

Tone and voicing in Cao Bằng Tai: implications for tonal evolution and change

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This study examines the phonetic variation in the realization of lexical tones and onset consonants in the Tai dialect of Cao Bằng province (CBT), Vietnam [tyz]. As a rare specimen of a language in the late stages of a tone split, CBT is important for our general understanding of tonal diachrony, because it provides us a chance to study up close how phonetic realization and phonological patterning interact in phonologization.

At the time the binary register split, CBT had a four-way contrast between aspirated $*p^h$ -, unaspirated $*p$ -, modal $*b$ - and implosive $*ɓ$ - onsets, in addition to voiced and voiceless fricatives and sonorants ($*f$ - $*v$ - $*m$ - $*^hm$ -). Subsequently, tones following $*b$ -, $*m$ - and $*v$ - were lowered in pitch; the historically modally voiced stops $*b$ - became breathy-voiced $/b̤$ -, while implosive $*ɓ$ - became modal voiced $/b$ -; and the voicing contrast in sonorants was ostensibly lost ($*^hm$ - and $*m$ - \rightarrow $/m$ -). This resulted in a system where six tones are found in syllables headed by sonorants, while in the obstruent sub-system, only high-register tones (1, 3, 5) are found after $/b$ - p - p^h -/ and only low-register tones (2, 4, 6) are found after $/v$ -/ and $/b̤$ -/ (Hoàng Văn Ma 1997; Pittayaporn 2009).

The details of the process, however, remain murky. Previous work (Hoàng Văn Ma 1997; Pittayaporn & Kirby 2017) indicated that older CBT speakers may still realize $*b$ as breathy-voiced $[b̤]$, while younger speakers may produce a devoiced $[p̥]$, consistent with tonogenetic models which ascribe a central role to voice quality (Thurgood 2002). However, acoustic-phonetic and electroglottographic data from a more recent age- and gender-stratified sample of 19 speakers revealed a linguistically homogeneous speech community, in which $*b > /b̤$ - appears to have merged acoustically with $/p^h$ -. This means that tonal register is no longer predictable after $/p^h$ -, illustrating a further step in the evolution of how tone splits evolve over time.

In addition, we observed some unexpected differences in the pitch trajectories following different onset types. For syllables bearing high-register tones (1, 3, and 5), we found a marked tendency for raised f_0 following $/p^h$ -/ compared to $/b$ -/ and (in some cases) $/p$ -, but $/m$ -/ was found to pattern with $/p^h$ -/ in this respect. For syllables bearing low-register tones (2, 4, and 6), we observed a less marked tendency for raised f_0 following $/b̤$ -/ $>$ $[p^h]$ -/ and $/v$ -/ relative to $/m$ -. These findings suggest that the historically voiceless sonorants still retain at least some of the acoustic properties they presumably shared with voiceless plosives prior to conditioning the tone split. In other words, in an important sense there are still two kinds of sonorants in CBT, illustrating that the phonetic specification of tonal categories may be much richer than the apparent phonological patterns suggest.

These findings show that the timing of the interrelated processes of tonal register split and neutralization of laryngeal contrast may be more complex than previously assumed: while historical sonorant voicing may well have conditioned the initial split (L-Thongkum 1997), it does not appear that the sonorant voicing merger must necessarily be completed prior to the devoicing of originally voiced obstruents. Our study of CBT thus provides new insights into the internal complexities of the tonogenetic process, reminding us that the temporal ordering implied by stages in diachronic models cannot be taken too literally, and illustrating how careful analysis of synchronic acoustic-phonetic variability can contribute to our understanding of the diachrony of tone change.

References

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