The Development of Tone Sandhi in Western Hmongic: A New Hypothesis

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March 13, 2004

1 Introduction

The tone sandhi patterns in Western Hmongic languages have been widely discussed from the point of view of synchronic phonology (Downer 1967; Sprigg 1975; Ratliff 1992a), and these discussions have often assumed a certain degree of knowledge of the historical development of these alternations. Specifically, earlier investigators like Downer and Ratliff have pointed out that, especially in Hmong proper (the *Chuanqiandian* group) and A-Hmao (the *Diandongbei* group), alternations that look rather different from the point of view of synchronic phonetics are very similar when examined in terms of historical tone categories. Ratliff (1992a, 1992b), Downer (1967) and Niederer (1998:214, *passim*.) have all presented pictures of the development of these patterns that extend some distance back into the histories of these languages. The goal of the current paper is to extend these insights, supplemented with my own, into a specific proposal about the development of this system of alternations which will provide insight into some of the unusual patterns found in daughter languages.

The goal of this paper is not to speculate on the nature of the phonetic seeds for these alternations. In fact, throughout most of the paper, I maintain a view of the actual tones as abstract historical entities, totally devoid of phonological substance. Rather than talking about tones in terms of their phonetic realization or phonological features, I will discuss them as if they are vertices on graphs, labelled according to the historical categories which Chang Kun (1947, 1953, 1972) established very clearly for the Hmong-Mien family and which are accepted by the small community of scholars working in Hmong-Mien historical linguistics.

These graphs represent input/output mappings. Technically, they may be described as directed pseudo-graphs with an out-valence of one—each vertex is connected to exactly one outward-pointing edge, which represents the mapping between the source vertex (the input) and the destination vertex (the output). An edge may start and end at the same vertex, representing a mapping of that input to an identical output[1]. A vertex may have several incoming edges. Such configurations correspond to neutralizations, where multiple inputs are mapped to a single output. Each such graph represents a fragment of the grammar—the knowledge that the speaker must have to properly dispose of any of the possible inputs she may encounter in a specific (morphological and phonological) environment.

Here, we will be concerned primarily with a single environment (and thus, a single graph for each synchronic state). The historical tone sandhi patterns that can be reconstructed for the Western

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1. In my diagrams, such loops are not directly represented (for reasons of presentation). The can be assumed for vertices with no outward-directed edge.

branch of Hmongic are all triggered by a preceding syllable bearing a *ping* tone (A1 or A2) within a closed set of morphological and syntactic constructions (the most important of these being numeral-classifier constructions and compounds of various kinds, though *ping*-tone prefixes may also trigger the same alternations; see Ratliff 1992a:40-42). I will argue that, for Proto-Western-Hmongic, this graph is very simple—it has only one non-self mapping. However, incremental changes in the phonology of WHm, which can be reconstructed development by development, have produced synchronically unusual and complex phonological interactions like those in Mashan dialects (double chain shifts) and A-Hmao (chain shifts with "bounce-back"[1]).

2 The Tone System of Proto-Western Hmongic

Proto-Western Hmongic (PWHm) was like Proto-Hmong-Mien in having four tones, which we will call A, B, C, and D. These correspond to the *ping*, *shang*, *qu*, and *ru* tones of Chinese historical linguistics, both in that early Chinese loanwords into Hmong-Mien languages were systematically borrowed into the Hmong-Mien category matching their tone in Chinese, and in that they seem to have been subject to the same prosodic constraints (for example, the ordering of coordinate compounds in Hmong and Chinese can both be predicted based upon the same ordering of historical tone categories; see Ting 1975 and Mortensen 2003).

At the PWHm stage, these tones were already split (allophonically) into two series or "registers," based upon the voicing of the onset consonants. In some WHm dialects, such as Yejipo, this split has been lost (Li Yongsui 1987; Niederer 1998:109), but the evidence that it already existed (non-contrastively, but in a phonologically real sense) in PWHm is quite strong. Following a common convention, I will call the *"yin"* series that developed in syllables with voiceless onsets and pre-glottalized sonorants A1, B1, C1, and D1 and the "*yang*" series that developed in syllables with voiced, non-glottalized onsets A2, B2, C2, and D2.

At this stage, there appears to have been a single alternation (attesting that the tonology of the language already made reference to the registers, even though they were not yet contrastive): following A1 and A2, the tone A2 became a derived sandhi tone S that was probably similar in its

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1. For this term, and it's application to WAH, see Mortensen 2002.

phonetics to C2. This hypothesis contrasts with the proposal of Ratliff (1992a) that the original WHm sandhi rules all changed non-C tones into C-tones[1].
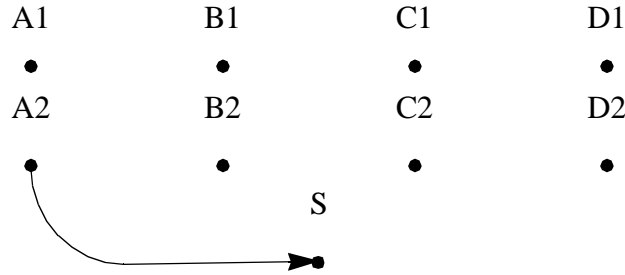
A1   B1   C1   D1

A2   B2   C2   D2

S

Figure 1: PWHm *ping*-driven tone sandhi.

From these very simple beginnings, the pattern was extended and modified through mergers and remappings. However, the reflex of this seminal rule maintained in all of the daughter languages discussed here except for A-Hmao.

3 Developments in Subgroups

3.1 Guiyang-Huishui

Based upon a shared innovation within their tonal systems, we should group two of Wang, Mao, Meng, and Zheng's subgroups, Guiyang and Huishui, together. They are clearly distinct groups, but they share at least two innovations that are not shared by other WHm languages. In both of these groups, C1 and D1 have merged, B2 has been remapped to S, and S has merged with C2 (Niederer 1998:121-136).
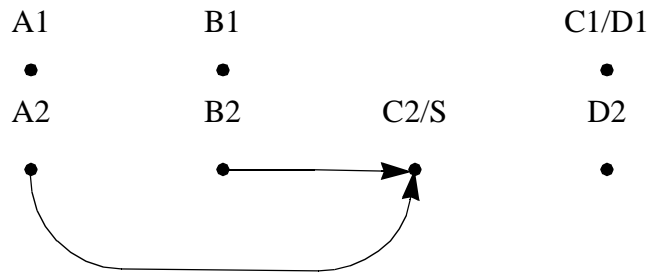
A1   B1   C1/D1

A2   B2   C2/S   D2

Figure 2: Proto-Guiyang-Huishui *ping*-driven tone sandhi.

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1. In fact, the reflexes of S most frequently merge with C2. Exceptions are the Mashan dialects, where S remains distinct, and the A-Hmao group, where S merges with B2.

3.1.1 Guiyang

The Guiyang group is distinguished from Huishui, however, by the merger of A2 and D2. This merger is attested in Baituo, Tieshi, and Zhongba but not Gezheng (Niederer:1998). This merger seems to be an unconditioned surface neutralization—the available evidence suggests that only words which historically had the tone A2 (and not those belonging to the historical D2 category) undergo sandhi in Guiyang languages (see Niederer 1998:124, 131).

In Tieshi, the environment for these alternations has become somewhat more general: in addition to tones A1 and A2, tones B1, B2, and C1 can trigger the historical tone sandhi alternations (Li 1993:31).

3.1.2 Huishui

There is very limited documentation for Huishui dialects aside from Jiading, which seems to preserve the tonology of Proto-Guiyang-Huishui intact (Niederer 1998:124).

3.2 Core Western Hmongic

The tonology of what I will call "Core Western Hmongic" (CWHm) is much more complex than that of the Guiyan-Huishui group. In this branch, I place the Mashan group and Far Western Hmongic. Once again, this grouping is based upon a set of shared innovations in the tonal phonology. Four new mappings were added at this stage: B2 was mapped to C2 and C2 was mapped to S in the ping sandhi context, and an interesting chain shift was added in the yin register: B1 was mapped to C1 and C1 was mapped to D1. Based upon the tonal reflexes of these tones in various languages belonging to this group, it seems that this was originally a kind of lowering chain..
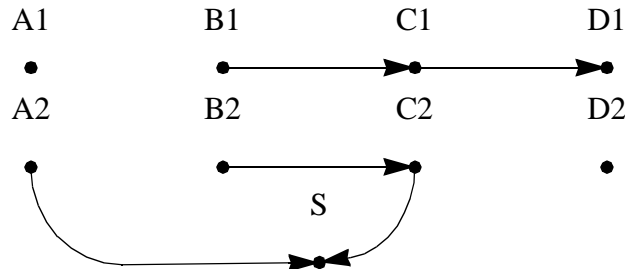

Figure 3: Proto-CWHm *ping*-driven tone sandhi.

3.2.1 Mashan

The hallmark of the Mashan dialects is a split that occurred in the yin register, creating 12 tones out of 8 (Niederer:1998). In these dialects, historical aspirated segments conditioned a secondary tonal split with the yin series. I will call this third tonal series A1', A2', A3', and A4'. The B1 → C1 → D1 chain is preserved in both yin series, meaning that these dialects have an additional

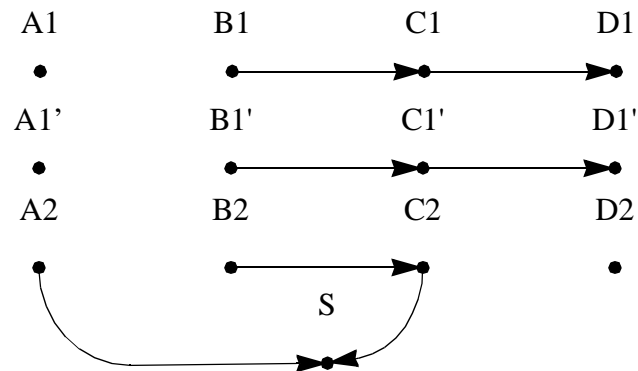chain of the form: B1' → C1' → D1'. The Mashan dialects are unique in preserving S as a distinct tone[1].

Figure 4: Proto-Mashan *ping*-driven tone sandhi.

3.2.1.1   *Jiaotuo-Shuijiping*

Two of these dialects, Jiaotuo and Shujiping share a merger (or rather, surface neutralization) of D1' and C2. In both Shuijiping and Jiaotuo, S is retained as a distinct sandhi tone. In Shuijiping, the inherited mappings are maintained. However, in Jiaotuo, B2 is remapped to S (Niederer 1998:143).

3.2.1.2   *Xinzhai*

Xinzhai does not feature the merger of D1' and C2. Instead, there are mergers of C1 with A1', C1' with D1', and D2 with S (Xian 1990).

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1. Niederer (1998) labels this tone as (6°), following Chinese scholars. The reason for this label appears to be the fact that certain words which would be expected to have the tone C2 or (6) on historical grounds, have this tone as their lexical tone instead.

3.2.2   Far Western Hmongic

Far Western Hmongic (FWHm) consists primarily of Hmong and A-Hmao. In FWHm, the principle tonal innovation is the remapping of D2 to S..
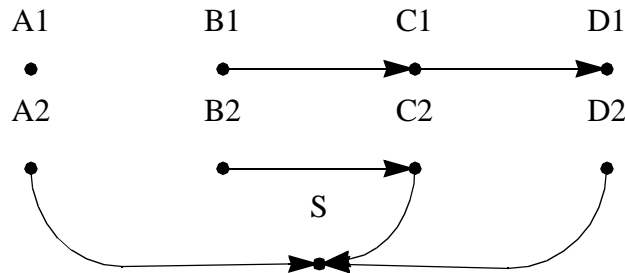

Figure 5: Proto-FWHm *ping*-driven tone sandhi.

3.2.2.1   *Diandongbei (A-Hmao)*

Some of the most synchronically interesting tone systems in Hmongic are those of A-Hmao. In this branch, A2 was remapped to A1. In Western A-Hmao (based upon indications from Johnson 1999) the sandhi tone S merged with B2. As a result, the tones that were still mapped to S (C2 and D2) were mapped to B2, which was, in turn, mapped to C2. The resulting configuration seems odd synchronically, but follows quite naturally from the diachronic principles assumed here..
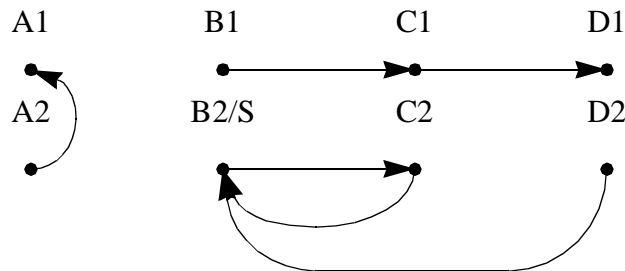

Figure 6: WAH *ping*-driven tone sandhi.

In Eastern A-Hmao, however, this system has been complicated by an interesting nominal/non-nominal split in the *yang* series (Wang and Wang:1986; Ratliff 1992b). Let us call the members of the additional tone series that developed due to this split B2', C2', and D2'. Just as B2 was mapped

to C2, B2' was mapped to C2'. However, there was no S'—the tones C2' and D2' were still mapped to S. As in Western A-Hmao, S subsequently merged with B2, thus resulting in a rather complicated neutralization with "bounce-back" (by which I mean, the "sink" in the neutralization is mapped back to one of the tones that is mapped to it).
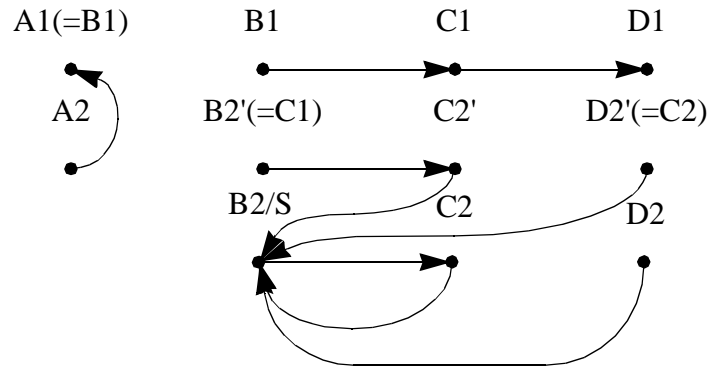
Figure 7: EAH *ping*-driven tone sandhi.

3.3 Chuanqiandian (Hmong proper)

The tone sandhi of Hmong Daw (or White Hmong) is by far the best studied aspect of synchronic Hmongic phonology, and it is quite representative of tone sandhi in Hmong dialects. The only significant tonal innovation over PFWHm that these dialects share is the merger of S with C2 (rather than B2, as in A-Hmao). The system is preserved most cleanly in dialects like Dananshan and Dashanjiao (Niederer 1998:87, 108). In Hmong Daw, some aspects of the system are slightly obscured by the surface neutralization of tones B2 and D1 (Ratliff 1992a:29-31). Likewise, in the closely related Mong Leng (Green/Blue Hmong) dialect, B2 and C2 have merged. Xuyong dialect displays a more dramatic innovation: Here C1 and C2 have been remapped to themselves. In essence, the two alternations associated with these tones have disappeared.
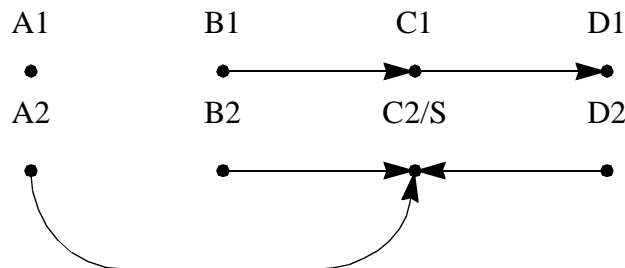
Figure 8: PWHm *ping*-driven tone sandhi.

4 Discussion and Conclusion

I have presented a proposal regarding the development of *ping*-triggered tone sandhi in Western Hmongic languages and dialects. The account has described a branching tree of synchronic states, related by incremental changes—remappings, splits, mergers and surface neutralizations. The chrononological ordering of the proposal, however, has made arguing for some of it's details awkward, since the evidence for each earlier state is to be found in the subsequent states. As such, it seems wise to highlight some of the evidence that supports this proposal.

4.1 The Sandhi Tone S

An important, and I believe novel, aspect of this argument is the assertion that tone sandhi in Hmong was originally not structure preserving—that the first sandhi rule cased A2 to be mapped to a tonal category that did not exist lexically. The interesting facts in CWHm tone sandhi are by-products of the mapping of additional tones to this derived category. The most significant evidence for this position comes from the Mashan dialects, where such a tone is, in fact, attested synchronically. But why should such a tone be reconstructed for Western Hmongic as a family if it is only directly attested in one branch? Because it affords us an elegant account of awkward facts in other branches of the family. Most significantly, it allows a coherent diachronic account of the tone circles found in A-Hmao dialects and of their relationship to the *yang*-tone neutralization found in Hmong proper. Finally, they allow us to relate tone sandhi in CWHm languages to the tone sandhi patterns in their distant Guiyang-Huishui relatives.

4.2 Subgrouping

The subgrouping that emerges from this understanding of tonal development in WHm is fundamentally consistent with subgroupings that have been made by earlier scholars, affirming the soundness of their work (see Wang 1985; Niederer 1998; Johnson 2002). It allows for additional refinements in the structure of these classifications, which may or more not be born out by additional comparative data. If the languages highlighted by Niederer (1998) may be taken as representative, the first major split in WHm was between the Guiyang-Huishui group, where tones C1

and D1 have merged, and CWHm languages, which share a number of tone sandhi rules not shared with the Guiyang-Huishui group (including the very salient B1 → C1 → D1 chain).
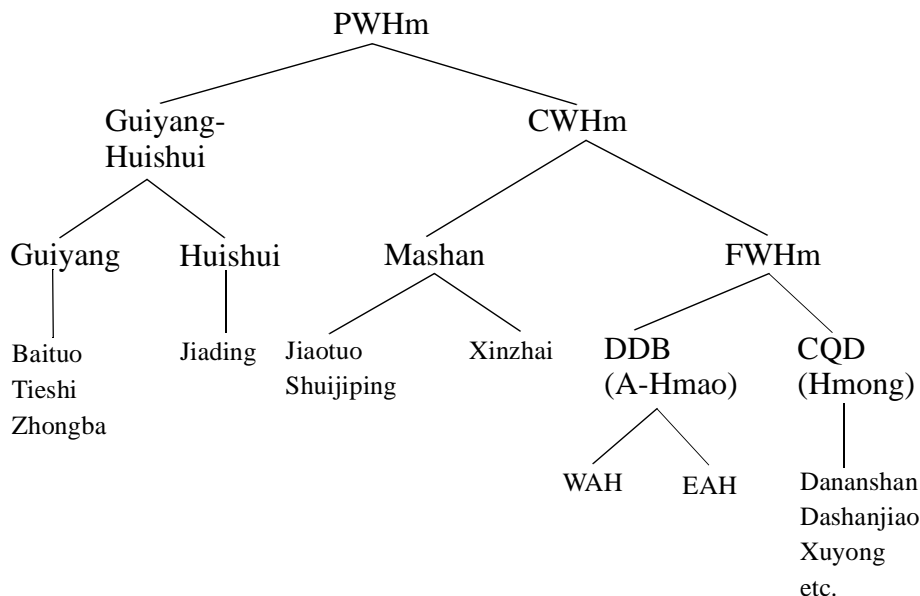
PWHm
├── Guiyang-Huishui
│   ├── Guiyang
│   │   └── Baituo, Tieshi, Zhongba
│   └── Huishui
│   └── Jiading
└── CWHm
    ├── Mashan
    │   ├── Jiaotuo, Shuijiping
    │   └── Xinzhai
    └── FWHm
        ├── DDB (A-Hmao)
        │   ├── WAH
        │   └── EAH
        └── CQD (Hmong)
            └── Dananshan, Dashanjiao, Xuyong, etc.

Figure 9: Subgrouping of WHm based upon shared tonal innovations.

4.3 Abstraction

This analysis rests upon assumptions about phonological alternations that is different from those implied by much of the phonological literature. Here, it is assumed that the phonological grammar simply captures the alternations and other patterns that are present in data to which a language learner is exposed, and at most, rationalizes these. The grammar only constrains possible alternations by being unable to learn (or perhaps, rationalize) some of them. In other words, the grammar does not deduce alternations from some general set of first principles, but instead perpetuates—to the extent possible—the patterns that history gives it. This point of view is consistent with the relative stability of the tone alternations in Western Hmong in contrast with the extreme variability of the phonetic (and therefore, phonological) substance of the tones. These facts about diachrony and tonal alternations are not unique to Hmong, and Chen (2000:42-45) makes a similar observation about the tone sandhi rings in Southern Min dialects of Chinese.

In my use of this model, I have made no attempt to explain why specific changes have occurred. This is a much thornier matter than showing that the innovations have happened. Presumably, though, such alternations could have two kinds of sources. The first source is related to phonetics—alternations are introduced through phonetic peturbations of tones in specific environments. Variability in tonal coarticulation and timing may lead to the systematic misperception of an alternation. Undoubtedly, the first tone sandhi alternations in WHm were of this type. However, it is interesting to note that these sandhi alternations seem to have become associated with a particular

set of morphological environments quite early in their history, and we should not predict that perceptually motivated alternations will be morphological specific. These alternations may have had another possible source: speakers may have mistakenly assumed that they constituted a marker of a certain set of morphological constructions. As a result, they may have introduced new alternations on the false assumption that the pattern was more general than it was historically. But while questions of the ontogeny of these tonal alternations is important to Western Hmongic tonology, it call hardly be addressed adequately here and should be left to future research.

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