

On the phonological interpretation of laryngeally modified nasals

Bert Botma, Leiden University

While most languages have voiced nasals only, there are also languages with contrastive nasals that are produced with a laryngeal setting other than voice. Such nasals can be referred to as “laryngeally modified nasals”. In the UPSID database (cf. Maddieson 1984), three types of laryngeally modified nasals are distinguished: laryngealized nasals, breathy voiced nasals and voiceless nasals. These types of nasals are marked: they occur in only 3.4% of the languages in the UPSID sample, and their presence in a language implies the presence of the unmarked voiced series of nasals.

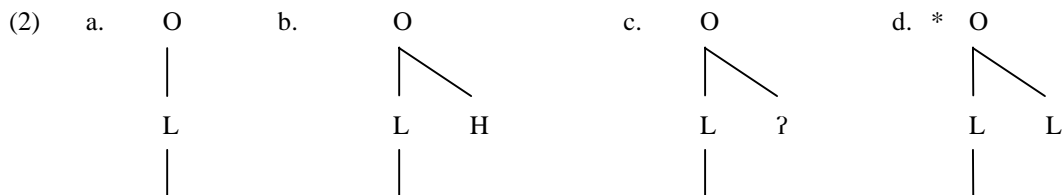
In this talk I examine the phonological status of laryngeally modified nasals in more detail, paying particular attention to the nasals that are described as voiceless in UPSID (as well as in Chomsky & Halle 1968, for instance). It has been claimed on a number of occasions that these nasals are more appropriately viewed as being aspirated phonologically (e.g. Anderson & Ewen 1987, Lombardi 1991). I will take essentially the same view here, although, based on observed phonological contrasts, I claim that there is no need to distinguish between aspirated and breathy voiced nasals. This predicts that languages, in addition to a voiced series of nasals, allow for a maximally two-way contrast in terms of laryngeally modified nasals, as is found in, for instance, Jalapa Mazatec, Sui and Sedang. Observe that the classification in Maddieson (1984) predicts a maximally three-way contrast, which to the best of my knowledge is unattested.

To account for these observations I develop a theory of segment structure that employs a restricted set of elements –**ʔ**, **H** and **L**– from Element Theory (Harris & Lindsey 1995). I assume that these elements have the following general articulatory and acoustic interpretations:

(1)	<i>Element:</i>	<i>Articulatory interpretation:</i>	<i>Acoustic interpretation:</i>
	ʔ	complete closure	energy reduction
	H	close approximation	random noise
	L	open approximation	(spontaneous) voice

Note here that the articulatory interpretation of **ʔ**, **H** and **L** corresponds to the traditional three-way manner distinction in terms of degree of oral stricture.

Following the main tenets of Dependency Phonology (e.g. Anderson & Ewen 1987), I assume that **ʔ**, **H** and **L** may enter into head-dependency relations. Nasality for instance is represented by **L** dominating **ʔ**, as shown in (2a-d). Laryngeal modifications are represented in terms of dependent elements, and are viewed as sisters of the topmost manner element. As such they are dominated by a subsyllabic constituent which, in case of laryngeal modifications, is typically the onset, represented in (2) as **O**. In (2), (2a) represents a plain voiced nasal. (2b) shows that nasal manner with dependent **H** has a variable phonetic interpretation, ranging from voicelessness to aspiration and breathy voice. (2c) shows that nasal manner with dependent **ʔ** is variably realized as preglottalization, postglottalization or creaky voice. (2d), denoting a “voiced nasal”, is ruled out on the grounds that nasals, being sonorants, are redundantly voiced; this is formalized in terms of a co-occurrence restriction involving **L**. In (2) I ignore place specification; here and below the bilabial nasal represents all places of articulation.



?
?
?
?

[m]
[m̥, m̥m, mm̥, hm, mh, mfi]
[m̥, ?m, m?]

Given that “voiceless nasals” have dependent **H**, we expect to find phonological interaction with other segment types that have **H** as part of their structural make-up. For instance, aspirated stops (head **ʔ**, dependent **H**) sometimes “devoice” sonorants, as in English and Icelandic, while sibilants (head **H** only) are often involved in the creation of contrastive voiceless nasals. For example, it is generally assumed that the fusion of certain prefixes with root-initial nasals gave rise to laryngealized and voiceless nasals in Proto-Burmese-Loloish and Proto-Loloish (cf. Bradley 1979). These prefixes are reconstructed by Bradley as *s- and *ʔ-, which, when added to a nasal-initial root, yielded *sm and *ʔm in Proto-Loloish. (3) shows the development of such clusters in a number of Loloish languages (cf. Bradley 1979:144); note here that *C- denotes any consonantal prefix other than *s- or *ʔ-.

(3) <i>Proto-Loloish</i>	*m	*Cm	*sm	*ʔm
<i>Burmese</i>	m	m	hm	m
<i>Phunoi, Bisu</i>	m	b	hm	hm
<i>Yi</i>	m	m	m̥	m̥
<i>Lisu, Akha, Lahu, Mpi</i>	m	m	m	m

(3) shows that the Proto-Loloish three-way contrast in the prefix series, which according to Bradley is necessary to account for certain pitch reflexes, has developed into a maximally binary contrast in modern Loloish languages, as is illustrated for Phunoi, Bisu and Yi. Burmese, which is a Burmese but not a Loloish language, is included in (3) to show that the distinction between *sm and *ʔm as reconstructed for Proto-Burmese-Loloish has a present-day reflex. Parallels of the Burmese-Loloish development are found in Primitive Greek and Old Irish, where we find /m̥, n̥/ as the reflex of Indo-European *sm, *sn (cf. Ohala & Ohala 1993). Observe, too, that English children sometimes realize target #sm- and #sn- sequences as [m̥, n̥], e.g. [m̥ɪt] “Smith” and [n̥ɪd] “sneeze” (cf. Smith 1973).

In this talk I examine a range of synchronic and diachronic processes that support the representation of phonetically voiceless, aspirated and breathy voiced nasals in terms of a single phonological element **H**. This approach, it is argued, provides not only a restrictive interpretation of laryngeally modified nasals (as well as other sonorants), but also provides a straightforward account of the interaction between such nasals and other segment types specified for **H**, including aspirated stops, sibilants, and fricatives.

References

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Bert Botma (e.d.botma@let.leidenuniv.nl)
Department of English Language and Culture
University of Leiden
P.O. Box 9515
2300 RA Leiden