

## Abstract

This thesis provides a systematic acoustic study of citation tonal systems of Northern Gan by exploring key tonal dimensions of the register, pitch height, contour, and duration. The “multi-register and four-level” tonal model, which incorporates those dimensions, is employed to transcribe the tonal systems of seven investigated towns, aiming to elaborate the complicated tonal systems. The significant findings of the research are:

Both modal and non-modal phonation types are found in Xiushui Gan. These non-modal phonation types, including breathy, falsetto and fortis, facilitate the tonal contrast and affect the evolutionary pathways of the tonal systems. Breathily voice consistently shows up in *cìqīng* and *quánzhuó*-onset tones while falsetto or/and fortis variously appear(s) in *yīnqù* and *yīnrù* series. The t-test results suggest that there is a preference for acoustic cues in distinguishing modal voice from the breathily voice for different tonotypes.

Phonetic realizations of PB are classified into two types. Hangkou, Bailing, Quanfeng, Daqiao, and Zhajin are of type one, whose PB plosives are conditionally realized with a voicing lead. When PB realized with a voicing lag, they are not contrastive with PA in terms of aspiration. The other type consists of Xikou and Gangkou, with no PB plosives realized with a voicing lead, though the VOT distribution shows a tendency of contrast in aspiration between PA and PB, but not consistent. Neither synchronic prevoicing nor aspiration of the syllable onsets are crucial elements responsible for *cìqīng* tone splits. The merger of *cìqīng* and *quánzhuó* stops is supposed to be induced by breathily phonation caused by mistiming of aspiration and vocal folds vibration in *cìqīng* syllables.

Tonal splits induced by phonation mechanism are found in both lax and checked tones with *cìqīng* and *quánzhuó*-onset tones having a lower onset  $f_0$  than their modal counterparts, especially in high pitch tones. Tonal splits induced by coda are found in MC *rù* tones with historical \*-k coda *yángrù* losing their syllable-final consonants, lengthening, and eventually merging with lax tones.

In sum, the various phonation types and coda difference lead to exceedingly complex tonal systems with the tonal number varying from ten to sixteen in Xiushui Gan. The research also strongly implies that the tonal systems should be understood in a multi-dimension perspective, and the distinctive feature may consist of a bunch of acoustic cues. The phonological system should be treated as a dynamic instead of a static, and the intra- and inter-individual variants should not be eliminated as they may indicate possible directions of tonal evolution.