

Utterance-final high vowel diphthongization in Chongqing Mandarin

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In Chongqing Mandarin (a dialect spoken in Southwestern China), high vowels undergo utterance-final diphthongization. This paper presents an analysis of diphthongization as fission of high vowels in monomoraic syllables motivated by an utterance-final floating mora. High vowels do not fission into identical parts due to an OCP constraint, and we derive the similarity between the parts with faithfulness constraints, which prevent them from surfacing elsewhere in the language.

High vowels including [i, y, u, ʊ] and the ‘apical vowel’ [ɿ] surface utterance-finally as their diphthongized versions, respectively [iɪ, yɪ, uɔ, ʊɔ, ɿɛ]. The examples in (1) illustrate the alternations of the five vowels (in red):

- | | | |
|-----|--|---|
| (1) | Utterance-medial high vowel | Utterance-final high vowel diphthongized |
| | [pɿ ³³ .xo ³¹] ‘pen case’ | [mau ³³ .piɿ ³¹] ‘writing brush’ |
| | [ly ³⁴ .zən ³¹] ‘female’ | [mei ³⁴ .lyɿ ⁴²] ‘beauty’ |
| | [tsɿ ³⁵ .tɛin ³³] ‘funds’ | [tʰəu ³³ .tsɿɛ ³⁵] ‘to invest’ |
| | [fo ²² .muɔ ⁴²] ‘parents’ | [jɑŋ ³⁴ .foɔ ²¹] ‘foster father’ |
| | [su ³⁵ .tsəu ³³] ‘Suzhou’ | [tɕiɑŋ ³⁵ .suɔ ³³] ‘Jiangsu’ |

Non-high monophthongs ([pɛ³¹] ‘white’, [kʰo²¹³] ‘class’, [pa³¹] ‘eight’), a vowel in a closed syllable ([ɛin³⁵] ‘heart’) and the second part of an underlying diphthong ([pai²¹³] ‘failure’), do not diphthongize utterance-finally.

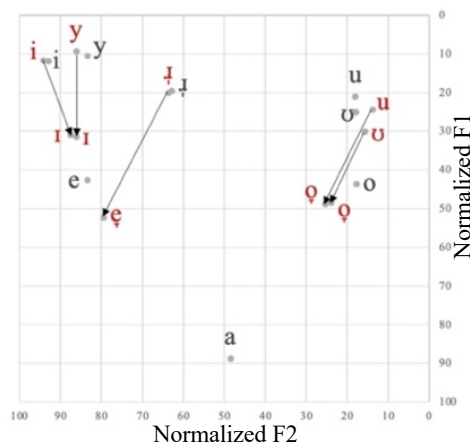
We analyze diphthongization as fission, rather than epenthesis. As a generalization of boundary tones, we set up a floating mora at the right edge of every utterance, which needs association. As the tableaux in (2) illustrate, these constraints motivate fission in high vowels, but not in low vowels which would otherwise violate INTEGRITY-IO(–high). Syllables that are already bimoraic like [ɛin] and [pai], cannot host the floating mora without becoming superheavy. Under an epenthesis account, it is not obvious how to restrict diphthongization to high vowels only (i.e. why underlying /paɪ#/ does not become *[paɪVɪ]).

- (2) High vowels undergo diphthongization utterance-finally and non-high vowels do not

pi ₁ μ#	INT(–hi)	*FLOAT	INT(+hi)
pi ₁ μ		*!	
ɿpi ₁ ɪ ₁			*

pa ₁ μ#	INT(–hi)	*FLOAT	INT(+hi)
ɿpa ₁ μ		*	
pa ₁ V ₁	*!		

Interestingly, the novel vowels derived through diphthongization cannot surface in any other contexts. Unlike other languages which exhibit lengthening, Chongqing Mandarin does not just



lengthen a final vowel *[pi₁ɪ₁], but rather the quality of the second part is slightly different. This reflects the phonotactic constraints which disallow two identical vowels and [+high] vowels utterance-finally. In the analysis we do not treat the novel vowels like [ɿ] as phonologically high and the phonetic evidence is that they are much lower than the phonologically high vowels in the formant space, as shown on the left.

Furthermore, the quality of the second part is not arbitrary (this is another advantage of the fission account) and in /pi₁#/ it has to be [ɿ] because it is the closest vowel to [i] that is not [i].