

## Moraic geminates in Malayalam: evidence from minimal word effects and loanword adaptation

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We present new evidence to show that, contrary to previous stress-based analyses (e.g. Mohanan 1989), Malayalam geminates must be moraic in at least some contexts. We present and discuss evidence for the moraicity of geminates in both native words and in loanword adaptations, and we provide criteria for determining which of two strategies are used in the adaptation of CVC loanwords from English.

The minimal word in Malayalam is bimoraic: free roots are minimally CVCV, CV:C, CVC:, or CVCC in shape, where vowel and consonant length are phonemic (Mohanan 1989). This suggests that geminates and consonant clusters are moraic. However, evidence from stress assignment suggests that only vowels contribute to syllable weight (Mohanan 1986; Hayes 1995; Broselow et al. 1997). If geminates and consonant clusters are weightless, how can forms like CVC: and CVCC satisfy minimal word constraints in Malayalam? These forms are realized with a following schwa (1), so one possibility is that the schwa is moraic. However, Cyran (2001) uses distributional evidence to show that schwas are both nonmoraic and not present underlyingly: e.g., schwas only appear word-finally, where they occur to resolve Malayalam’s ban against obstruent codas (Mohanan 1989).

Given the bimoraic minimal word requirement, the facts above lead to specific predictions about the types of words which are licit in Malayalam. If schwas are nonmoraic, and CVC syllables are monomoraic, then words with the structure CVCə are ruled out in Malayalam – this prediction is borne out, as in (2). Further, evidence from native Malayalam words which have the structure CVC:ə, as seen in (1), shows that geminates must be moraic:

- |     |         |     |        |
|-----|---------|-----|--------|
| (1) | pal:ə   | (2) | * palə |
|     | CVC:ə   |     | CVCə   |
|     | ‘tooth’ |     |        |

The contrast between (1) and (2) can only be explained if we assume that the geminate in (1) is moraic, satisfying the minimal word requirement. These examples also support Cyran’s claim about the nonmoraic status of schwas; if schwas were moraic, words with the structure of (2) should be possible.

Further evidence that geminates are moraic comes from loanword adaptation. Malayalam speakers adapt CVC words from English using two different strategies: in (3), the vowel is lengthened, while in (4), the vowel stays short and the coda consonant is geminated, which results in a word with the structure CVC:ə. In both cases, a schwa is epenthesized in order to resolve an illicit coda, but crucially, in order to account for examples like (4), geminates must be moraic: the schwa does not contribute a mora, and the minimal word must be bimoraic.

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|-----|---|-----|--|
| (3) | a. /p <sup>h</sup> as/ ( <i>English input</i> ) | (4) | a. /bʌs/ ( <i>English input</i> )      |
|     | b. pa:sə ( <i>vowel-lengthened loanword</i> )   |     | b. bas:ə ( <i>geminated loanword</i> ) |
|     | ‘pass’  |     | ‘bus’                                  |

In almost all cases<sup>1</sup>, both strategies are not possible for a given word, and choice of

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<sup>1</sup>For a few words, both strategies can be used – there is some evidence that this reflects different diachronic patterns of loanword adaptation, and these examples will be discussed further in the presentation.

strategy depends on perceived vowel length. English tense vowels are adapted as long Malayalam vowels, as in (5), while lax vowels are borrowed as short vowels with geminate coda consonants, as in (6). The one exception is /æ/ (7), which we assume is due to its greater phonetic length relative to other lax and non-low tense vowels in English (van Santen 1992). (8) - (10) are additional examples of the input vowel mapping onto a particular adaptation strategy, with the source vowels /ɛ/ and /ʊ/ resulting in the gemination strategy, and /ɔ/ resulting in a long vowel.

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|-----|---|------|---|
| (5) | a. /seɪl/ ( <i>input</i> )<br>b. *sel:ə ( <i>geminate</i> )<br>c. se:lə ( <i>long vowel</i> )<br>'sale' | (6)  | a. /k <sup>h</sup> ʌp/ ( <i>input</i> )<br>b. kap:ə ( <i>geminate</i> )<br>c. *ka:pə ( <i>long vowel</i> )<br>'cup' |
| (7) | a. /mæp/ ( <i>input</i> )<br>b. *map:ə ( <i>geminate</i> )<br>c. ma:pə ( <i>long vowel</i> )<br>'map'   | (8)  | a. /sɛt/ ( <i>input</i> )<br>b. sɛt:ə ( <i>geminate</i> )<br>c. *sɛ:tə ( <i>long vowel</i> )<br>'set'               |
| (9) | a. /mɔl/ ( <i>input</i> )<br>b. *ma:lə ( <i>geminate</i> )<br>c. ma:lə ( <i>long vowel</i> )<br>'mall'  | (10) | a. /wʊd/ ( <i>input</i> )<br>b. wʊd:ə ( <i>geminate</i> )<br>c. *wʊ:də ( <i>long vowel</i> )<br>'wood'              |

English CVC loanwords can undergo gemination in order to satisfy minimal word constraints in Malayalam, and this process is sensitive to both phonemic length (= tense vowels) and phonetic length: English /æ/, though phonologically lax, has a relatively long inherent duration. The gemination strategy is unexpected given previous analyses claiming that Malayalam geminates are nonmoraic. Our analysis, which treats Malayalam geminates as moraic, correctly accounts for the gemination strategy for loanword adaptation, explains the presence of native words with the structure CVC:ə, and preserves the inherent moraicity of geminates, as posited in Moraic Theory (Hayes 1989).

The evidence presented here points to the conclusion that final (pre-schwa) geminates in otherwise nonminimal words must be moraic; whether or not this conclusion affects Mohanan's conclusion that geminates must be nonmoraic (based on stress in longer words) is an issue that we address in the talk, where we present minimal pairs which suggest, contra Mohanan, that geminates do affect stress patterns in longer words.

## References

- Broselow, E., Chen, S., & Huffman, M. (1997). Syllable weight: convergence of phonology and phonetics. *Phonology*, 14, 47-82.
- Cyran, E. (2001). Parameters and scales in syllable markedness: the right edge of the word in Malayalam. *Trends in Linguistic Studies and Monographs*, 134, 1-25.
- Hayes, B. (1989). Compensatory Lengthening in Moraic Phonology. *Linguistic Inquiry*, 20, 253-306.
- Hayes, B. (1995). *Metrical Stress Theory: Principles and Case Studies*. University of Chicago Press.
- Mohanan, K. P. (1986). *The theory of lexical phonology*. Dordrecht, Holland: Reidel.
- Mohanan, T. (1989). Syllable Structure in Malayalam. *Linguistic Inquiry*, 20(4), 589-625.
- van Santen, J. P. H. (1992). Contextual effects on vowel duration. *Speech Communication*, 11, 513-546.