

Shared innovation and the variability: On the development of syllable-initial voiced obstruents and its interplay with tones in north-western Gan Chinese dialects

It is generally agreed that there were four tones in Middle Chinese, namely *Ping* ('level'), *Shang* ('rising'), *Qu* ('departing'), and *Ru* ('entering'), and at the same time, there was a three-way distinction of syllable-initial obstruents into voiced, voiceless unaspirated, and voiceless aspirated (Karlgren 1915-1926). The development of syllable-initial voiced obstruents and tonal split are two major sound changes from Middle Chinese to Modern Chinese and its dialects, which actually determines the profile of modern phonologies of Chinese dialects and contributed to the diversity of tones.

Ideally, tones split according to the voicing condition of initial consonants, namely high tones, in general, are associated with voiceless initials and low tones with voiced initials. Regarding the development of obstruents, only Wu dialects and the old varieties of Xiang dialects retain the three-way distinction. In the other dialects, voiced obstruents merged with voiceless ones in various ways. For instance, voiced stops and affricates became voiceless unaspirated in Min dialects, but voiceless aspirated in Hakka and Gan dialects, in general. And in Mandarin dialects, voiced stops and affricates became voiceless aspirated in level-toned syllables and voiceless unaspirated in non-level-toned syllables. The complex interplay between the development of voiced obstruents and tones thus contributed to a highly diversified phonology of consonants and tones in modern Chinese dialects.

This paper focuses on north-western Gan dialects. As in the other Gan dialects, voiced stops and affricates merged with their voiceless aspirated counterparts in north-western Gan dialects. But unlike in the other Gan dialects where voiced stops and affricates generally become voiceless aspirated, voiceless aspirated stops and affricates merged into their voiced counterparts on the contrary. This shared innovation of historical sound change made north-western Gan dialects a unique group in Chinese dialects. However, the phonetics of this shared innovation demonstrates great variability. The merged category of historical voiced and voiceless aspirated stops and affricates may realize as voiced unaspirated in Hukou, Duchang, Xingzi and Xiushui, and realize as voiced aspirated or further realize as voiceless but with voiced aspiration in Yongxiu and De'an, as reported in the literature of Chinese dialectology (e.g.: Liu ed., 1999: 268-271). Moreover, tonal split and its interplay with obstruent development added further complexity into the current phonetics and phonology of north-western Gan dialects. Something unique to this group is that the historical voiceless aspirated syllables, which are generally associated with high tones in other Chinese dialects, has become low-toned and either merged into the corresponding voiced syllables tonally or even contributed to a distinctive tonal category. In other words, not only historical voicing but also aspiration contributed to tonal split. More intriguingly, the influence of aspiration on tones is even retained on the *Ping*-tone split in Nanchang and Xinjian where the merged voiced obstruent category has further developed into voiceless aspirated. Based on the acoustic analysis of the obstruent production from 30 speakers from 10 dialects, this paper examines the phonetic variability and its interplay with tones in North-western Gan Chinese dialects. The fine-grained phonetic details clearly demonstrated that shared innovation shares great variability as well.