

LABIAL UNMARKEDNESS IN SRI LANKAN PORTUGUESE CREOLE¹

ELIZABETH HUME GEORGIOS TSERDANELIS
OHIO STATE UNIVERSITY

ABSTRACT

In this squib we introduce new language data into the debate concerning the markedness of place of articulation. The data concerns a process of assimilation in Sri Lankan Portuguese Creole where coronal patterns are more marked than both labial and dorsal. The pattern is of particular significance since it provides a clear example of a language in which labial patterns are unmarked, thus leading us to the conclusion that labial, in addition to (at least) coronal and dorsal, must also be included in the set of possible unmarked places of articulation. Implications of the SLPC pattern for structure- and constraint-based accounts of markedness are discussed.

1. Introduction

What the unmarked place of articulation is for consonants remains a controversial issue in phonological theory. Some assume that it is coronal (e.g. Kean 1976; Paradis & Prunet 1991, Mohanan 1993, Prince & Smolensky 1993, Hume 1996, Wilson 2001), while others suggest velar (e.g. Trigo 1988). Rice (1996) makes the case for both coronal and velar as unmarked.² While there is little consensus as to which place of articulation, if any single type, is unmarked universally, most would agree on one point: labial is never the unmarked place of articulation for consonants.

In this short squib we present data from Sri Lankan Portuguese Creole (SLPC) which provides precisely such a case. The evidence comes from nasal place assimilation where it is shown that labial place patterns as unmarked. As we discuss below, drawing on assimilation as a diagnostic for the markedness status of a feature is common practice among phonological theorists. The underlying assumption is that an unmarked feature behaves as a target, or undergoer, of assimilation while a marked feature does not. The extent to which this diagnostic is an appropriate measure of phonological markedness is an important question yet one that goes beyond the scope of this paper. Rather, our goal is simply to show that by drawing on the same

¹ Acknowledgements.

² Arguments for laryngeal as the unmarked place have also been put forth. See Lombardi 2001 and section 4.2 below.

class of evidence commonly used to determine the unmarked status of other consonantal places, the SLPC pattern leads us to the conclusion that labial must also be included in the set of possible unmarked places of articulation.³

2. Featural Asymmetry as a Diagnostic for Phonological Markedness

It has long been assumed that phonological criteria for determining markedness relations can be established on the basis of the asymmetrical patterning of features or sounds in inventories and phonological processes (see, among others, Trubetzkoy 1939, Archangeli 1982, Rice 2000). As Rice notes, when comparing features within a class, one feature may pattern asymmetrically with respect to another; this feature is deemed the unmarked member of the relation. For example, Archangeli (1982) points out that although Yoruba counts three tones in its tonal inventory (High, Mid, Low), the Mid tone, unlike H and L, never appears in the structural descriptions and changes of phonological rules.⁴ In this case, the Mid tone patterns asymmetrically from the other members of the tonal class and is thus considered the unmarked member. Asymmetry can also be found in the language's segmental phonology: phonological rules consistently treat /i/ differently from other vowels in the language, which is taken to provide support for the unmarked status of the features distinguishing /i/ from other vowels in the system (Pulleyblank 1988).

Asymmetries can arguably be observed in any type of phonological process including assimilation, the process most relevant to our discussion of SLPC in the following section. When comparing members of a feature class in assimilation, it is commonly assumed that “the unmarked pole of an opposition is lost or obscured, with the marked pole remaining...In assimilation, the marked features within a class are active... the unmarked features, on the other hand, are passive, or inert – these...are overridden by other features” (Rice 2000: 4). Put another way, marked features resist modification while unmarked features are subject to change.

To illustrate, consider place assimilation in Korean, a frequently cited example.

³ The data introduced in this paper raise many questions relating to markedness including, among others, the status of markedness in linguistics, the identification and reliability of markedness diagnostics, the role of native language knowledge in the development of markedness patterns. Each of these issues is important and merits careful consideration and debate. Endeavoring to undertake this task clearly exceeds the modest goals of this short paper, however. See, however, Batistella (1990), Rice (2000), Hume (2002), among many others, for related discussion.

⁴ Akinlabi (1984) and Laniran (1992) argue that M tones form contours in the postlexical phonology.

(1) *Korean place assimilation*

- | | | | | |
|----|--------------------------|------------|-------------|------------------------|
| a. | /mit+ko/ | [mikk'o] | | 'believe and' |
| | /mit ^h +pota/ | [mipp'ota] | | 'more than the bottom' |
| b. | /ip+ko/ | [ikk'o] | | 'wear and' |
| | /nop+ta/ | [nopt'a] | *[nott'a] | 'high' |
| c. | /nok+ta/ | [nokt'a] | *[nott'a] | 'melt' |
| | /kuk+pota/ | [kukp'ota] | *[kupp'ota] | 'more than soup' |

In Korean, a final obstruent stop assimilates in place to a following consonant, with the following restrictions. As shown in (a), a morpheme-final coronal assimilates to a following velar or labial consonant. A morpheme-final labial also assimilates to a following velar, but fails to assimilate to a following coronal, as in (b). As the two examples in (c) show, a final velar consonant does not assimilate to either a following labial or coronal consonant. According to the view that markedness is correlated with resistance to modification, the velar consonant is considered most marked, followed by the labial, then coronal.

With this as a basis, we turn now to a discussion of the patterns observed in Sri Lankan Portuguese Creole.

3. Nasal Place Assimilation in Sri Lankan Portuguese Creole

As noted above, the asymmetrical patterning of sounds in assimilation is a widely accepted diagnostic for markedness. In short, unmarked sounds are assumed to undergo assimilation while marked sounds resist modification. The focus of this section is on nasal place assimilation in Sri Lankan Portuguese Creole and its relevance to the place markedness debate. First, however, we offer some relevant background concerning the language and its phonological system.

The data used in this study are from Smith's 1971 grammar, supplemented by an on-line database of 2,500 words kindly provided to us by Ian Smith. At the time Smith wrote his grammar, Sri Lankan Portuguese Creole (SLPC) was spoken on the east coast of Sri Lanka by about 2,500 people. It is related to several Indo-Portuguese creoles that have formed in many areas on the Indian subcontinent. Most speakers are bilingual in either Tamil or Sinhalese.

For reference, the language's phoneme inventory for consonants is given in (2).

(2) The phonemic consonant inventory:

<i>labial</i>	<i>labial- dental</i>	<i>dental- alveolar</i>	<i>palatal- alveolar</i>	<i>palatal</i>	<i>velar</i>
p		t			k
b		d			g
			tʃ		
			dʒ		
	f	s			
		z			
m		n		ŋ	ŋ
		r			
		l			
w				y	

We draw the reader's attention to the observation that nasals occur contrastively at labial, dental-alveolar, palatal and velar places of articulation. Not all types occur in all contexts, however, as shown in (3). In word-initial position, only [m] and [n] occur. Intervocally, all nasals can be found, including a retroflex nasal which patterns as an allophone of the dental-alveolar following non-high back vowels ([o(:), ə, a]).⁵ Word-finally, only [m, n, ŋ] occur though, with the exception of loanwords, [ŋ] is found in only a small number of words.

(3)

<i>Word Initial</i>		<i>Intervocalic</i>		<i>Word Final</i>	
[m,n]		[m,n, ɲ, ŋ, ŋ]		[m, n, ŋ]	
mael	'honey'	kumiyam	'communion'	pa:m	'bread'
no:s	'we'	penera	'sift'	si:n	'bell'
		lae:ɲə	'firewood'	uŋ	'one'
		uŋə	'one'		
		əŋimal	'animal'		

Nasals also appear in clusters followed by an obstruent, as illustrated in (4). Within morphemes, homorganicity between the members of a nasal-obstruent cluster is required.

⁵ The lateral /l/ also has a retroflex allophone occurring under the same conditions as the retroflex nasal.

(4) Morpheme-internal NC clusters

li:mpu	‘clean’	po:mbə	‘dove’
o:ntə	‘yesterday’	o:ndə	‘wave’
ɨntʃə	‘draw’	uŋdʒuwey	‘knee’
bri:ŋken	‘game’	li:ŋgu	‘tongue’

Across morpheme boundaries, the situation is more complex. In this case, a labial or velar nasal systematically assimilates to a following consonant, while a coronal remains unchanged. Consider the data in (5). The forms in (5a) illustrate mono-morphemic words ending in either a labial or velar consonant. When the genitive singular suffix /su-/ is added, as in the second column, both the labial and the velar assimilate to the place of articulation of /s/. The velar also assimilates to a following labial, as illustrated in the third column with the addition of the dative suffix /p ʔ/. Further, in the verbal noun forms, a final labial assimilates to a following velar consonant. However, as shown in (5b) the coronal /n/ resists assimilation to both a labial in the third column, and a velar in the fourth. Additional examples of assimilation involving the labial and velar are provided in (5c).

(5)	<i>Nom.sg.</i>	<i>Gen. sg.</i>	<i>Dative Sg.</i>	<i>Verbal noun</i>	<i>Gloss</i>
a.	va:rzim	va:rzinsu	va:rzimpə	va:rziŋki-	‘harvest’
	raza:m	raza:nsu	raza:mpə	raza:ŋki-	‘reason’
	ma:m	ma:nsu	ma:mpə	ma:ŋki-	‘hand’
	mi:tiŋ	mi:tinsu	mi:timpə	mi:tiŋki-	‘meeting’
b.	bataan	bataansu	bataanpə	bataanki-	‘button’
	si:n	si:nsu	si:npə	si:nki-	‘bell’
	tavn	tavnsu	tavnə	tavnki-	‘town’
	kəlku:n	kəlku:nsu	kəlku:npə	kəlku:nki-	‘turkey’
c.	pikini:m + ka:zə	[pikiniŋ ka:zə]			‘small + house = small house’
	pərim + təsuwa:	[pərin təsuwa:]			‘me + sweat = I am sweating’
	reza:m + ley	[reza:n ley]			‘reasonably’
	uŋ + fa:kə	[uŋ fa:kə]			‘one + knife’ cf. [uŋ a:nu] ‘one year’
	uŋ + di:y	[uŋ di:y]			‘one + day’

The observed pattern of place assimilation in Sri Lankan Portuguese Creole is of particular interest given the commonly held view that the asymmetrical patterning of features in assimilation serves as a diagnostic for a feature's markedness. The observation that coronal alone resists assimilation leads us to conclude that labial and dorsal are the least marked places of articulation for nasals, while coronal is the most marked.^{6,7}

4. Implications for formal approaches to markedness

We turn now to some of the implications of the observed patterns of place assimilation for formal models of phonology. The observations from SLPC suggest that in addition to allowing for coronal and velar to be unmarked in a system, an adequate model must also predict unmarked labial. As we briefly outline just below, whether the model is structure- or constraint-based, greater formal flexibility seems warranted when it comes to characterizing the unmarked place of articulation.

4.1 Structure-based markedness

Consider first structure-based approaches to markedness. In this approach, as assumed in the influential work of Sagey (1986), for example, accounting for differences in markedness is a structural issue: the less structure a representation has, the more unmarked the segment being represented is. Building on this assumption, Rice's (1996) model of feature organization

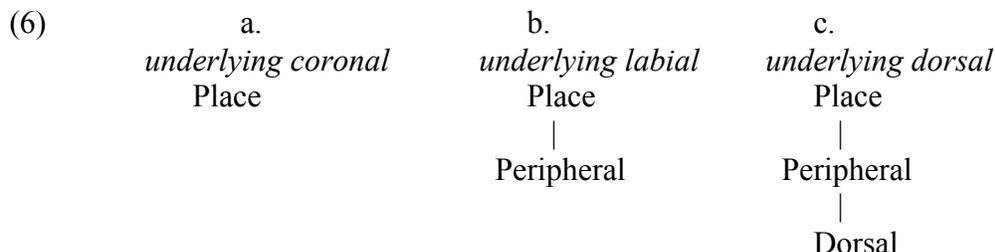
⁶ Suggestive evidence from a process of spirantization in the language also supports the view of labial and velar as less marked than coronal. Obstruent stops /b, d, g/ are reported to spirantize intervocalically and in intervocalic clusters with /r/. However, Smith notes that the patterns of assimilation among the three consonant types are not equivalent. He states, "The non-coronal stops /b/ and /g/ become spirantized much more frequently than does coronal /d/" (p. 90). While numerous cases of spirantized /b/ and /g/ are provided, there are none of spirantized /d/.

Under the assumption that resistance to modification is a diagnostic for a segment's markedness, that is, the more resistant to change, the more marked a segment is, the facts from spirantization, while only suggestive, nonetheless support those from assimilation: the coronal is more marked than the labial or dorsal.

⁷ To the extent that word frequency can be used as a diagnostic for markedness, the frequency facts partially support the observed pattern. Proposals linking markedness to segment frequency contend that the most frequently occurring segment (or feature) in a given language, or in a given context in that language, is the least marked (e.g. Trubetzkoy 1939, Greenberg 1966). Available frequency data in SLPC show that the labial [m] is the most frequent nasal consonant in word-final position. In the 2,500 word database of SLPC words, [m] occurred 102 times, while the coronal [n] occurred 64 times. If we limit our discussion to [m] and [n], word frequency would concur with the evidence from the place assimilation asymmetry: [m] is most frequent, therefore, it is the unmarked place of articulation, and, as a result, it will undergo assimilation.

However, [ŋ] also occurs word-finally and its frequency is very low: it is extremely rare in the native vocabulary in word-final position, occurring in only one or two words. Otherwise, [ŋ] is limited to recent borrowings. According to the frequency hypothesis, we would then incorrectly predict the velar to pattern with the marked coronal, rather than the unmarked labial.

provides a clearly articulated connection between markedness and structure. In (6) we present a simplified version of the model, with coronal, labial and dorsal places of articulation represented.

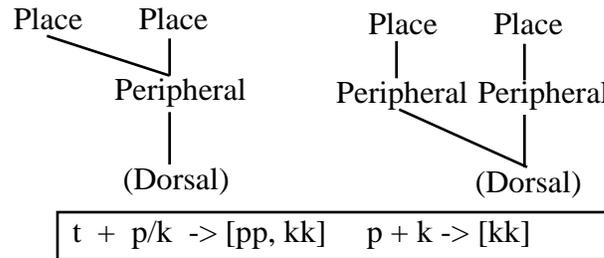


The figure in (6a) provides the characterization of an unmarked coronal, represented with only a place node. Labial is represented with a Peripheral node, thus rendering it structurally more marked than coronal. However, the most marked place of articulation is dorsal which has all of the structure of the other two places in addition to a Dorsal node.⁸

The model outlined above correctly predicts the observed patterns of place assimilation in Korean (Iverson and Lee 1994). Recall from (1) that a coronal is reported to assimilate to a following dorsal or labial, a labial assimilates only to a dorsal, while dorsals are not targets at all. These patterns can be captured as in (7): spreading the Peripheral node from a labial or dorsal consonant to a coronal is a viable process, as is spreading the Dorsal node to a labial. In each case, structure is being added to a less marked representation. A key assumption of the model is that assimilation is structure-building thus predicting a less specified representation to be a more likely target for spreading than one with more structure. It also correctly rules out the non-occurring place assimilations in Korean (e.g. /pt/ → *[tt]; /kp/ → *[pp]): spreading from a less marked coronal to a labial or dorsal, or spreading from a labial to a dorsal are impossible rules given that in each case the target would contain more structure than the trigger.

⁸ Though not illustrated in (6), Rice also assumes the existence of velar place which is claimed to differ both representationally and phonetically from the dorsal in (2c). Like the coronal, it may surface as unspecified for place. This key aspect of the theory allows for language specific variability concerning which consonant surfaces as unmarked; either coronal or velar may be unmarked, depending on the language. Archangeli (1984) goes one step further and argues that markedness is determined on a language specific basis. Her claim is consistent with the conclusions that we draw in this paper.

(7)



While the model in (6) is able to represent the facts of Korean, we suggest that it is too restrictive as a universal model given the underlying assumption that labial can never pattern as unmarked. The fact that it can, as evidenced by the attested pattern in Sri Lankan Portuguese Creole, suggests the need for a less rigid view of what can and can not occur as unmarked in language. In our view, the observation that all places of articulation can surface as unmarked suggests that markedness considerations do not provide compelling motivation for arguments concerning the structural representation of place features.

4.2 Harmonic constraint ranking

Markedness considerations also figure prominently in Optimality theoretic analyses. In this framework, markedness relations are captured by means of harmonic rankings. While OT constraints are generally assumed to be freely rankable as a means of encoding cross-linguistic variation, a harmonic ranking imposes a universally fixed order on a particular set of constraints. For instance, Prince & Smolensky (1993, ch. 9) formalize the view that coronal is the unmarked place of articulation by means of the harmonic ranking in (8). (The double arrows in (a) are interpreted as imposing a universally fixed ranking.) The harmonic ranking is translated into the constraint ranking in (8b)⁹ which, informally stated, expresses the claim that labial and dorsal places of articulation are more marked than coronal place.

- (8) a. Harmonic ranking of place: labial, dorsal >> coronal
b. *labial, *dorsal > *coronal

⁹ See e.g. Jun 1995 for an OT account of the Korean facts.

The harmonic ranking of place features implies that markedness relations among these features are universally determined. That is, a single ranking of place features forms part of the grammar of all speakers of all languages. As we have seen, however, coronal is not least marked in all languages. To account for this observation, the theory allows for an additional constraint to dominate the fixed hierarchy, thus having the effect of overruling the unmarked status of a lower ranked constraint.

Consider Lombardi's (2001) account of epenthesis in Axininca Campa as an illustration. Lombardi draws on evidence from a range of languages to argue that the laryngeal consonant, [h] or [ʔ], rather than the coronal, is the universally unmarked consonant, as expressed in (9), a modified version of (8b).

(9) *Dorsal, *Labial > *Coronal > *Pharyngeal

To accommodate the observation that coronal may, under certain conditions, emerge as unmarked, Lombardi makes use of a more highly ranked constraint to predict the observed pattern. For instance, to account for epenthetic [t] in Axininca Campa, Lombardi posits an additional constraint, namely *ʔ ('glottal stop is prohibited') which, when ranked above the place hierarchy, effectively rules out the laryngeal as the unmarked consonant, as shown in (10) (reproduced from tableau (51) in Lombardi (2001)).

(10) Coronal epenthesis in Axininca Campa (Lombardi 2001)

	/iŋkoma+i/	*ʔ	*Lab	*Cor	*Phar
a.	iŋkomaʔi	*!			*
b. 	iŋkomati			*	
c.	iŋkomapi		*!		

As can be seen, epenthesis serves to repair an ill-formed input which, in this case, is caused by vowels in hiatus. Three candidates with different epenthetic consonants are illustrated in (10): a laryngeal, a coronal, and a labial. While the laryngeal is argued to be universally unmarked, its failure to surface as the epenthetic consonant in (10) is accounted for by ranking *ʔ above other place markedness constraints. Candidate (c) with a labial epenthetic consonant is also ruled out

given the high ranking of *Labial. The crucial ranking of *ʔ and *Labial over *Coronal expresses the observation that it is better to insert an epenthetic coronal than a labial or laryngeal. The proposed constraint ranking thus selects coronal as the unmarked, or default, consonant in this language.

It is important to point out that unlike the structural model discussed above, there is nothing in the OT approach that expressly rules out labial from surfacing as unmarked in some language. In fact, given that any number of constraints can dominate the harmonic ranking of place features, any feature could, in principle, pattern as unmarked. For example, assuming the ranking in (9), we can predict a language with unmarked [p], as opposed to [t] or [ʔ], simply by ranking constraints such as *[t] and *[ʔ] above the markedness hierarchy. Alternatively, in a language in which dorsal is unmarked, at least three constraints penalizing the insertion of a labial, coronal or laryngeal could be positioned above the harmonic ranking. Given that any place feature can pattern as unmarked in some language, we question the need to include a universal harmonic ranking of place features in the first place. In fact, by allowing place constraints to be freely ranked (see also Fonte 1996), we correctly predict all place features to surface as unmarked in some language.

While it is beyond the scope of this paper to evaluate all proposed cases of harmonic ranking, we suggest that the use of this formal device to account for sound patterns involving, at least, place of articulation is questionable. In fact, a theory with freely rankable place constraints is empirically equivalent to one using harmonic ranking supplemented by more highly ranked constraints: both allow all place features to pattern as unmarked. However, the two approaches differ in terms of at least one key heuristic principle: simplicity. While both make use of constraint ranking, a fundamental tenet of Optimality Theory, only the latter theory incorporates harmonic ranking as a formal tool. By Occam's Razor, the theory making use of only freely rankable constraints is therefore more highly valued. We view the elimination of harmonic ranking in the case of place features as a positive outcome for OT given that fixed rankings are antithetical to the basic underpinnings of the theory: constraint conflict. We speculate that upon closer scrutiny other cases of harmonic ranking will be revealed to be equally superfluous.

5. Conclusion

In this short squib, observed patterns of place assimilation in Sri Lankan Portuguese Creole have pointed to the need for greater formal freedom in the characterization of place features in phonological theory. Given that labial, in addition to (at least) velar and coronal can pattern as unmarked in language, we suggest that formally restricting the patterning of place features on the basis of markedness considerations is unfounded.

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