

The representation of nasality in Konai

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1 General introduction

This paper focuses on the issue of how nasality is represented in Konai. Årsjö & Årsjö (2005) describe nasality as being a property of words and clitics. However, I will argue that it is specified at the segment level with subsequent spreading of [\pm nasal] to vowels which are underlyingly unspecified for this feature. This analysis is capable explaining instances of irregularity that must be labelled exceptions if one takes Årsjö & Årsjö's point of view.

2 Introducing Konai

Konai is a Papuan or non-Austronesian language spoken in the north of the Western Province of Papua New Guinea (Årsjö & Årsjö 2000:38, 2005:213). The language's location within Papua New Guinea can be seen in Figure 1, which is taken from Årsjö & Årsjö (2000:27).

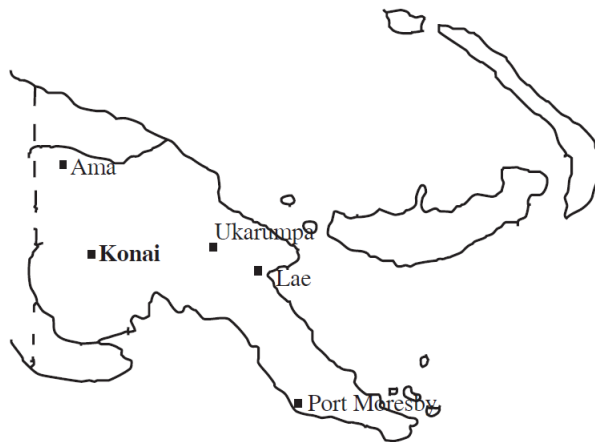


Figure 1: Map of Konai in Papua New Guinea

There are approximately 500 speakers of Konai, all of whom live in seven villages found near the Murray River (Årsjö & Årsjö 2000:38–9, 2005:213; Hammarström et al. 2015; Lewis et al. 2015). These are located between roughly 110 and 160 kilometres north-west of Mount Bosavi. Dahamo, the largest Konai village, is the site of the only airstrip in the vicinity (Årsjö & Årsjö 2000:38). Figure 2 shows a map of the area in which Konai is spoken, reproduced from Årsjö & Årsjö (2000:29–30).

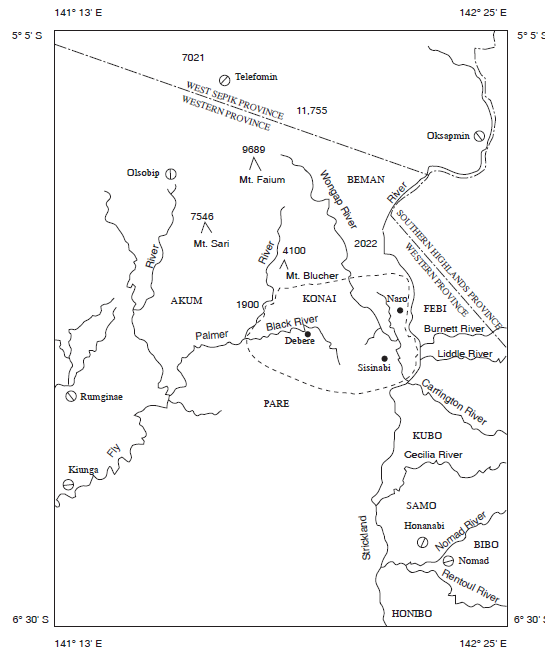


Figure 2: Map of the Konai and adjacent areas

Genetically, Konai belongs to the same group of languages as Fembe, Samo and Odoodee. These are referred to by Shaw (1986) as the Strickland Plain subfamily of the Bosavi family. However, on both Ethnologue (Lewis et al. 2015) and Glottolog (Hammarström et al. 2015), the same grouping is known as the East Strickland family with the label “Bosavi family” being used to refer to a different cluster of Trans–New Guinea languages. Wurm (1982) classifies Konai as a language of Central and South New Guinea Stock belonging to the larger Trans–New Guinea family. Årsjö & Årsjö (2000:27) report such disagreement but later (Årsjö & Årsjö 2005, Årsjö 2016) explicitly favour the theory that Konai is a Bosavi language in the mould of Shaw (1986).

3 Data sources

The primary source of data for the work presented here is Årsjö & Årsjö (2005) from the Summer Institute of Linguistics (SIL). This is a guide to the orthography and a basic descriptive account of Konai phonology that is based on their own fieldwork as well as that of previous fieldworkers. The data presented by Årsjö & Årsjö (2005) were collected from native speakers of Konai. I have also gathered supplementary data from Årsjö (2016), a revised and expanded version of Årsjö (1998) that has only recently become available to me. Årsjö & Årsjö (2005) and Årsjö (2016) are freely available to download online; Årsjö (1998) is not but has, in any case, been superseded.

4 The sounds of Konai

There are thirteen consonant phonemes in Konai and these are shown below in Table 1.

	Bilabial	Dental	Alveolar	Retroflex	Palatal	Velar	Glottal
Nasal	m						
Plosive	(p) b	t̪ d̪				k g	
Fricative	ɸ		s				h
Lateral				ɭ			
Glide	w				j		

Table 1: Consonant phonemes

The voiceless bilabial plosive /p/ has been included in brackets as it is uncommon, only occurring word-medially in some loan words (Årsjö & Årsjö 2005:215).

The phoneme /l/ has four allophones: the dental nasal [ɲ] occurs word- and clitic-initially; the coronal tap [ɾ] occurs following the coronal consonants /t/, /d/ and /s/; the retroflex nasal [ŋ] occurs word-medially in nasal words; and the retroflex lateral [ɭ] occurs elsewhere. The distributions of [ɭ] and [ŋ] are discussed in §5.3, as is the fact that word-initial /h/ is nasalised before high nasal vowels.

There are six monophthong vowel phonemes; these are provided in Table 2.

	Front	Central	Back
High	i		u
High-mid			o
Low-mid	ɛ		ɔ
Low		ɑ	

Table 2: Monophthong phonemes

In addition to these, there are four diphthongs, see Table 3.

	Front	Central	Back
High			
High-mid			o
Low-mid	ɛ		ɔ
Low		ɑ	

Table 3: Diphthong phonemes

All vowels, both monophthongs and diphthongs, may be phonemically either oral or nasal, as demonstrated by (near) minimal pairs such as those given below.

- | | | | | | |
|-----|-----------|-----------|-----|----------|----------|
| (1) | a. t̪ɑ | ‘INDEF’ | (3) | a. d̪iɔ | ‘bone’ |
| | b. t̪ã | ‘to talk’ | | b. d̪ĩɔ̃ | ‘grass’ |
| (2) | a. [ɛ]ɛ | ‘2DU’ | (4) | a. d̪ugu | ‘to see’ |
| | b. [ɛ̃]ɛ̃ | ‘strong’ | | b. sũgũ | ‘top’ |

Stress in Konai is non-contrastive and usually falls on the final syllable of a word. Tone, however, is phonemic and, broadly speaking, there are five distinct patterns: fall-rise, rising, rise-fall, falling and fall-fall.

The language’s phonology also exhibits various patterns, including vowel reduction and vowel harmony. Further such details can be found elsewhere in Årsjö & Årsjö (2005), Nichols (2015) and Årsjö (2016).

For simplicity’s sake, irrelevant phonetic phonological details and processes such as stress, tone and vowel reductions are ignored in the transcriptions used in this paper.

5 Nasality in Konai

5.1 The data

As mentioned in §4, all vowels can be phonemically nasalised but, in addition to this, two of Konai’s thirteen consonant phonemes have nasal allophones. However, /h/ is only nasalised before high

vowels and /l/ is not nasalised in clusters. The non-contrastive nasalisation of consonants are omitted from the main body of the discussion in this paper.

The commonest pattern regarding nasal vowels in words in Konai is for every vowel in a root to be either oral or nasal.

- | | | | | | |
|-----|---------|---------------|-----|---------|-------------------|
| (5) | a. gaŋi | ‘wild animal’ | (6) | a. māŋã | ‘younger sibling’ |
| | b. ðihi | ‘child’ | | b. ðũmũ | ‘to be finished’ |
| | c. kugɔ | ‘paper, book’ | | c. mũkɔ | ‘nose’ |
| | d. beje | ‘possum, rat’ | | d. φɔφɔ | ‘to be muddy’ |

The vowels in suffixes surface as either oral or nasal depending on the nasality of vowels in the root to which they are affixed.

- | | | | | | |
|-----|-------------|------------------|-----|------------|------------------|
| (7) | a. to-ŋo | ‘hold-IRR-NPST’ | (8) | a. mɔ-ŋɔ | ‘get-IRR-NPST’ |
| | b. ðu-ŋu | ‘shoot-IRR-NFUT’ | | b. tɔhɔ-ŋũ | ‘shoot-IRR-NFUT’ |
| | c. aguði-ŋɛ | ‘sky-ALC’ | | c. hũẽĩ-ŋẽ | ‘water-ALC’ |

Enclitics, however, behave differently. The nasality of a word and the nasality of an enclitic have no effect on one another. That is, nasal words do not nasalise oral clitics and nasal clitics likewise do not nasalise oral words either.

- | | | | | | |
|------|------------|-------------|------|------------|-----------------------|
| (9) | a. sabɛ=ko | ‘home=LOC’ | (11) | a. mijɑ=be | ‘Victoria.pigeon=TOP’ |
| | b. mɔsɔ=ko | ‘house=LOC’ | | b. hũŋã=me | ‘night=TOP’ |
| (10) | a. heɪ=je | ‘axe=INST’ | (12) | a. aje=hã | ‘father=GEN’ |
| | b. tã=je | ‘talk=INST’ | | b. ẽje=hã | ‘brother=GEN’ |

There are, however, a number of exceptions to the system as it is described above. Firstly, certain loan words incorporated into the language show discontinuous nasality, despite the fact that they are monomorphemic (Årsjö & Årsjö 2005:226).

- | | | |
|------|-----------|---|
| (13) | a. ẽsɔŋ | ‘angel’ (from English) |
| | b. ðɔki | ‘donkey’ (from English) |
| | c. hãŋɔwɑ | ‘village’ (from Aekyom, an unrelated neighbouring language) |

There are also two known examples of suffixes that retain oral vowels when attached to nasal words rather than being nasalised. These are object focus /-gi/ and plural /-ga/ suffixes, both of which attach to verbs before other inflectional suffixes (Årsjö & Årsjö 2005:225).

- | | | |
|------|---------------|----------------------|
| (14) | a. bãgã-gi-ŋɛ | ‘tie-OF-IRR-FUT’ |
| | b. φẽŋẽ-ga-ŋɛ | ‘come.up-PL-IRR-FUT’ |
| | c. sɔ-go-ŋo | ‘open-OF-IRR-NPST’ |

5.2 Analysis

In this section I will present Årsjö & Årsjö’s views and provide an alternative point of view. The analysis I provide here uses the theoretical framework of autosegmental phonology (Goldsmith 1976 et seq.). Årsjö & Årsjö do not use such a framework but I have nevertheless adapted their analysis so that it may also be presented in the same manner (e.g. in diagrams such as (15) below).

According to Årsjö & Årsjö (2005:225–6), nasality in Konai is a property of words and clitics rather than individual vowels.

- (15) a. $\underset{\cdot}{d}ihi$ 'child'
 |
 [-nasal]
- b. $m\ddot{s}s\ddot{s}$ 'house'
 |
 [+nasal]
- c. $t\ddot{g}g\ddot{o}$ 'to make'
 |
 [-nasal]
- d. $t\ddot{h}h\ddot{o}$ 'to shoot'
 |
 [+nasal]

Årsjö & Årsjö's claim is based on the fact that nasalised words do not nasalise oral clitics, nor do nasal clitics nasalise oral words.

- (16) a. $\underset{\cdot}{d}ihi = ko$ 'child-LOC'
 | |
 [-nasal] [-nasal]
- b. $m\ddot{s}s\ddot{s} = ko$ 'house-LOC'
 | |
 [+nasal] [-nasal]

However, suffixes are nasalised when attached to nasal words as they are contained within the word.

- (17) a. $t\ddot{g}g\ddot{o}-[u]$ 'make-IRR-NFUT'
 |
 [-nasal]
- b. $t\ddot{h}h\ddot{o}-[ũ]$ shoot-IRR-NFUT'
 |
 [+nasal]

They dismiss those examples of discontinuous nasality outside clitic contexts, e.g. loan words and non-nasalised suffixes, as exceptions to this rule of word-level nasality.

The kind of pattern laid out for Konai by Årsjö & Årsjö is not a novel description of nasality. For example, in Tuyuca, a Tucanoan language spoken in Colombia and Brazil, morphemes may be described as being either oral or nasal Barnes 1996. Some examples of this, taken from Barnes (1996:32), are provided in (18) and (19) below.

- (18) *Oral morphemes in Tuyuca*
- a. $pe\acute{e}$ 'to bend'
 b. $wat\acute{i}$ 'dandruff'
 c. $-ke$ 'CL: palm leaf'
- (19) *Nasal morphemes in Tuyuca*
- a. $p\acute{e}\acute{e}$ 'to prepare soup'
 b. $w\acute{a}t\acute{i}$ 'demon'
 c. $-k\acute{e}$ 'CL: packaged items'

Barnes (1996) analyses entire morphemes as either being associated with an autosegment overtly specifying a value for the feature [\pm nasal] or being unspecified. However, Walker (2003:42) considers the behaviour of nasality in Tuyuca to be bidirectional spreading and 'assume[s] that nasality originates in the first vowel of a morpheme' as it is not possible to definitively identify the segment that is responsible for initiating the spreading.

In Konai, rather than specifying nasality at the level of the word or clitic, I believe that it is specified at the segment level. This is illustrated in (20) with a minimal pair of native roots.

- (20) a. $l\ \epsilon\ l\ \epsilon$ '2DU'
 | |
 [-nasal] [-nasal]
- b. $l\ \tilde{\epsilon}\ l\ \tilde{\epsilon}$ 'strong'
 | |
 [+nasal] [+nasal]

I assign each vowel in a given root a value for [\pm nasal]. However, it may well be possible that, as in Walker's analysis of Tuyuca, only the first vowel bears a specification for this feature and the subsequent vowels acquire their values for [\pm nasal] via spreading.

In any case, the approach presented here is able to explain the behaviour of the supposed exceptions as being entirely regular. For example, loan words that contain both oral and nasal vowels need not be viewed as exceptions, see (21).

- (21) a. $\begin{array}{cccc} \tilde{\epsilon} & s & \text{ɔ} & \text{ɭ} \\ | & & | & \\ [+nasal] & & [-nasal] & \end{array}$ ‘angel’ b. $\begin{array}{cccc} \text{ɖ} & \tilde{\text{ɔ}} & k & i \\ | & & | & \\ [+nasal] & & [-nasal] & \end{array}$ ‘donkey’

Such examples also provide evidence for an equipollent $[\pm nasal]$ rather than privative $[nasal]$ feature. In both examples in (21), if the second vowel were unspecified for $[\pm nasal]$ then nasality would spread from the first to the second vowel. However, this is not what is found.

I also analyse clitics as being specified at the segment level for $[\pm nasal]$. This means that any preceding value for $[\pm nasal]$ is unable to spread to the vowels of clitics and so they do not alternate. Although it might be possible for clitics to fall outside the domain of nasal spreading, there are reasons for suspecting this that this is not the case (see §5.3).

- (22) a. $\begin{array}{cccc} \text{ɖ} & i & h & i \\ | & & | & \\ [-nasal] & & [-nasal] & \\ & & & | \\ & & & [-nasal] \end{array}$ = k o ‘child-LOC’
 b. $\begin{array}{cccc} m & \tilde{\text{ɔ}} & s & \tilde{\text{ɔ}} \\ | & & | & \\ [+nasal] & & [+nasal] & \\ & & & | \\ & & & [-nasal] \end{array}$ = k o ‘house-LOC’

In contrast to clitics, the majority of suffixes can be analysed as being unspecified for $[\pm nasal]$. They are subsequently assigned a value for this feature by spreading from the root to which they are attached. Indeed, suffixes may also be unspecified for other features, such as $[\pm back]$, which are acquired via vowel harmony, see Nichols (2015).

- (23) a. $\begin{array}{cccc} \text{t} & \text{o} & \phi & \text{o} \\ | & & | & \\ [-nasal] & & [-nasal] & \end{array}$ - ɭ - o ‘step-IRR-NPST’
 b. $\begin{array}{cccc} m & \tilde{\text{o}} & - & \tilde{\text{o}} \\ | & & & \\ [+nasal] & & & \end{array}$ - ɭ - o ‘get-IRR-NPST’

Those suffixes that might otherwise be regarded as exceptional can be analysed as being overly specified as $[-nasal]$. Any preceding vowel in the root that is specified as $[+nasal]$ is therefore unable to spread this value to such suffixes. The feature $[-nasal]$ on these suffix, however, is able to spread to any other suffixes that might follow it, as in (24).

- (24) a. $\begin{array}{cccc} b & \tilde{\text{a}} & g & \tilde{\text{a}} \\ | & & | & \\ [+nasal] & & [+nasal] & \\ & & & | \\ & & & [-nasal] \end{array}$ - g i - ɭ - ε ‘tie-OF-IRR-FUT’
 b. $\begin{array}{cccc} \phi & \tilde{\text{ɛ}} & \text{ɭ} & \tilde{\text{ɛ}} \\ | & & | & \\ [+nasal] & & [+nasal] & \\ & & & | \\ & & & [-nasal] \end{array}$ - g a - ɭ - ε ‘come.up-OF-IRR-FUT’

5.3 Further issues

The analysis presented in §5.2 pays attention only to vowels, all consonants are effectively considered transparent to the spread of nasality. However, a potential problem for this is that, according to Årsjö (2016:38), the topic marking clitic is realised as $[b\epsilon]$ when attached to an oral word and $[m\epsilon]$ when attached to a nasal word, as shown below in (25) and (26).

- (29) a. /hɛɪ/ → [hɛɪ] 'axe'
 b. /hɔ̃hɔ̃/ → [hɔ̃hɔ̃] 'light'
 c. /hĩẽ/ → [hĩẽ̃] 'pitpit (*Saccharum edule*)'
 d. /hũẽĩ/ → [hũẽĩ̃] 'water'

It is unclear whether or not the nasalisation of /h/ is phonetic or than phonological.

Finally, in addition to this, Årsjö (2016:38) note that there are a small number of examples of denasalisation preceding /k/ /g/ and /l/. However, such behaviour is not very productive (and it may indeed be restricted to certain contexts and morphemes, e.g. genitive clitic plus independent possessive clitic).²

5.4 A historical explanation?

Finally, in this section, having laid out a synchronic account of nasality in Konai above, I provide a tentative remark on a possible origin for the pattern we observe.

As can be seen from the examples in (30) below, nasality is also, and more transparently than in Konai, specified at the segment level in Odoodee, a related language, and may occur in any position in the word (Hays & Hays 2002). This is also appears to be the case in Samo, another related language (Shaw & Shaw 1977).

- (30) a. mɔ̃sɔ̃ 'house'
 b. hɔ̃mɔ̃ 'leg'
 c. sãso 'death adder'

My hypothesis, therefore, is that nasality was once specified at the segment level in Konai and then this spread throughout the word. Following this, nasality would have indeed been specified at the word-level as Årsjö & Årsjö suggest. However, subsequent loans and grammaticalisations required the reanalysis of nasality as being specified at the segment level once more.

Unfortunately, I do not have, or have not been able to gain access to, any information or any historical work on this language family and so, for now, this point remains necessarily speculative.

6 Conclusion

In this paper, I hope to have convinced you that nasality in Konai is specified, and indeed maybe unspecified, at the segment level which may then spread throughout the word. This is contrary to what Årsjö & Årsjö (2005) state: that nasality is a property of words or clitics.

The analysis presented here explains the behaviour of regular suffixes and clitics but also incorporates apparent irregularities such as discontinuously nasalised loan words and exceptionally unnasalised suffixes.

There are, however, issues that remain to be dealt with satisfactorily, namely a consistent and coherent explanation for the nasalisation of consonants. Work to be conducted in the future might also including integrating the current analysis into an Optimality-Theoretic framework, cf. e.g. Walker (2003), McCarthy (2011).

²This only became fully known to me with the publication online of Årsjö (2016), though it is briefly alluded to in Årsjö & Årsjö (2005:242), but I have included it for the sake of completeness.

Abbreviations

1	first person	FUT	future	N	non-
2	second person	GEN	genitive	OF	object focus
3	third person	IN	inclusive	PL	plural
ALC	approximate locativiser	INDEF	indefinite	PST	past
CL	classifier	INST	instrumental	SG	singular
DU	dual	IRR	irrealis	TOP	topic
EX	exclusive	LOC	locative		

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