:]	*masakŋgo	'sweet potato'
d.	[dundaŋgɛ-ŋgɛ]	[dundaŋgɛ:]	*dundaŋgŋgɛ	'shack'

8. In general, word-final consonants are disallowed, thereby necessitating word-final vowel epenthesis in all instances (i.e. for sonorant stems *and* obstruent stems).

9. CVL syllables (where L is some sonorant) are permitted word-internally, no need for repair via epenthesis. CVL syllables also found in other word-internal instances.

   a. [kɛl.bɛ.du.le]   'termite mounds'
   b. [bɔr.bɔr.dɛ]   'colons'

10. Our *epenthesis* account:

   i) Posits the presence of underlying stem-final vowel in one stem type and epenthesis to satisfy syllable markedness in other stem type. This accounts for otherwise 'unpredictable' suffixation patterns in *sonorant* noun stems.
   ii) Suggests that phonotactic repairs obscure underlying form of the stem in some instances (e.g. 5a,b plural forms).
   iii) Based upon phonotactics, syllable contact, and simplicity
   iv) Can account for suffixation patterns in all noun classes

11. Heath's alternative *deletion* account:

    i) Requires multiple derivational steps, e.g. vowel raising, consonant
    deletion (in some instances), and vowel deletion.
    ii) Cannot account for failure to occur in (5a)-type words
    iii) Has trouble accounting for suffixation in other classes

12. Sonorant stems ending in either liquids or rhotics behave identically and exhibit both V-final and C-final suffixation patterns.

	Singular	Plural	Gloss
a.	[ila-ŋgo]	[ila]	'ripe'
b.	[ɛlɛ-ŋgo]	[ɛlɛ]	'peanut'
c.	[dombele-ŋgo]	[dombele]	'rooster's crest'
d.	[aːl-ŋgo]	[aːle]	'rain'
e.	[dendel-ŋgo]	[dendele]	'round object'
f.	[uriː-ŋgo]	[uriː]	'sapling'
g.	[keker-ŋgo]	[kekeriː]	'clitoris'
h.	[bur-ŋgo]	[buriː]	'tender'

13. Sonorant stems ending in nasals behave in a similar but not identical way as *liquid* sonorant stems in (12). Nasal stems exhibit both V-final and C-final suffixation patterns. Impermissible geminates reveal preference for stem faithfulness.

	Singular	Plural	Gloss
a.	[kina-ŋgo]	[kina]	'bone'
b.	[bɔnɛ-ŋgo]	[bɔnɛ]	'fontanel'
c.	[gone-ŋgo]	[gone]	'squash'
d.	[tiniː-ŋgo]	[tiniː]	'hip'
e.	[nɛm-go]	[nɛmɛ]	'salt'
f.	[ban-go]	[bane]	'red'
g.	[gon-go]	[gone]	'water jar'
h.	[bin-go]	[biniː]	'big'

14. Analogous suffixation patterns can be found for other classes (sub-classes) of suffixing nouns.

i) [-ŋge]-suffixing inanimate nouns

	Singular	Plural	Gloss
a.	[guliː-ŋge]	[guliː]	'shed'
b.	[toŋgere-ŋge]	[toŋgere]	'shallow hole'
c.	[daːni-ŋge]	[daːniː]	'thickening syrup'
d.	[dol-ŋge]	[doleː]	'hole at base of house'
e.	[bur-ŋge]	[buriː]	'tender'
f.	[seːdun-ge]	[seːduni]	'pounding area'

ii) [-mbo]-suffixing animate nouns

	Singular	Plural	Gloss
g.	[gulaː]	[gulaː-mbo]	'axe'
h.	[andasara]	[andasara-mbo]	'white person'
i.	[gaɲa]	[gaɲa-mbo]	'cat'
j.	[nale]	[nal-mbo]	'friend'
k.	[deːre]	[deːr-mbo]	'statuette'
l.	[boniː]	[bon-bo]	'tomtom'

15. For V-final *sonorant* stems, a full range of vowels (i.e. i, u, e, ɛ, o, ɔ, a, short/long) is found. Importantly, these vowels are <u>identical</u> in both word-final position and in suffixed forms. These vowels are part of the underlying representation of the stem, and stem faithfulness, once again, bars against such a change. Representative examples include (13a-d) and (14a-c, 14g-i).

16. Epenthetic vowels found word-finally in C-final sonorant stems (and both word-finally and word-internally for obstruent stems) are generally limited to [i], [e], and in a few instances [ɛ]. These vowels are not part of the underlying representation and are supplied by default to satisfy phonotactics, hence the limited inventory. In obstruent C-final stems, these vowels may vary in word-internal vs. word-final positions.

	Singular	Plural	Gloss
a.	[simba-ŋgo]	[simba]	'leaf'
b.	[dɔdɛ-ŋgo]	[dɔdɛ]	'ash'
c.	[tebi-ŋgo]	[tebe]	'plant'
d.	[niŋgi-ŋge]	[niŋge]	'green sauce'

17. The proposal of V-final vs. C-final stems in regards to the observed behavior of stem-final vowels is supported by quantitative data from Heath (2009). Heath states that approximately 50% of suffixing nouns fail to exhibit any vocalic alternations stem-finally. This follows what might generally be expected if the inventory of different stem types is split between these two classes.

18. Motivation for noted suffixation patterns can be drawn from both phonotactics and syllable contact.

    i) Avoidance of word-final consonants in all instances is not unusual, possible reflex of markedness
    ii) Presence of some codas word-internally, i.e. sonorant codas permitted but obstruent codas avoided, follows from Prince & Smolensky's (1993/2004) Margin Hierarchy and Baertsch's (2002) Split Margin Hierarchy. Segments of different sonorities are preferred in different word positions.
    iii) To what can this split distribution be attributed in Najamba?

19. *Contextual weight* (e.g. Rosenthall & van der Hulst 1999; Morén 2000) of CVC syllables is a tempting proposal, however it fails to explain why heavy CVV syllables are not problematic.

20. An alternative is posit that all CVC syllables are heavy (e.g. via weight-by-position (e.g. Hayes 1989)) and that heavy syllables closed by certain consonants in specific word-positions are disallowed. Evidence for such distribution can be found in recent work (e.g. Ragheb & Davis 2010). As a result:

    i) Epenthesis is necessary in word-final position for all C-final stems.
    ii) Epenthesis is not necessary in word-internal positions for sonorant stems.
    iii) Epenthesis is necessary in word-internal positions for obstruent stems.

21. Phonotactics also at work in avoiding elicit gemination, e.g. upon suffixation in nasal-final stems. Such data also illustrate the importance of stem faithfulness in this language. For example,

    a) /nɛm + ŋgo/   → [nɛmgo], *nɛmŋgo, *nɛŋgo   'salt'
      /nɛm + Ø/   → [nɛmɛ]

    - versus –

    b) /kɔmɔ: + mbo/ → [kɔmɔ:mbo]   'sickles'
      /kɔmɔ: + Ø/   → [komɔ:]

22. Conclusion: Inflection for number in Najamba nouns is entirely predictable if one permits stems of different shapes. A static V-final stem necessitates an analysis containing unpredictable 'deletions'. Suffixation patterns are supported by surface vowel patterning and provide information about stem faithfulness and the language's syllable phonotactics.

Selected references

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