

Bidirectional Nasal Harmony in Toro Tegu

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Abstract

Toro Tegu, a Dogon language spoken in central Mali, exhibits very productive nasal harmony that is bidirectional. However, this harmony behaves differently based on three factors: direction, morpheme boundaries, and deletion. Some segments that are targets in rightward nasal harmony become blockers in the other direction, and vice versa. Some segments are targets for nasal harmony across morpheme boundaries, while other segments are not; this also interacts with direction-specific effects. Additionally, deletion of rhotic-initial syllables also affects the success of nasal harmony in expected environments. These data indicate that Walker (1998)'s implicational nasal harmony needs to be revised and that accounts of harmony in OT need to be adapted to account for bidirectional harmony with direction-specific blocking effects.

<http://www.dogonlanguages.org/>

1 Introduction

1.1 Toro Tegu

- Dogon Languages
 - approximately 20 languages
 - spoken in Mali and Burkina Faso
- Dogon Languages Project (est. 2004)
 - systematic documentation of Dogon languages
 - team of eight international fieldworkers
 - PI: Jeff Heath, U of Michigan
 - funding: NIH, NSF-DEL
 - lexical, grammatical, textual documentation

1.2 Theoretical Background

- implicational nasalization hierarchy by ?
 - denotes nasalize-ability of segments across languages
 - languages divide at a particular number; segments to the left are TARGETS that undergo harmony; segments to the right are BLOCKERS that prevent harmony
 - implicational through the ordering of *NASSTOP, *NASLIQ, *NASV...
- Harmonic Serialism by ?
 - OT-internal theory to account for feature harmony
 - one change at a time while the changes repair violations
 - once changes incur new violations, CONVERGENCE is reached and no more changes are made
- accounting for harmony in HS

- features are privative [NAS], not binary [\pm NAS]
- each language has a fixed ordering of *NASSEGMENT constraints and SHARE(F)

SHARE(F): assign a violation mark for each pair of adjacent segments that are not linked to the same token of F

- spread until *more spreading = more violations*

- supported by ?
- claim: “no language [with direction-specific blocking] has ever been reported. . . Serial Harmony would be threatened if some language had leftward and rightward spreading processes that differed only in their blockers” (McCarthy, 2009:40-43)

- based on ?: if the order of *NASSEGMENT constraints and SHARE(F) is fixed within a language, then any harmony that incurs a violation mark spreading in one direction will inherently incur a violation mark in the other direction
- asymmetric harmony (with direction-specific blocking of feature-spreading) is harmonically bounded

- the data show that Toro Tegu exhibits bidirectional nasal harmony that is asymmetric

2 Data

- [NAS] segments in Toro Tegu:
 - nasal stops / \tilde{n} \tilde{m} \tilde{j} $\tilde{\eta}$ /
 - nasal vowels
 - nasal sonorants / \tilde{w} \tilde{y} \tilde{r} /

2.1 Rightward Nasal Harmony

2.1.1 Monomorphemic

- vowels, glides, and rhotics are targets:

(1) / $\tilde{m}arey$ / \rightarrow [$\tilde{m}\tilde{e}\tilde{r}\tilde{e}\tilde{y}$] ‘injury’

- laterals, fricatives, and stops are blockers:

(2) / $\tilde{m}olu$ / \rightarrow [$m\tilde{o}lu$] ‘resin’

2.1.2 Multimorphemic

- vowels, glides, and rhotics are targets:

(3) / $u\tilde{n}\tilde{o} + yara$ / \rightarrow [$\tilde{u}\tilde{n}\tilde{i}\tilde{y}\tilde{a}\tilde{r}\tilde{a}$] ‘go up + fut’

(4) / $p\tilde{e} + yara$ / \rightarrow [$p\tilde{e}\tilde{y}\tilde{a}\tilde{r}\tilde{a}$] ‘ripen + fut’

- laterals are also targets and are re-paired to [n]:

(5) / $a\tilde{n}\tilde{n}a + li$ / \rightarrow [$\tilde{a}\tilde{n}\tilde{n}\tilde{u}\tilde{n}\tilde{o}$] ‘urinate + perf.neg’

- fricatives and stops are blockers:

(6) / $u\tilde{n}\tilde{o} + s\tilde{o}$ / \rightarrow [$\tilde{u}\tilde{n}\tilde{u}\tilde{s}\tilde{o}$] ‘go up + perf’

2.2 Leftward Nasal Harmony

2.2.1 Monomorphemic

- vowels and glides are targets:

(7) / $yaa\tilde{n}a$ / \rightarrow [$\tilde{y}\tilde{a}\tilde{a}\tilde{n}\tilde{j}\tilde{a}$] ‘night’

- stops, fricatives, rhotics, and laterals are blockers:

(8) / $le\tilde{j}e$ / \rightarrow [$\tilde{l}\tilde{e}\tilde{\eta}\tilde{e}$] ‘sweet’

2.2.2 Multimorphemic

- vowels, glides, and laterals are targets:

(9) /ya + řu/ → [yãřũ] ‘woman + *sg*’

(10) /lu + řo/ → [lũřõ] ‘go in + *imperf.neg*’

- stops, fricatives, and rhotics are blockers:

(11) /εrεε + ñu/ → [εrẽẽñũ] ‘strapping young man + *sg*’

2.3 Quick Summary

segment	rightward		leftward	
	mono	multi	mono	multi
stop	block	block	block	block
fricative	block	block	block	block
vowel	target	target	target	target
glide	target	target	target	target
rhotic	target	target	block	block
lateral	block	target	block	target

2.4 RV-Deletion

- rv and -řv syllables are deleted before a coronal affix in multimorphemic words:

(12) /dɔrɔ + tɔ/ → [dɔtɔ] ‘sell + *imperf*’

(13) /zeri + li/ → [ze:li] ‘bring + *perf.neg*’

2.4.1 Rightward Effects

- rv-deletion **does not** block rightward nasal harmony onto vowels, glides, or rhotics

(14) /ñãřu + yara/ → [ñãỹãřã] ‘lay mortar + *fut*’

- rv-deletion **does** block harmony onto laterals

(15) /ñãřã + li/ → [ñãli] ‘chase + *perf.neg*’

2.4.2 Leftward Effects

- rv-deletion **does** block leftward nasal harmony onto vowels, glides, or rhotics

(16) /wara + ña/ → [wañã] ‘cultivate + *imperf.neg*’

- rv-deletion **does not** block harmony onto laterals, which are re-paired to [ɲ]

(17) /lurɔ + ñɔ/ → [lũũñõ] ‘be hurt + *imperf.neg*’

2.5 Summary

- stops and fricatives are always blockers
- vowels and glides are always targets (see (7))
 - unless they’re to the left of rv-deletion (see (16))
- rhotics are targets for rightward nasal harmony (see (1))
 - but blockers for leftward nasal harmony (see (11))
- laterals are blockers for monomorphemic nasal harmony in both directions (see (8))
 - but targets for multimorphemic harmony (see (10))

- * but rv-deletion blocks rightward harmony onto laterals in multimorphemic words (see (15))
- * but it doesn't block leftward harmony (see (17))

3 Theoretical Implications

- on the implicational nasalization hierarchy of Walker (1998)
 - (+) 1 vowels 2 glides 3 liquids 4 fricatives 5 stops 6 (—)
 - if liquids, then glides?
 - * *not always*, as in leftward nasal harmony after rv-deletion
 - distinction between rhotics and laterals
 - * impossible to assimilate into nasalization hierarchy
 - * multimorphemic rightward harmony: both target
 - * monomorphemic leftward harmony: both block
 - * monomorphemic rightward harmony: rhotics target, laterals block
 - * multimorphemic leftward harmony: rhotics block, laterals target
- on the theory of harmonic serialism of McCarthy (2009)
 - HS is incompatible with Toro Tegu by nature of the SHARE(F) constraint
 - no ranking of the *NASSEGMENT constraints accounts for the data

4 Conclusions

- languages with different blockers in different directions do exist, contrary to Walker (1998) and McCarthy (2009)
- Walker's (1998) implicational nasal hierarchy cannot account for nasal harmony in Toro Tegu
 - even so, it *can* account for thousands of other languages
- harmonic serialism can't account for Toro Tegu, either
 - tweak the SHARE(F) constraint?
- harmony is not understood as fully as previously thought

4.1 Future Research

- account for Toro Tegu in OT
 - ?
 - ?
- search for languages with similar nasal harmony
- search for parallel languages with other kinds of feature harmony