

A Survey of Phonologically Driven Affix Order  
with special attention to Pulaar

Affix order is widely recognized as one of the most important issues in morphology. While some claim that affix order is always syntactically or semantically determined, others have demonstrated the existence of parochial constraints on affix order. Yet a third prediction is made by McCarthy & Prince's (M&P; 1993) proposal that phonological (P) OT constraints can outrank morphological (M) constraints (that is,  $P \gg M$ ): phonology should be a determining factor in the relative order of co-occurring affixes in some languages. In this paper, I argue that this major prediction of OT is incorrect.

A survey of the world's languages reveals few cases where phonology appears to play any role in affix order, and closer examination of these cases generally reveals that a superior non-phonological explanation is possible. In the first portion of this paper, I present results of a survey of phonological affix order. Some 'near-misses' are discussed including Awtuw (Feldman 1986) and Doyayo (Wiering and Wiering 1994). For each putative case, there is an alternative account that does not require  $P \gg M$ .

In the next section, I focus on the case of Pulaar (West Atlantic). It has been claimed that in the Gombe Fula dialect (Arnott 1970), the order of consonantal verb suffixes is 'TDNR': all /-t/ suffixes precede the /-d/ suffixes, which precede the /-n/ suffix, which in turn precedes the /-r/ suffixes. The order is striking because it appears to be phonological, since according to Ladefoged's (1982) sonority scale,  $t < d < n < r$ . If the TDNR order and a sonority-related explanation for it hold, this is significant as an example of a previously unattested type of phonological affix order predicted by M&P's  $P \gg M$  proposal. However, new data from a Senegalese Pulaar dialect reveal a different ordering generalization from Arnott's, and reexamination of his examples in light of the new data suggest a reinterpretation of his findings in terms of an analysis that does not involve phonologically driven affix order. Thus, Pulaar serves as an illustrative example of the point that there seem to exist no solid cases of phonologically driven affix order, since Pulaar was previously one of the most promising examples of the phenomenon.

In the remainder of the paper, I lay out the details of the  $P \gg M$  analysis of Gombe affix order and the alternative, non-phonological account. Arnott claims that Gombe suffixes adhere strictly to the TDNR order. Pairwise combinations of these suffixes are given in (1). This system is analyzed in OT using the  $P \gg M$  strategy: the 'P' constraint is \*RISINGSONORITY(SUF), prohibiting a suffixal consonant of sonority X from following a suffixal consonant of sonority greater than X (similar constraints are needed for Basaa (Hyman 2003), Tiene (Hyman & Inkelas 1997), and Yaka (Hyman 1998), which exhibit lenition from left to right or ban certain sequences of consonants in a prosodic domain). This outranks the 'M' constraint SCOPE: if suffix Y has semantic scope over suffix Z, Z must precede Y. A sample tableau (2) shows how even when the suffixes' scope corresponds to the opposite order, this ranking generates forms obeying the TDNR generalization.

A different generalization has emerged in data from a northern Senegalese Pulaar speaker. Here, the order of T depends on which specific T is used. While Reversive /-t/ precedes all suffixes (3a), Repetitive /-t/ follows all suffixes (3b). Comprehensive /-d/ precedes Modal /-r/ (3c), which precedes Causative /-n/ (2d), allowing the generalization:  $T(\text{Rev}) \gg D(\text{Com}) \gg R(\text{Mod}) \gg N(\text{Cau}) \gg T(\text{Rep})$ .

There is evidence that the difference between the Reversive /-t/ and Repetitive /-t/ in northern Senegalese Pulaar is also true of Gombe. Another look at Arnott's data reveals systematicity in exceptional forms that he claimed involved lexicalized root-suffix combinations. Some exceptions involve T affixes, and in each case, Repetitive /-t/ unexpectedly appears after another suffix instead of before it as predicted by TDNR (4). Furthermore, though Arnott asserts that Repetitive /-t/ patterns with Reversive /-t/, not one example is cited where Repetitive /-t/ occurs in the predicted order, preceding D, N, or R. This requires revising the TDNR generalization to allow different T suffixes to be ordered separately. Thus, the sonority-based explanation, and therefore the  $P \gg M$  analysis, is no longer valid.

The present study converges with recent findings (e.g., Yu (2003)) that fewer types and cases of  $P \gg M$  exist than predicted. If the existing cases of phonologically driven affix order yield to alternative analyses where P constraints do not outrank M constraints, this suggests that the possibility of  $P \gg M$  should be eliminated and, as argued by Yu (2003),  $M \gg P$  is a universal ranking.

Examples (**bolding** indicates relevant suffixes; underlined segments are implosives)

(1) Pairwise suffix combinations in Gombe Fula from Arnott (1970) showing TDNR order

'o-mabb- <b>it-ii</b>	'o-yamd- <b>it-in-ii</b> -mo
3sg-close-REV-COM-past	3sg-be_well-REV-CAU-past-3sg
'He opened all (of something)'	'He made him well, cured him'
no-njood- <b>od-or</b> -too-mi 'e mabbe	'o-yamd- <b>it-in-ir-ii</b> -mo
how-sit-ASS-MOD-fut-1sg with 3pl	3sg-be_well-REV-CAU-MOD-past-3sg
'How shall I sit/live with them?'	'He cured him with (something)'

(2) [be-djang-**id-in-ii**]  
'they taught together'

/djang, N, D/	*RISINGSONORITY(SUF)	SCOPE
a. -djang- <b>in-id</b> -	*!	
☞ b. -djang- <b>id-in</b> -		*

(3) New data from northern Senegalese Pulaar indicating a different ordering generalization

a. Reversive /-t/ precedes all other suffixes

mi-habb- <b>it-ii</b>	<u>boggi</u>	<u>di</u>	fof	'o-sok- <b>t-in-ii</b>	kam	baafal
1sg-tie-REV-COM-past	ropes	det.	all	3sg-lock-REV-CAU-past	1sg	door
'I untied all the ropes'				'He made me unlock a door'		

'o-udd- <b>it-ir-ii</b>	baafal
3sg-close-REV-MOD-past	door
'He opened a door with (something)'	

b. Repetitive /-t/ follows all other suffixes

mi-yaa- <b>d-it-ii</b>	'e	makko	'o-djang- <b>in-it-ii</b>	kam
1sg-go-COM-REP-past with	3sg		3sg-learn-CAU-REP-past	1sg
'I went with her again'			'He taught me again'	

mi-habb- <b>ir-it-ii</b>	<u>boggol</u>
1sg-tie-MOD-REP-past	rope
'I tied a rope with (something) again'	

c. Comprehensive /-d/ precedes Modal /-r/

'o-sok- <b>d-ir-ii</b>	baafe	<u>de</u>	fof
3sg-lock-COM-MOD-past	doors	det.	all
'He locked all the doors with (something)'			

d. Modal /-r/ precedes Causative /-n/

'o-irt- <b>ir-in-ii</b> -kam	supu	kuddu
3sg-stir-MOD-CAU-past-1sg	soup	spoon
'He made me stir soup with a spoon'		

(4) Arnott's exceptional forms where Repetitive/Retaliative /-t/ unexpectedly follows another suffix

mi-hul- <b>n-it</b> -oo-mo	mi-wol- <b>d-it</b> -ataa	'e	mabbe
1sg-fear-CAU-RET-fut-3sg	1sg-speak-COM-REP-fut_neg	with	3pl
'I'll frighten him in turn'		'I won't speak with them again'	

Selected references

Arnott, D.W. 1970. *The Nominal and Verbal Systems of Fula*. Oxford: Clarendon Press.  
 Ladefoged, P. 1982. *A Course in Phonetics*. New York: Harcourt Brace Jovanovich.  
 McCarthy, J. and A. Prince. 1993. Generalized Alignment. Ms., UMass and Rutgers.  
 Yu, Alan C.L. 2003. *The Morphology and Phonology of Infixation*. PhD. dissertation, UC Berkeley.