Nasal spreading and syllabification in Kamaiurá

Stephen Nichols – University of Manchester

stephen.nichols@manchester.ac.uk

1 Introduction

Some background information:

- Kamaiurá is a Tupi–Guarani language spoken in the Upper Xingu region of Brazil by a people who number around 300 (Seki 2000:31).
- Previous work includes Everett & Seki (1985) on reduplication.
- Seki (2000) describes nasal spreading but does not provide an analysis.

In this poster, I will:

- Present the data found in Seki (2000).
- Discuss the fact that spreading is only begun if the source of nasality is in the rhyme–which can then spread to the onset and escape the syllable–but that nasal onsets cannot initiate spreading.
- Consider how one might analyse such a pattern in Optimality Theory.

Quick disclaimer:

- Since the data are taken exclusively from Seki's (2000) grammar and not from recordings, no acoustic or articulatory information is available.
- Nasal spreading is most consistently transcribed when discussing nasality.

Then why bother?

- Seki *does* provide an explicit and consistent description of the behaviour of nasal spreading – it's not reading too much into sketchy or patchy data.
- If it did turn out *not* to be true for Kamaiurá, this is still possible instantiation of nasal harmony which presents analytical challenges that merits attention.

2 Kamaiurá phonology (briefly)

Phoneme inventory (Seki 2000:409ff):

- Consonants: /m n̪ ŋ p t̪ k kʷ ʔ ts h hʷ ɾ w j/
- Vowels: /i ĩ ɨ ɨ̃ u ũ e ẽ a ã o õ/

Particularly relevant aspects:

- Syllables are of the shape (C)V(C) (ibid. 419f).
- Codas are only permitted word-finally (but not /kʷ ʔ ts h hʷ ɾ/; ibid. 420).
- Contrastive oral and nasal vowels (ibid. 427).
- /ɾ w j/ are realised as [ɾ̃ w̃ ɲ] in nasal environments (ibid. 412f).
- Spread of nasality is halted by the (non-glottal) obstruents (segments we can assume are specified as [-nasal]).
- Kamaiurá fits nicely into the typological hierarchy of nasal harmony systems (see e.g. Piggott 1992, Walker 1995, 2003).

3 Example data

/akaŋ/ [akãŋ] 'cabeça'	/ɨpɨt̪uŋ/ [ʔɨpɨt̪ũŋ] 'noite'	/mejũ/ [mẽɲũ] 'beiju'
/ama/ [hama] 'mamãe (voc.)'	/itsũ/ [itsũ] 'nariz dele'	/miɲat̪a/ [miɲat̪a] 'castanha'
/amo/ [hamo] 'outro'	/iʔarõ/ [hĩʔãrõ] 'é gostoso'	/mɨt̪ũ/ [mɨt̪ũ] 'mutum'
/eem/ [heẽm] 'saia!'	/iʔirũ/ [iʔĩrũ] 'marido dele'	/mɨt̪u/ [mɨt̪u] 'pulmão'
/eɲe/ [heɲe] 'você'	/ʔiwakuŋ/ [ʔiwakũŋ] 'nuvem'	/paraɲa/ [paraɲa] 'rio'
/haʔ̃ɨj/ [hãʔ̃ɨɲ] 'semente dele'	/jaʔẽ/ [ɲãʔẽ] 'panela'	/pet̪im/ [pet̪ĩm] 'sobrinho dele'
/iɲi/ [hiɲi] 'rede'	/kawĩ/ [kãw̃ĩ] 'mingau'	/weʔ̃ɨj/ [w̃ẽʔ̃ɨɲ] 'ele coça'
/ipeŋ/ [ipẽŋ] 'tobaco'	/kujã/ [kũɲã] 'mulher'	

N.B. It seems likely that, at least articulatorily, the glottals /ʔ h hʷ/ are nasalised in nasal environments, especially given that, as onsets, they permit the transmission of nasality; however, Seki does not transcribe them as such.

4 Analysis

- Nasal spreading and manner-specific anti-nasalisation constraints (à la Walker 1995, 2003 inter alia).
- Sonority and nasality faithfulness constraints.
- An (undominated) anti-segment-skipping constraint is also required.
- A (fairly) low-ranking left-alignment constraint is also added.

NoGap, *NasPlosive > Ident(son) > Spread(+nas) > Ident(nas) > Align^{Nas}L > *NasLiquid > *NasSemiVowel > *NasVowel

/kujã/	NoGap	*NasP	Ident(son)	Spread(+nas)	Ident(nas)	Align^{Nas}L	*NasL	*NasSV	*NasV
[kujã]				**!*					*
[kuɲã]				**!	*				*
☞ [kũɲã]				*	**				**
[kũjã]	*!			**	*				**
[k̃ũɲã]		*!			***				**
[ŋũɲã]			*!		***				**

/akaŋ/	NoGap	*NasP	Ident(son)	Spread(+nas)	Ident(nas)	Align^{Nas}L	*NasL	*NasSV	*NasV
[akaŋ]				***!					
[akak]			*!	***	*				
☞ [akãŋ]				**	*				*
[ãkãŋ]	*!			*	**				**
[ãk̃ãŋ]		*!			***				**
[ãŋãŋ]			*!		***				**

The additional, and most intriguing, detail of nasal spreading in Kamaiurá is that it can be initiated only by a nasal nucleus or coda–not an onset; thus:

- /pa.ra.n̪a/ → [pa.ra.n̪a], *[pã.rã.n̪a]
- /a.ma/ → [ha.ma], *[hã.ma]

But, once begun, nasality propagates leftwards out of the syllable until stopped by an opaque segment or word boundary:

- /ka.wĩ/ → [kã.w̃ĩ] *[ka.w̃ĩ]
- /ku.jã/ → [kũ.ɲã] *[ku.ɲã]

However, upon affixation resyllabification occurs after nasal spreading:

- /a.kaŋ.-e.t̪e/ → a.kãŋ.e.t̪e, *a.ka.ŋe.t̪e → [a.kã.ŋe.t̪e] 'cabeçudo'

N.B. The second vowel in words such as /akaŋ/ can be shown to be underlyingly oral rather than nasal by the morphologically-induced deletion of the nasal coda and subsequent lack of nasal vowel (Seki 2000:428).

A mora-based approach?

- If the mora is the domain of nasality then the behaviour of rhymes is easily explained.
- But this does not obviously lead to nasality spreading to onsets.

A syllable-based approach?

- This more readily permits the spreading of nasality from syllable to syllable.
- But does not explain why nasal onsets do not spread nasality at all.

A mixed approach?

- Let whole rhymes and syllables, not just segments, license nasality.
- Allow nasal rhymes to nasalise entire syllables unless the onset is [-nasal].
- Permit only syllables to license "spreadable" nasality (cf. Walker 1998 on rounding harmony in Altai).

5 Conclusions

In this poster, I hope to have:

- Convinced you that the data from Kamaiurá are at least interesting.
- Shown that, in terms of transparency/opacity, Kamaiurá fits neatly into the current typology.
- Posed an interesting analytical question regarding the conditions for regressive spreading between syllables.
- Provided you with the beginnings of a solution to the problem.

References

Everett, Dan & Lucy Seki. 1985. Reduplication and CV Skeleta in Kamaiurá. *Linguistic Inquiry* 16(2). 326–30.

Piggott, Glyne. 1992. Variability in Feature Dependency: the Case of Nasal Harmony. *Natural Language & Linguistic Theory* 10. 33–77.

Seki, Lucy. 2000. *Gramática do Kamaiurá: Língua Tupi-Guarani do Alto Xingu*. Campinas, SP: Editora da Unicamp.

Walker, Rachel. 1995. Hierarchical opacity effects in nasal harmony. In Janet Fuller, Ho Han & David Parkinson (eds.), *Proceedings of the 11th eastern states conference on linguistics*, 318–29. Ithaca, NY: DMLL Publications.

Walker, Rachel. 1998. A minimal triplet in Altaic: Round licensing, harmony, and bisyllabic triggers. University of California, Santa Cruz, ms. [Available on Rutgers Optimality Archive, ROA-263].

Walker, Rachel. 2003. Reinterpreting transparency in nasal harmony. In Jeroen van de Weijer, Vincent van Heuven & Harry van der Hulst (eds.), *The Phonological Spectrum, Part I: Segmental Structure*, 37–72. Amsterdam: John Benjamins.

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