BLOCKING NASAL SPREAD IN BONGGI
Michael Boutin
Institut Linguistik SIL Malaysia

1   Introduction[1]

Bonggi is a Western Malayo-Polynesian language spoken in Sabah, Malaysia. Word-final nasals are either simple [m], [n] and [ŋ], or preploded [ᵇm], [ᵈn] and [ˠʔ] depending upon the nasalization of the preceding vowel.[2]   Word-final nasals are simple if the preceding vowel is nasalized as in (1).

(1) *onom*   /ɔ.nɔm/   ['ɔnɔ̃m]   'six'
    mien   /mi.ən/   ['mĩẽn]   'aunt'
    tingaang /ti.ŋa.aŋ/ [t̪i'ŋããŋ]   'scorpion'

Final nasals are preploded if the preceding vowel is non-nasalized as in (2).

(2) *agubm*   /a.gum/   ['agʷuᵇm]   'type of shellfish'
    Sandahadn /san.da.kan/ [sən'dahəᵈn]   'Sandakan' (city)
    adakng   /a.daŋ/   ['adəˠŋ]   'charcoal'

Nasality is initiated by the articulation of a nasal consonant and continues irrespective of syllable boundaries until checked (Robins 1957:90).   Nasality (Robins 1957), nasal harmony (Court 1970) and nasal spread (Walker & Pullum 1999) refer to the spread of the feature [+nasal] to underlying non-nasal segments.   As seen in (3), nasal spread persists from a nasal consonant through the word until it is blocked by a word boundary or a non-nasal consonant.   Thus, nasal spread nasalizes vowels across syllables.   Semivowels, for example, /j/ in (3c) and /w/ in (3d), do not block nasal spread.

(3) a. *naga'* /na.gaʔ/   ['nãgəʔ]   'dragon'
    b. *nana'* /na.naʔ/   ['nãnɔ̃ʔ]   'pus'
    c. *minyen* /min.jən/ ['mĩɲ̃ẽn]   'son/daughter-in-law'
    d. *nyawa* /nja.wa/   ['ɲãw̃ɔ̃]   'life; soul'

Nasal spread and nasal preplosion occur when affixation takes place as seen in (4) and (5).[3]   Nasal spread is illustrated in (4a), (4b), (4c) and (5a), whereas nasal preplosion is illustrated in (4b), (5b) and (5c).   The final nasal is not preploded in (4a) and (5a) since the preceding vowel is nasalized.

(4) a. *naan*   /ŋ/ + /saan/   ['nããn]   'ACT.IND.SOA-
                                                carry.on.shoulder'
    b. *ngorikng* /ŋ/ + /kɔriŋ/ ['ŋʷõrɪˠŋ]   'ACT.IND.SOA-dry'
    c. *masa'*   /ŋ/ + /basaʔ/ ['mãsəʔ]   'ACT.IND.SOA-wash'

(5) a. *inumun* /inum/ + /ɔn/ [i'nũmʷũn] 'drink-UND.IND.SOA'
   b. *lebohodn* /lɔbɔk/ + /ɔn/ [lə'bʷɔhɔᵈn] 'pound.with.pestle-
       UND.IND.SOA'
   c. *atadadn* /atad/ + /ɔn/ [ə'tadəᵈn] 'bring-UND.IND.SOA'

Nasal spread (e.g. (6a)) and nasal preplosion (e.g. (6b) and (6c)) also occur in monosyllabic words.

(6) a. *man*   /man/   ['mə̃n]   'why'
   b. *bakng* /baŋ/   ['bəᵏŋ]   'if'
   c. *fudn*   /pun/   ['ɸʷuᵈn]   'also'

Since the nasality of the preceding vowel determines whether or not final consonants are simple or preploded, an important question is, what blocks nasal spread? Different linguists including Robins (1957), Scott (1964), Court (1970), Blust (1997) and Walker & Pullum (1999) have pointed out various phonetic features which block nasal spread. This paper offers an explanation for the occurrence of preploded nasals in certain Bonggi words. To my knowledge, the explanation offered here has not been previously proposed for any other language. I show that some Bonggi words have an underlying /l/ which blocks nasal spread; the /l/ then metathesizes and palatalizes resulting in forms as in (7).

(7) *noidn* /ŋ/ + /tɔlɔn/ [nõʲᵈn]   'ACT.IND.SOA-swallow'
   moidn /ŋ/ + /bɔlun/ ['mʷõʲᵈn]   'ACT.IND.SOA-fold.clothes'
   neidn /ŋ/ + /salin/ ['nẽʲᵈn]   'ACT.IND.SOA-change.clothes'

In (7), nasal spread is initiated by the word-initial nasal (cf. (4)). The word-final nasals in (7) are preploded despite the fact that there are no surface phonetic consonants to block nasal spread. Since only vowels occur between word-initial and word-final nasals in (7), one would expect both vowels to be nasalized and the final nasal to be simple as in *naan* ['nããn] 'ACT.IND.SOA-carry.on.shoulder' in (4a). Instead, preplosion occurs in *noidn* [nõʲᵈn] 'ACT.IND.SOA-swallow.something' and the other forms in (7) just as it does in *toidn* ['toʲᵈn] 'jungle'.

This paper accounts for 'apparent' exceptions like those in (7) by showing how an underlying /l/ blocks nasal spread in these forms. Subsequently, the /l/ is metathesized and then palatalized to [i]. This non-nasalized [i] then provides the proper environment for nasal preplosion.

Bonggi has sixteen underlying consonants /p t k ʔ b d g s dʒ m n ŋ l r w j/, one of which is borrowed (/dʒ/), and five underlying vowels /i u ə ɔ a/. Stress is predictable; it falls on the penultimate syllable of multisyllabic words as in (8).[4]

(8) *onsi* /ɔn.si/ [ˈons̬i] 'contents; flesh'[5]
  took /tɔ.ɔk/ [ˈtɔɔk̚] 'ripe'[6]
  sulufi' /su.lu.piʔ/ [suˈlu.ɸiʔ] 'small locally-made purse'[7]

2 Elements which block or trigger nasal spread

2.1 Robins (1957)

Nasality in Sundanese is blocked by a word boundary (Robins 1957:90). If word boundaries did not block nasal spread in Bonggi, the vowels in *iudn* 'hammock' in (9) would be nasalized and the final nasal would not be preploded.

(9) *Sia* *m-asakng* *iudn*.[8]
  sia ŋ-pasaŋ iun
  3SG.NOM ACT.IND.SOA-install hammock
  'He will install a hammock.'

Nasality in Sundanese is blocked by consonants other than /h/ and /ʔ/ (Robins 1957:90). In Bonggi, glottal stop /ʔ/ is restricted to word-final coda position (e.g. /su.lu.piʔ/ 'small locally-made purse' in (8)); thus, it is irrelevant for blocking word-medial nasal spread. /k/ weakens to [h] intervocalically in unstressed syllables as in (10).

(10) *fakahas* /pakakas/ [ɸəˈkahəs] 'tools; equipment'[9]
  tikuhur /tikukur/ [t̬iˈkʷuhur̥] 'spotted dove'[10]
  lebohodn /lɔbɔk/ + /ɔn/ [ləˈbʷɔhɔᵈn] 'pound.with.pestle-
                  UND.IND.SOA'
  ngelobok /ŋ/ + /lɔbɔk/ [ŋə̃ˈlɔbʷɔk̚] 'ACT.IND.SOA-
                  pound.with.pestle'

In Bonggi, [h] blocks nasal spread as in (11).

(11) *manahadn* /manakan/ [mə̃ˈnãhəᵈn] 'nephew; niece'
  ngahudn /ŋ/ + /akun/ [ˈŋãhuᵈn] 'ACT.IND.SOA-admit'
  mohodn /əm/ + /ɔkɔn/ [ˈmʷɔ̃hɔᵈn] 'ACY-eat'[11]

Nasal prefixes and infixes trigger nasality in Sundanese (Robbins 1957:93) and in Bonggi. In (12a) and (12d) the final nasal is preploded since the preceding vowel is non-nasalized, whereas the affixes in (12b), (12c), (12e) and (12f) trigger nasal spread which results in the final nasal being simple since the preceding vowel is nasalized.[12]

(12) a. *iudn* /iun/ [ˈiuᵈn] 'hammock'
  b. *ngiun* /ŋ/ + /iun/ [ˈŋ̊ĩũn] 'ACT.IND.SOA-swing.in.
                  hammock'
  c. *iniun* /in/ + /iun/ [iˈn̊ĩũn] 'REALIS-swing.in.hammock
                  -UND.IND.SOA'

d. *igbiakng* /ig/ + /biaŋ/ [ɪgˈbiəᵏŋ] 'RECIPROCAL-separated'
e. *miang* /ŋ/ + /biaŋ/[ˈm̃ĩə̃ŋ] 'ACT.IND.SOA-separate'
f. *biniang* /in/ + /biaŋ/ [biˈñĩə̃ŋ] 'REALIS-separate-
UND.IND.SOA'[13]

2.2 Scott (1964)

A number of Bukar-Sadong forms have word-final preploded nasals even though they are preceded by a nasal consonant with no intervening consonant to block nasal spread. Such forms often correspond to a Malay or Sea Dayak word which contains a word-medial consonant cluster consisting of a nasal followed by a homorganic stop as in (13). "The presence of a stopped final nasal in a word that has a medial nasal consonant always indicates that this medial nasal is not simple" (Scott 1964:434).

(13)
Bukar-Sadong		Malay	Sea Dayak
a. [ɐmudn]	'dew'	*embun*	*embun*
b. [ɐnaːugŋ]	'prawn'	*udang*	*undang*
c. [banugŋ]	'tapioca'		

Bonggi has a few forms, including those in (14), which can only be accounted for in terms of Malay correspondences. On the one hand, as we would expect from what has been said thus far, the final nasal in (14a) is preploded since the preceding vowel is non-nasalized. On the other hand, we do not expect the final nasal in (14b) and (14c) to be preploded since the affixes *ŋ-* and *-in-* trigger nasal spread (cf. (12)). (14b) contrasts with the regular forms in (4a), (12b) and (12e), while (14c) contrasts with the regular forms in (12c) and (12f). Malay /h/ > Ø in Bonggi; e.g., Malay *haram* 'forbidden' is realized as [ˈarəᵇm] in Bonggi. The irregular forms in (14b) and (14c) are accounted for by reference to history because there is no surface consonant to block the nasal spread triggered by the affixes. The presence of /h/ in the protoform blocks nasalization in the following vowel, which in turn provides the proper environment for nasal preplosion.

(14) a. *taadn* /taan/ [ˈtaaᵈn] 'endure' (Malay *tahan*)
b. *naadn* /ŋ/ + /taan/ [ˈnãaᵈn] 'ACT.IND.SOA-endure'
c. *tinaadn* /in/ + /taan/ [t̪iˈnãaᵈn] 'REALIS-endure-
UND.IND.SOA'

Glottal stop [ʔ] does not block nasality in Bukar-Sadong, but in some cases [h], [j] and [w] do block nasality (Scott 1964:435). (11) shows that [h] blocks nasal spread in Bonggi, whereas (15) shows that [j] and [w] do not block nasal spread.