Four-stage evolution of Jìn Chinese entering tones: from Lǔliáng to Bìngzhōu

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Abstract

This paper demonstrates the evolution of Jìn Chinese entering tones. The "flip-flop" phenomenon has been observed in Jìn entering tones. Both Lǔliáng and Bìngzhōu Jìn have two entering tones, namely, Yīnrù tone and Yángrù tone. The Bìngzhōu entering tones have a "Yīn-low vs. Yáng-high" contrast, which is opposite to the Lǔliáng "Yīn-high vs. Yáng-low" contrast. 34 native Lǔliáng and Bìngzhōu Jìn speakers' recordings have been acoustically and phonologically analyzed. This study reconstructs a four-stage path that shows how this "flip-flop" phenomenon, namely, the Lǔliáng "Yīn-high vs. Yáng-low" entering-tone contrast changed to the Bìngzhōu "Yīn-low vs. Yáng-high" contrast.

Keywords: Jìn Chinese, entering tones, flip-flop, tone evolution

Introduction

Jìn is a major variety of Chinese, which is spoken in Shānxī province and neighboring regions. Bìngzhōu and Lǔliáng are two main dialects of Jìn spoken in Shānxī and Shǎnxī provinces. These two dialects both have two entering tones, namely, Yīnrù tone and Yángrù tone (Shen 2006).

It is generally assumed that Yīn tone has a higher pitch than Yáng tone within the same Middle Chinese tone category. However, we find that the Bìngzhōu entering tones have a "Yīn-low vs. Yáng-high" contrast, which is opposite to the Lǔliáng "Yīn-high vs. Yáng-low" contrast. Wang (1967) first proposed the linguistic concept "flip-flop" to describe alternations of two tones, in which the high tones become low tones and the low tones become high tones in certain linguistic environments.

By analysing 34 native Lǔliáng and Bìngzhōu Jìn Chinese speakers' recordings, and demonstrating the pitch patterns of Yīnrù tone (T4a) and Yángrù tone (T4b), we identify four stages with regard to the development of the two entering tones. We argue that the contrast of Bìngzhōu entering tones has evolved from that of Lǔliáng.

Methodologies

The "multi-register and four-level" tonal model (Zhu 1999, 2005), the universal tonal inventory, and the evolutionary comparative method (Zhu 2014, 2018) are the main methodologies applied in this study.

34 native Lǔliáng and Bìngzhōu Jìn Chinese speakers' recordings have been acoustically and phonologically analyzed. The software Praat was used to reduce noise on some recordings, to annotate the recorded tokens for tonal measurements, to extract pitch values, and to draw up spectrograms, etc. The method in Zhu (2010) was adopted to measure the tone-bearing part of each token and to normalize the inter- and intra-speaker variations.

Data analyses

In this section, we demonstrate the evolution of Jìn entering tones, to reconstruct a path that shows how the Lǔliáng "Yīn-high vs. Yáng-low" entering-tone contrast changed to the Bìngzhōu "Yīn-low vs. Yáng-high" contrast. We think the "flip-flop" that happened in Jìn entering tones is a gradual phonetic change rather than a sudden reversal.

Stage one: high T4a vs. low-dipping T4b

The first stage is that T4a is a short high tone while T4b is a mid-short low-dipping tone. Five tonal systems belong to stage one as shown in Figure 1 and Table 1. All the five systems are Lǔliáng dialect.

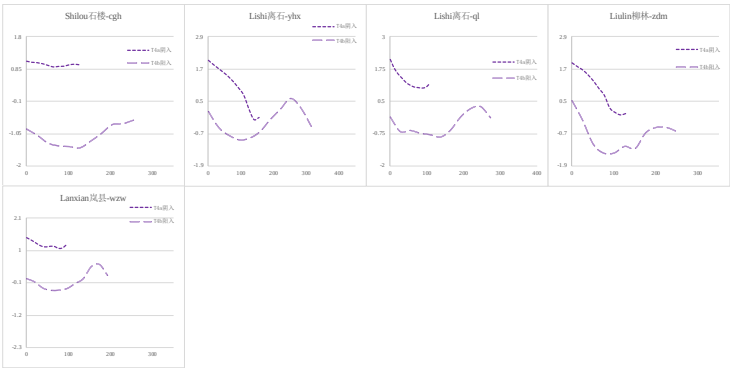


Figure 1. Stage one: high T4a vs. low-dipping T4b.

Table 1. Stage one: high T4a vs. low-dipping T4b.

Dialect sites	Yīnrù T4a	Yángrù T4b
Shílóu-cgh; Líshí-yhx; Líshí-ql; Liǔlín-zdm; Lánxiàn-wzw	{55/54/53} short, high-level	{323/303} mid-short, low-dipping

The pitch height, especially the height of tonal head of T4a, is as high as "5" on the scale of modal register under the framework of the multi-register-four-level model. T4b, as a low-dipping tone, is obviously lower than T4a.

Stage two: lowering T4a vs. low-dipping T4b econd-level

In the second stage, similar to the first stage, T4b is a low-dipping tone. However, T4a is gradually lowering its pitch height. Stage two has 10 systems, of which nine are Lǔliáng dialect, and one is Bìngzhōu dialect.

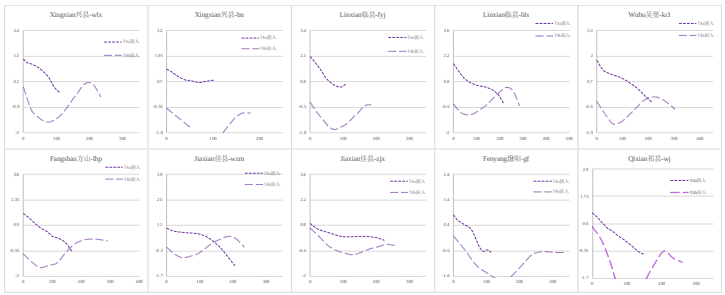


Figure 2. Stage two: lowering T4a vs. low-dipping T4b.

Stage three: lowering T4a vs. back-dipping T4b econd-level

In stage three, when T4a continues lowering, T4b starts to change as well. Stage three includes 11 systems, of which seven are from Lǔliáng and four are from Bìngzhōu.

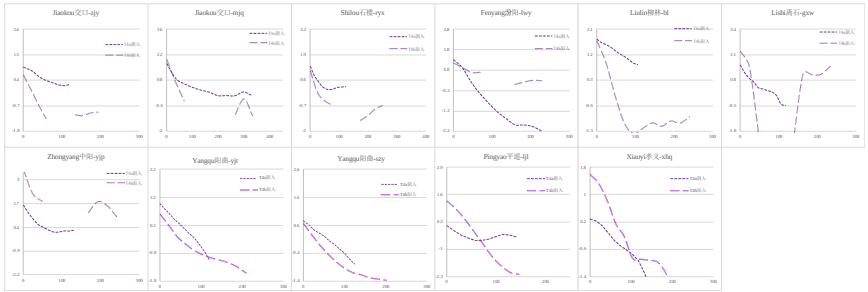
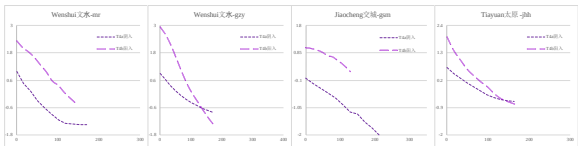


Figure 3. Stage three: lowering T4a vs. back-dipping T4b.

Stage four: low T4a vs. high T4b

Stage four is the final stage, in which T4a is lower than T4b. This stage includes eight tonal systems which are all from Bìngzhōu dialect.



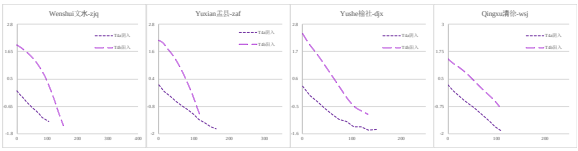


Figure 4. Stage four: low T4a vs. high T4b.

Conclusions

This study, by providing the illustrative examples of Lǔliáng and Bìngzhōu entering tones, exhibits a four-stage evolutionary path to explain how the Lǔliáng "Yīn-high vs. Yáng-low" contrast finally becomes the Bìngzhōu "Yīn-low vs. Yáng-high" contrast. The process of change is shown schematically in Figure 5.

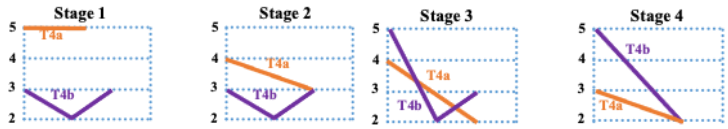


Figure 5. A schematic process of the "flip-flop" of Lǔliáng and Bìngzhōu entering tones.

At the first stage, the T4a is a short high tone while the T4b is a mid-short low tone with a dipping contour. In stage two, the T4a begins to lower its height and lengthen its duration, to gradually become a mid-tone with a falling contour. From stage three, as the T4a continues lowering, the T4b starts changing as well to avoid merging with each other. The T4b, originally a low-dipping tone, becomes a back-dipping tone by raising its tonal head. For the final stage, the T4a becomes a mid- or low-falling tone, and the T4b becomes a high-falling tone. By the end of these four stages, the two entering tones have finished the "flip-flop" process from Lǔliáng "Yīn-high vs. Yáng-low" to Bìngzhōu "Yīn-low vs. Yáng-high".

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