Distribution of Neutral Tone and Retroflex Lenition in Beijing Mandarin

Overview Stress in (Beijing) Mandarin, or the lack thereof, is a topic under much debate in the literature (Chao 1980, Duanmu 2007, Cheng 2011, a.o.). Retroflex lenition, an optional phenomenon occurred in fast speech, provides insight into prosodically weak positions in the language. Neutral-tone syllable, also known as toneless syllable, lacks tonal contours and pitch change phonetically as full-tone syllable in Mandarin (Chen 1984), so they have been traditionally analyzed as unstressed (Lin 2000, Zhang 2014, a.o.). My paper discusses that the neutral-tone syllables and prosodically weak positions predicted by retroflex lenition involve different levels of (un)stress, and that the distribution of neutral-tone syllables does not affect prosodic structures in the language. Detailed analysis of the interaction between neutral-tone syllables and retroflex lenition is constructed under the Harmonic Grammar framework (Legendre et al. 1990).

Data Neutral-tone syllables are mostly underlying and have unpredictable distribution, but full-tone syllables can surface with neutral tones in certain environments. A test to check if a surface neutral-tone syllable is underlying or derived is through Tone 3 Sandhi (TTS) (Chen 1984). TTS is a phenomenon where a contour tone (i.e., Tone 3 in Mandarin) turns into a rising tone (i.e., Tone 2) when preceding another contour tone, with an example given in (1).

(1) Tone 3 Sandhi: (214) → (35) / ___ (214)
/ɕjau214 ma214/ → [ɕjau35 ma214] ‘small horse’

A derived neutral-tone syllable with an underlying Tone 3 is able to trigger sandhi, although the surface environment is opaque, as shown in (2b). An underlying neutral tone is unable to trigger tone sandhi, as shown in (2a).

(2) The contrast between underlying and derived neutral tone
a. /tɕje214 tɕje/ → [tɕje214 tɕje] ‘sister’ (Underlying neutral tone, no Tone 3 sandhi)
b. /ɕjau214 tɕje(214)/ → [ɕjau35 tɕje] ‘Miss’ (Derived neutral tone, Tone 3 sandhi)

Underlying and derived neutral-tone syllables also behave differently with regards to retroflex lenition, which is a phenomenon where a retroflex obstruent /ʂ, t͡ʂ, t͡ʂʰ/ optionally changes into a sonorant in fast speech, as shown in (3).

(3) Retroflex lenition: /ʂ, t͡ʂ, t͡ʂʰ/ → [ɻ]
/ pʰai51 **t͡ʂʰu55** swo214 / → [pʰai51 **ɻu55** swo214] ‘police station’

Lenition is blocked when a phrase-medial rhotic syllable appears adjacent to an underlying neutral-tone syllable, shown in (4a). In contrast, when a phrase-medial rhotic syllable appears adjacent to a derived neutral-tone syllable, lenition occurs on the rhotic syllable, and the derived neutral tone restores to a full tone on the surface, shown in (4b).

(4) a. Retroflex lenition and underlying neutral tone (brackets mark morphosyntactic boundaries)

/[mai214 [**ʈʂʰəŋ35** tsʐ̩]]/ → [mai214 **ʈʂʰəŋ35** tsʐ̩]/ *[mai214 **ɻəŋ35** tsʐ̩] ‘buy orange’

b. Retroflex lenition and derived neutral tone

/[pu51 [**ʈʂʐ̩55** tau(51)]]/ → [pu51 **ɻʐ̩** tau51] ‘not know’

Question The difference between underlying and derived neutral tones regarding retroflex lenition raises two questions: (1) Does the prosodic structure change based on the distribution of neutral tones? (2)Why is retroflex lenition blocked adjacent to an underlying neutral tone?

Analysis I first argue that retroflex lenition occurs on a rhotic syllable on the weak branch of a binary trochee. Assuming prosodic structures are influenced by morphosyntax, the two examples in (4) have the same morphosyntactic structures and thus should have the same prosodic structures and trigger retroflex lenition in the same way, albeit against our observation. I argue that the prosodic structure does not change based on the distribution of any type of neutral-tone syllables. Rather, the language disfavors the sequence of toneless syllables and thus prohibits lenition that triggers tone loss occurring next to a neutral tone, as captured by the proposed constraint *ToneLapse in (5). Lenition can occur adjacent to a derived neutral-tone syllable because it has the option to restore to a full tone, whereas an underlying neutral-tone syllable cannot.

(5) ***ToneLapse:** Assign one violation for each occurrence of two adjacent syllables without two full tones.

cf. ***Lapse:** Every weak beat must be adjacent to a strong beat or the word edge.

(Elenbaas & Kager 1999: 282)

Conclusion My paper argues that the distribution of neutral-tone syllables does not affect prosodic structures. Underlying and derived neutral-tone syllables behave differently regarding retroflex lenition due to the difference in their availability to restore to a full tone. Underlying neutral-tone syllables are always lenition-triggering, regardless of their prosodic position. In this sense, lenition can either be triggered by being in a prosodically weak position, i.e., the weak branch of a binary trochee, or by having a neutral tone. Future work can be done to examine further and possibly unify these two triggers.

Additionally, the distribution of underlying neutral-tone syllables is unpredictable; however, the distribution of the derived neutral-tone syllable and lenition-triggering position is similar in nature. First, this argues against the traditional claim that the distribution of any type of neutral-tone syllable is unpredictable. Second, this suggests that there are different levels of prominence in Mandarin, one resulting from tone (i.e., full tone vs. neutral tone), and the other from prosody (e.g., strong vs. weak branch of a trochee).

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