Compensatory lengthening is not specific to segments

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Phenomenon: Yue dialects, i.e. Cantonese, Bobai and Xinyi, have a process whereby a rising tone replaces the lexical tone of the head noun to derive diminutive forms, referred to as *Pinjam* (changed tones) in the literature. Examples are given in (1). Note that occlusive codas change to their homorganic nasal counterparts in the diminutive form in Bobai. Previous accounts regarding Cantonese posit a floating high tone attaching to the host syllable (Chen 2000, Yip 1980, 2002). A rule banning complex contour tones in Cantonese triggers the loss of a tonal segment. This is illustrated in (2).

Problem: The above account predicts that the derived rising tone has the same duration as the lexical rising tone. However, Chao (1947) and Benedict (1942) noticed that, in Cantonese, the derived rising tone has a slightly longer duration than the lexical rising tone. The same phenomenon is observed in Bobai and Xinyi, where the derived rising tones are longer than the lexical rising tone (Wang 1932, Yu & Shen 1987). Establishing a correspondence between the Mandarin diminutive suffix [-ɻ] and the Cantonese high rising *Pinjam*, Chao used ***mora*** to describe this additional length, suggesting that the Cantonese mora is a suffix taking the form of a high tone rather than sound segments. This conjecture, capable of explaining the additional length associated with the *Pinjam*, is contrary to current theories according to which tones, being suprasegmental objects, have no temporal basis of their own. How to solve this paradox?

Two possibilities: O'Melia (1939) and Whitaker (1956) had the intuition that the additional length of *Pinjam* was to compensate the loss of the elided diminutive suffix [˩˥in 25] in Bobai, a more conservative dialect compared to Cantonese. There are two possibilities as to the nature of this compensatory lengthening, i.e. tone lengthens because of vowel lengthening, and vowel lengthens because of tone lengthening. Since Goldsmith (1976), only syllabic constituents and/or melodic segments are capable of lengthening through their association to skeletal positions. Tones, being autosegments, do not have a temporal basis and thus cannot lengthen by themselves. Consequently, vowel lengthening seems to be the only answer to the question. However, as Kavitskaya (2002) and Morin (2007) noticed, the nature of *CVCV > CV:C results from the fact that the inherent phonetic vowel duration of the first vowel in CVCV, being in open syllables, is reinterpreted as phonologically relevant after a change in the conditioning environment (syllable structure). On the contrary, there is no long vowel pre-existing to the disappearance of the diminutive suffix in Yue dialects. In

(4), the noun [mat] “thing” is closed by a consonant, and the suffix [ɲin] begins with a consonant too. The vowel of the head noun cannot have a long allophone. This possibility is thus excluded.

The solution: We claim that there is ***tonal compensatory lengthening*** in Yue dialects. This phenomenon can be explained by assuming that tones are *intrinsically positional objects*, and, more specifically, that they make up a universal periodic skeleton HLHL (Carvalho 2002). The interaction between tones and temporal positions is proposed in (3), where the register is represented by the spreading of a tonal segment to an adjacent position. On this basis, we propose a formal representation to account for the mechanism of Pinjam, illustrated in (4). The tone of the diminutive suffix [ɲin 25] replacing that of the head noun, the second tonal segment of the rising contour, H, expands to fill the vacuum left by the elision of the neighboring syllable.

Conclusion: A conjecture based on the segmental compensatory lengthening will encounter one problem: if the additional tonal duration had to be explained by the compensatory lengthening of vowels, no change in length would be expected to occur in closed syllables. Now, the additional length is observed in both open and closed syllables in *Pinjam*. Consequently, it is tone that lengthens under syllable elision, not vowel. In other words, the vowel lengthens under the pressure of the tone, not the tone under the pressure of the vowel.

(1)

a.	Bobai				
	mat32	“thing”	→	man25	“little thing”
	hɒp4	“box”	→	hɒm25	“little box”
b.	Cantonese				
	$t^hɒŋ$21	“sugar”	→	$t^hɒŋ$35	“candy”
	nøy23	“female”	→	nøy35	“daughter, girl”
	ɒp3	“duck”	→	ɒp35	
	kɒt2 tsɒt2	“cockroach”	→	kɒt2 tsɒt 35	
	kɒp3	“pigeon”	→	kɒp35	

(2)

a. $t^hɒŋ$ “sugar” M L H

b. $t^hɒŋ$ M L H

c. $t^hɒŋ$ “candy” M H

(3)

a. falling contour tones

H L H L

x x x x

[Hl] [hL]

b. level tones

H L H L

x x x x

[H] [L]

c. rising contour tones

L H L H

x x x x

[lH] [Lh]

⇨ The capital letter indicates the register.

(4) a. mat32 + ŋin25 "thing" → b. man25: "little thing"

H L ← L H L H

x x + x x ⇨ x x + x x

C V C C V C C V C C V C

m a t ŋ i n m a t ŋ i n

⇨ the nasal feature left by the elided diminutive suffix [ŋin25] nasalizes the coda of the host syllable.

Selected references

Benedict, Paul K. (1942). *Cantonese Phonology*, ms.

Carvalho, J. Brandão de (2002). *De la syllabation en termes de contour CV*, Habilitation thesis, Ecole des Hautes Etudes en Sciences Sociales, Paris.

Chao, Yuan Ren (1947). *Cantonese Primer*. Mass: Havard.

Kavitskaya, Darya (2002). *Compensatory lengthening: phonetics, phonology, diachrony***.** New York ; London : Routledge.

Morin, Yves Charles (2007). *Sources et évolution des distinctions de durée vocalique en gallo-romain*. Paper presented at the conference GalRom07 - Diachronie du gallo-roman, Nice,15-17 January

O'Melia, Thomas (1939). *First Year Cantonese*. Hong Kong Maryknoll House, Hong Kong.

Whitaker, K. P. K. (1956) A study on the modified tones in spoken Cantonese. *Asia Major* 184-207.

Wang, Guosheng (1996). Hubei Daye hua de qingyi biandiao (Emotive tone sandhi in the dialect of Daye, Hubei). *Zhongguo Yuwen* 355-360