

Distantly and prosodically conditioned nasal substitution in Austronesian languages

In the previous studies of nasal substitution (NS) in Austronesian languages within Optimality Theory (OT), attention has been paid to the type of stem-initial consonant (Pater 1999, 2001; Archangeli et al. 1998; Zuraw 2000; Zaharani 2005). This is because the occurrence or non-occurrence of NS is mostly determined by the voicing and the place of articulation of the stem-initial consonant. For example, in Malay, only voiceless obstruents undergo NS (1). However, other structural determinants of NS have received little attention. This paper takes up two such factors and provides OT-based accounts for them.

1. Distantly conditioned NS. In some languages, the occurrence/non-occurrence of NS is conditioned by the presence of a nasal + obstruent cluster within the stem. For example, in Ngaju Dayak, NS occurs with voiced obstruents only when the stem contains a nasal + obstruent cluster (2a). Otherwise, nasal assimilation without fusion is observed (2b).

In order to handle this, the self-conjoined markedness constraint $\text{CRISPEDGE}[\sigma]^2$ is proposed (cf. Itô and Mester 1999, 2003; Alderete 1997). This constraint prohibits multiple occurrences of a nasal + obstruent cluster anywhere in the word. The constraint is ranked above the set of constraints proposed by Pater (2001): $\text{CRISPEDGE}[\sigma]^2 \gg \text{IDENT}[\text{PHAREXP}] \gg \text{CRISPEDGE}[\text{PRWD}] \gg \text{UNIFORMITY}$. $\text{CRISPEDGE}[\text{PRWD}]$ ensures that NS occurs at the prefix-stem boundary, but not stem-medially. I also demonstrate that even in Malay, for which no obvious distantly conditioned NS has been reported, $\text{CRISPEDGE}[\sigma]^2$ appears to be operative: In Malay, the voiceless palatal affricate *tʃ* does not undergo NS unlike *p*, *t*, *s* and *k*; however, NS is occasionally observed for stems containing a nasal + obstruent cluster (3).

2. Prosodically conditioned NS. In most Austronesian languages that have monosyllabic content morphemes, NS does not occur when the root is monosyllabic (Blust 2004: section 4.6). Instead, a vowel is epenthesised (4).

Taking Indonesian as an example, I argue that this is due to prosodic reasons. FT-BIN, which requires binary feet, is proposed as an undominated constraint. Assuming Cohn and McCarthy's (1998) claims (i) that a Prosodic Word (PrWd) in Indonesian includes suffixes but not prefixes and (ii) that suffixes are not footed, vowel epenthesis is the only way to satisfy FT-BIN, for it creates a new syllable, enabling binary footing as in (5a). Neither NS (5b) nor nasal assimilation (5c) satisfy FT-BIN. Alongside FT-BIN, also undominated is ALIGN-WD-L, which requires the left edge of every root to coincide with the left edge of a PrWd. The constraint ranking $\text{FT-BIN}, \text{ALIGN-WD-L} \gg \text{IDENT}[\text{PHAREXP}] \gg \text{CRISPEDGE}[\text{PRWD}] \gg \text{UNIFORMITY} \gg \text{DEP}$ explains the fact that vowel epenthesis only occurs when a nasal-ending prefix is involved, but not when the prefix does not end in a nasal (6a–b) or when a root is used by itself with no prefix (6c). This fact needs special treatment in Delilkan's (2005) prosody-only analysis.

Since both of these less-discussed conditions on NS above are analysed on the basis of previous studies, the success of the present analysis lends support to Pater's (2001) analysis of NS based on 'crispness' of edges and Cohn and McCarthy's (1998) claims about the prosodic structure of Indonesian. My analysis of distantly conditioned NS provides another example of self-conjoined markedness constraints in addition to other phenomena discussed by Alderete (1997) and Itô and Mester (1999, 2003), among others. Furthermore, this study also serves as a partial reply to Blust (2004), who brings up several empirical facts that are not explained by Pater (1999, 2001) and concludes that 'recent attempts to discover a motivation for nasal substitution within the framework of Optimality Theory are inadequate, and are likely to remain so in any currently conceivable version of the theory' (73) and that the phenomenon should be understood as 'an arbitrary product of history' (136) (cf. Blevins 2004). This paper demonstrates that it is too early to abandon OT in favour of such a solely diachronic theory.

- (1) Malay
- a. Stems beginning with voiceless obstruents
 /məŋ- + pilih/ → [məmileh] ‘to choose’
 /məŋ- + tulis/ → [mənules] ‘to write’
 /məŋ- + sokong/ → [məŋokong] ‘to support’
 /məŋ- + kira/ → [məŋirə] ‘to count’
- b. Stems beginning with voiced obstruents
 /məŋ- + beli/ → [məmbəli] ‘to buy’
 /məŋ- + dapat/ → [məndapat] ‘to get’
 /məŋ- + gali/ → [məŋgali] ‘to dig’
- (2) Ngaju Dayak (Dempwolff 1922:195ff)
- a. Stems containing a nasal + obstruent cluster
 /məŋ- + buŋkus/ → [məmbuŋkus] ‘to wrap into bundle’
 /məŋ- + dindiŋ/ → [məmbindiŋ] ‘to make walls’
- b. Stems not containing a nasal + obstruent cluster
 /məŋ- + bohəl/ → [məmböhəl] ‘to knot’
 /məŋ- + dawa/ → [məmbdawa] ‘to accuse’
- (3) Occasional nasal substitution in stems beginning with *tf* in Malay
 /məŋ- + tfontoh-i/ → [məŋtfontohi] ~ [məŋontohi] ‘to model, follow’
 /məŋ- + tfaŋkuk/ → [məŋtfaŋko?] ~ [məŋaŋko?] ‘to hook’
 /məŋ- + tfaŋkil/ → [məŋtfaŋkel] ~ [məŋaŋkel] ‘to dig out’
- (4) Indonesian
 /məŋ- + tʃat/ → [məŋətʃat] ‘to paint’
 /məŋ- + tes/ → [məŋətes] ‘to test’
 /məŋ- + pos-kan/ → [məŋəposkan] ‘to post’
- (5) a. Vowel epenthesis: mə.[(ŋə.tʃat)]_{PrWd} , mə.[(ŋə.pos).kan]_{PrWd}
 b. Nasal substitution: *mə.[(ŋat)]_{PrWd} , *mə.[(mos).kan]_{PrWd}
 c. Nasal assimilation: *məŋ.[(tʃat)]_{PrWd} , *məm.[(pos).kan]_{PrWd}
- (6) Indonesian
- a. Prefix *di-*
 /di- + tʃat/ → [ditʃat] ‘to be painted’
 /di- + pos-kan/ → [diposkan] ‘to be posted’
- b. Prefix *bər-*
 /bər- + tʃat/ → [bərtʃat] ‘to be painted’
 /bər- + hak/ → [bərhak] ‘to have the right’
- c. No prefix
 /tʃat/ → [tʃat] ‘paint’
 /pos/ → [pos] ‘mail, post’
 /hak/ → [hak] ‘right’