



**HAL**  
open science

## On intransitive nasal prefixation in Sino-Tibetan languages

Laurent Sagart

► **To cite this version:**

Laurent Sagart. On intransitive nasal prefixation in Sino-Tibetan languages. Cahiers de linguistique - Asie Orientale, 2006, 35 (1), pp.57-70. halshs-00103359

**HAL Id: halshs-00103359**

**<https://shs.hal.science/halshs-00103359>**

Submitted on 4 Oct 2006

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

ON INTRANSITIVE NASAL PREFIXATION  
IN SINO-TIBETAN LANGUAGES<sup>1</sup>

L. Sagart  
CNRS  
Paris, France

**1. Intransitive m-**

Wolfenden (1929:30) identified an intransitive verb prefix *m-* in Written Tibetan, in words like *m-chi-ba* 'to appear, show oneself', *m-kho-ba* 'desirable, to be wished for', *m-gu-ba* 'to rejoice, be glad or content', *m-nar-ba* 'to suffer, to be tormented', *m-nam-pa* 'to smell, to stink', etc. He equated this prefix with other intransitive nasal prefixes in related languages: Boro *ma-*, *mi-* (p.111), Ao Naga *me-* (p. 128), Lhota *m-* (146), Mikir *iŋ-* (p. 155), Empeo *n-* (p. 172). A representative set is:

|                 |                                     |
|-----------------|-------------------------------------|
| Written Tibetan | <i>mnam-pa</i> 'to smell, to stink' |
| Boro            | <i>ma-nām</i> 'to smell' (intr.)    |
| Ao Naga         | <i>me-nem</i> 'to smell' (intr.)    |
| Mikir           | <i>iŋ-nim</i> 'to smell' (intr.)    |

Benedict (1972:117sq) extended the list of languages reflecting Wolfenden's *m-*, adding in particular Kachin and Nung examples, such as:

|        |                                  |
|--------|----------------------------------|
| Kachin | <i>mə-nam</i> 'to smell' (intr.) |
| Nung   | <i>phənam</i> 'to smell' (intr.) |

Benedict pointed out that while unprefixed forms of root \**nam* 'to smell' were variously transitive or intransitive, *m-* prefixed forms of the same root were as a rule

---

<sup>1</sup> This is a reworked version of a paper presented at the 9th International Himalayan Language Symposium, Manasagangotri, 9–12 December, 2003. I am very grateful to G. Jacques and to Boyd Michailovsky for invaluable advice on Written Tibetan and on Kiranti languages. They should not be held responsible for what I did with their advice, however.

intransitive. He regarded this m- as originating in an old 3rd person sing. pronoun, characterizing the prefix as 'durative, reflexive, intransitive' (Benedict 1972:117). He reconstructed a number of TB verb forms with m-, some of them transitive:

- \*m-nuy 'laugh'
- \*m-nam 'smell, stink'
- \*(m-)u:m 'hold in the mouth'
- \*m-sow 'arise, awake'
- \*(m-)a 'dumb, mute'
- \*(m-)dza 'love'
- \*(m-)kyen 'know'
- \*(m-)lyak 'lick'
- \*m-sow 'arise, awake'
- \*(m-)syil~(m-)syal 'wash, bathe'
- \*m-to 'high'
- \*m-tuk 'spit, vomit'
- \*m-twa 'spit, spittle'
- \*(m-)u 'while, howl, bark'

It seems that two distinct prefixes should be distinguished in this list of Benedict's reconstructions: an intransitive nasal, and another prefix (in 'hold in the mouth', 'lick', 'love', 'know' etc.). In Chinese these two prefixes exist side by side, as N- intransitive and m- controlled/volitional, see Sagart (1999:74sq, 82).

For Loloish, Matisoff (1970, 1972) reconstructed a stative prefix N-, which he linked to the Written Tibetan m- prefix. His examples are predominantly intransitive. Here are some Loloish pairs from Yi of Xide 喜德 (Dai Qingxia 1992:43), where N- is preserved in the form of prenasalization:

|                                                  |                                            |
|--------------------------------------------------|--------------------------------------------|
| <i>ti</i> <sub>55</sub> 'to suspend' (tr.)       | <i>ndi</i> <sub>55</sub> 'to be suspended' |
| <i>tu</i> <sub>55</sub> 'to kindle, set on fire' | <i>ndu</i> <sub>55</sub> 'to burn' (intr.) |
| <i>tchi</i> <sub>55</sub> 'to make fall'         | <i>ndzi</i> <sub>55</sub> 'to fall'        |
| <i>po</i> <sub>31</sub> 'to roll' (tr.)          | <i>mbo</i> <sub>33</sub> 'to roll' (intr.) |

Initial voicing in the intransitive members of these pairs is not due to the influence of the nasal prefix. Rather, with the first three pairs in the above list, the high tone indicates that the root initial is originally voiced. For instance *tu<sub>55</sub>* 'to kindle' goes back to Proto-Lolo-Burmese \*duk in Matisoff's reconstruction. The voiceless aspirated initial in 'to pull off' apparently reflects a Proto-Lolo-Burmese voiced stop with transitive or directive prefix s- or ?-. Yet prenasalization in all four intransitive members is outside the root, and clearly correlates with intransitive meaning. The form *ndu<sub>55</sub>* 'to burn' (intr.), for instance, goes back to Proto-Lolo-Burmese \*N-duk in Matisoff's reconstruction.

In Gyarong intransitives are derived from transitives through prenasalization and voicing of the initial. Here voicing of the initial is a secondary effect of prenasalization. Examples from Lin Xiangrong (1993: 193):

|                                 |                                 |
|---------------------------------|---------------------------------|
| <i>ka-tʃop</i> 'to set fire to' | <i>kə-ndʒop</i> 'to catch fire' |
| <i>kɐ-klɛk</i> 'to wipe off'    | <i>kə-ŋglɛk</i> 'to fall'       |
| <i>kɐ-phɛk</i> 'to split'       | <i>kə-mbɛk</i> 'to be rent'     |
| <i>kɐ-tɕhop</i> 'to break'      | <i>kə-ndʒop</i> 'to be broken'  |

Gyarong contrasts aspirated and unaspirated voiceless stops in root initial position. As can be seen from the examples above, intransitive prenasalization voices both kinds of initials.

## 2. Alternation of root initial

Independently from intransitive m- prefixation, Benedict (1972:124sq) reconstructed a second morphological process involving transitive and intransitive verbs, also at PTB level: "alternation of root initial", whereby intransitive verbs with voiced initials alternate with transitive verbs with the corresponding voiceless initials. Based on alternations in Tibetan, Kiranti and Bodo-Garo, he reconstructed such pairs as \*bar~\*par 'to burn' (intransitive, transitive), \*be~\*pe 'broken, break', \*bleŋ~\*pleŋ 'straight, straighten', \*bliŋ~\*pliŋ 'full, fill', etc. He made no claim as to which of the voiceless or voiced member of these alternations was basic, and which was derived.

Citing observations of Francke and Simon, he argued that this alternation occurs in Written Tibetan disguised as a tense distinction in verb paradigms, where the present and future forms, with voiced initials, occur in suppletion with the perfects and imperatives, with voiceless initials. Here are some examples of Written Tibetan alternating verb paradigms, from a larger list compiled by G. Jacques:

|                           | present                     | perfect                     | future        | imperative                      |
|---------------------------|-----------------------------|-----------------------------|---------------|---------------------------------|
| cast down                 | <i>'bebs</i>                | <i>phab</i>                 | <i>sbab</i>   | <i>phob</i>                     |
| give                      | <i>'bogs</i>                | <i>phog</i>                 | <i>dbog</i>   | <i>phog</i>                     |
| cause to come forth       | <i>'byin</i>                | <i>phyung</i>               | <i>dbyung</i> | <i>phyungs</i><br><i>phyung</i> |
| cut                       | <i>'gas</i>                 | <i>bkas</i>                 | <i>dgas</i>   | <i>khos</i>                     |
| hinder, lock up           | <i>'gegs</i>                | <i>bkag</i>                 | <i>dgag</i>   | <i>khogs</i><br><i>khog</i>     |
| load, entrust with a task | <i>'gel</i>                 | <i>bkal</i>                 | <i>dgal</i>   | <i>khol</i>                     |
| fill, soil, smear         | <i>'gengs</i>               | <i>bkang</i>                | <i>dgang</i>  | <i>khongs</i><br><i>nkhongs</i> |
| take away                 | <i>'gog</i>                 | <i>bkog</i>                 | <i>dgog</i>   | <i>khog</i>                     |
| conquer                   | <i>'joms</i>                | <i>bcom</i>                 | <i>gzhom</i>  | <i>choms</i>                    |
| put in                    | <i>'jug</i>                 | <i>bcugs</i><br><i>bcug</i> | <i>gzhug</i>  | <i>chug</i>                     |
| shudder, shrink           | <i>'jums</i><br><i>'jum</i> | <i>bcum</i>                 | <i>gzhum</i>  | <i>chum</i>                     |

The presents and futures of these transitive verbs appear to be based on voiced-initial intransitive forms, which in some cases exist independently. Thus, for the first two verbs we have *gang* 'to be full', *gas* (also *'gas*) 'to be cut'. The integration of originally intransitive verb forms as transitive presents and futures in incomplete verb paradigms is apparently a simple case of transitive use of intransitives ("walk the dog").

In other cases intransitive verb forms with voiced initials exist side by side with non-alternating transitive verb paradigms with voiceless root initials:

|                    |             |              |             |             |
|--------------------|-------------|--------------|-------------|-------------|
| to collect, gather | <i>'thu</i> | <i>btus</i>  | <i>btu</i>  | <i>thus</i> |
| to wipe off        | <i>sub</i>  | <i>bsubs</i> | <i>bsub</i> | <i>subs</i> |

Next to these transitive verb paradigms we have isolated intransitives with voiced initials: *'du* 'to get together, gather' and *zub* 'to be wiped off, disappear'. In these examples, the old voiceless-transitive vs. voiced-intransitive contrast can be observed without the interference of the tense distinctions. Note that if *zub* 'to be wiped off' is from an earlier *m-sub*, the m- prefix has not turned the fricative initial into an affricate, as one might have expected.

Recently LaPolla (2002) has maintained that the two processes of m- prefixation and alternation of root initial existed side by side in PTB.

### 3. Intransitive morphology in Chinese

Ostensibly Middle Chinese (c. 500 CE) has "alternation of root initial" as defined by Benedict. Lists of minimal pairs can be found in Downer (1959:263), Chou Fa-kao (1962), Zhou Zumo (1966:116-118), Pulleyblank (1973:114), and Mei Tsu-lin (1988:175). Here is a composite list of examples, in Baxter's Middle Chinese notation (Baxter 1992):

|                                               |                                              |
|-----------------------------------------------|----------------------------------------------|
| 別 pjet (III) 'to separate, distinguish'       | 別 bjet (III) 'to take leave'                 |
| 敗 paejH 'to defeat'                           | 敗 baejH 'to be defeated'                     |
| 斷 twanH 'to cut, sever'                       | 斷 dwanH 'broken off, cut off from; to cease' |
| 折 tsyet 'to break, to bend' (trans.)          | 折 dzyet 'to bend' (intrans.)                 |
| 屬 tsyuwk 'to assemble'                        | 屬 dzyuwk 'to be connected with'              |
| 箸 trjak 'to put something in a certain place' | 箸 drjak 'to occupy a fixed position'         |
| 檢 kjemX (III) 'to restrain'                   | 儉 gjem (III) 'poor, in dire straits'         |
| 張 trjang 'to stretch'                         | 長 drjang 'long'                              |
| 增 tsong 'to add, to double'                   | 層 dzong 'in two stories, double'             |

Another set of transitive verbs in k- alternates with intransitives in h- (equivalent to [ɣ] in Baxter's notation); this sound is the regular Middle Chinese reflex of Old Chinese \*g- (Old Chinese may have been spoken around the middle of the first millennium BCE) before sounds other than Middle Chinese medial -j-, so that "alternation of root initial" obtains there too. Examples:

|                                   |                                    |
|-----------------------------------|------------------------------------|
| 壞 kweajH 'to destroy, ruin'       | 壞 hweajH 'to be ruined'            |
| 見 kenH 'to see'                   | 現 henH 'to appear'                 |
| 會 kwajH 'to assemble (trans.)'    | 會 hwajH 'to assemble' (intrans.)   |
| 解 keaiX 'to separate, untie'      | 解 heaiX 'loosened'                 |
| 降 kaewngH 'to go down, send down' | 降 haewngH 'to lie down, submit to' |
| 繫 kejH 'to attach'                | 繫 hejH 'be attached to'            |
| 夾 keap 'to press between'         | 狹 heap 'narrow'                    |

While all these Middle Chinese pairs are a perfect match, formally and functionally, for Benedict's "alternation of root initial", it now appears (Sagart 1994, Baxter and Sagart 1998, Sagart 1999, Sagart 2003) that the roots in these pairs are originally voiceless, with voicing in the intransitive members being due to the effect of an OC nasal prefix N- (prenasalisation), lost in Middle Chinese. In this, Chinese is similar to Gyarong. The primary evidence for Chinese intransitive N- comes from early Chinese loans to Hmong-Mien (a.k.a. Miao-Yao), where N- is preserved:

| Chinese transitive                                                         | Chinese intransitive with N-                                          | Hmong-Mien prenasalized                                                                |
|----------------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 中 trjuwngH < * <sup>b</sup> trung-s 'to hit the centre'                    | 仲 drjuwngH < * <sup>b</sup> N-trung-s 'to be in the middle; 2nd of 3' | P-Mienic * <sup>n</sup> tung <sub>C</sub> ~ * <sup>n</sup> ɲtung <sub>C</sub> 'middle' |
| 光 kwang < * <sup>a</sup> kwang 'to glorify, make brilliant' (Shang inscr.) | 皇, 煌 hwang < * <sup>a</sup> N-kwang 'bright, brilliant'               | PHm-M * <sup>n</sup> qwjAng <sub>A</sub> 'bright, brilliant'                           |
| 夾 keap < * <sup>a</sup> krep 'to press between'                            | 狹 heap < * <sup>a</sup> N-krep 'narrow'                               | PHm-M * <sup>n</sup> NGe:p 'narrow'                                                    |
| 括 kwaet < * <sup>a</sup> krut 'to scrape, polish'                          | 滑 hwheat < * <sup>a</sup> N-krut 'smooth, slippery'                   | PHm-M * <sup>n</sup> NGwɔ:t 'slippery, polished'                                       |
| 張 trjang < * <sup>b</sup> trang 'to stretch,                               | 長 drjang < * <sup>b</sup> N-trang 'long,                              | P-Hm-M * <sup>n</sup> dA:ŋ A                                                           |

extend'

tall'

'long'

Note: Proto-Hmong-Mien (PHm-M) forms are from Wang and Mao (1995); the Mienic reconstruction for 'middle' is my own, based on Mien *dong<sub>5</sub>*, Biao Min *dong<sub>5</sub>*.

Reflection of Chinese type-A velars as uvulars is regular in early loans to Hmong-Mien. The fourth Chinese pair is not minimal. Note that intransitive N- prefixation does not occur in native Hmong-Mien words (Sagart 1994).

Chinese is like Gyarong: intransitive m- has assimilated its point of articulation on that of a following stop, thereby changing to N- (prenasalization); N- has then voiced a following voiceless unaspirated stop, giving rise to what may be called intransitive voicing. In the above examples, the words for 'middle' and 'bright, brilliant' were borrowed early, before the nasal prefix had voiced the following stop in Chinese: the Hmong-Mien initial is voiceless prenasalized. The words for 'narrow', 'slippery, polished' and 'long' were borrowed after the voiceless stop had been voiced by the nasal prefix in Chinese: the words in Hmong-Mien have voiced prenasalized initials.

Differences with Gyarong are that (1) Middle Chinese has lost prenasalization completely, and (2) in Chinese N- does not voice a following aspirated initial (Sagart 2003): Old Chinese \*Ch- and \*NCh- (where 'Ch' = any voiceless aspirated stop) merge in Middle Chinese as Ch-, so that any OC transitive~intransitive pairs with Ch-type initials are undetectable by Middle Chinese; but note that such pairs are still distinguished in loans to Hmong-Mien: thus, if it was not for the evidence of the Mien pair *khai<sub>1</sub>* (< Proto-Mienic \*kh-) 'to open' (transitive) vs. *gai<sub>1</sub>* (< Proto-Mienic \*ŋkh-) 'to open' (intransitive), we would not be able to recover the Late Old Chinese pair 開 \*akhij 'to open' (transitive) vs. 開 \*aN-khij 'to open' (intransitive), as Middle Chinese has *khøj* for both meanings.

Based on the widespread occurrence of intransitive m- in ST languages, I argued that Proto-Sino-Tibetan had an m- prefix which served to derive intransitives out of transitives (Sagart 2003).

#### 4. Is root alternation a special case of intransitive nasal prefixation?



The Chinese facts blur the distinction between "alternation of root initial" and intransitive m- prefixation; they suggest that in Kiranti, Bodo-Garo and Tibetan as in Chinese, "alternation of root initial" can be treated as a special case of intransitive nasal prefixation, where the intransitive nasal prefix has disappeared after having voiced the root initial: specifically in these languages, the voiced-intransitive members of each pair would go back to voiceless transitive roots with the intransitive m- prefix: for instance the pair reconstructed by Benedict as \*bar 'to burn' (intr.) ~\*par 'to burn' (tr.) would be reinterpreted as \*m-par 'to burn' (intr.) ~ \*par 'to burn' (tr.), with intransitive m- being needed independently to account for intransitive verbs like \*m-nam 'to propagate smell, stink'.<sup>2</sup> This would simplify the picture of ST intransitive morphology considerably.

A theory which treats "alternation of root initial" as a special case of intransitive nasal prefixation predicts that, at least preceding voiceless stops, a ST language has intransitive nasal prefixation if it retains nasal prefixes/phonetic prenasalization, and that it has root alternation otherwise (a third possible outcome is that the nasal prefix falls without voicing a following stop, of course, in which case one has neither one nor the other). This prediction fares well with Burmese-Lolo and with Gyarong: that Burmese-Lolo shows no trace of root alternation, as observed by Matisoff (see Benedict 1972: 125, note 342), is no more an oddity of Burmese-Lolo but a consequence of the fact that proto-Burmese-Lolo had prenasalized initials. The same goes with Gyarong.

A problem is Written Tibetan, which has both alternation of root initial, and intransitive nasal prefixation *preceding voiceless stops*: a clear example of intransitive m- prefixation is seen in the pair *'kho-ba* 'to wish, to want' vs. *m-kho-ba* 'desirable, to be wished for' (LaPolla 2002 after Wolfenden); this is in clear contrast to root alternation, as in the pairs listed above in paragraph 2.

There are a few more intransitive forms with m- prefix and voiceless stop initials in Written Tibetan:

---

<sup>2</sup> Of course, some pairs of voiceless transitive vs. voiced intransitive verbs can still be explained in terms of the transitive s- prefix devoicing the voiced initials of some intransitive verb roots.

*m-khrang-ba* 'hard, solid, compact'

*m-khregs-pa* 'hard, firm'

*m-thun-pa* 'to be in agreement or harmony'

*m-tho-ba* 'to be high'

These forms are unpaired. Some of them have voiced-initials cognates, or cognates with m- outside of Written Tibetan: corresponding to Tibetan *m-khrang-ba* 'hard, solid, compact', Matisoff (2003:75) reconstructs TB \*grang~krang 'strong/firm/tight/distended', with the voiced alternant based on Lushai; and he lists Jingpo *məthō* 'high, pinnacle' opposite Tibetan *m-tho-ba* 'to be high' (204).

There are also examples with voiceless affricate initials:

*m-ched-pa* 'to gain ground spontaneously'

*m-chi-ba* 'to appear, show oneself'

*m-chis-pa* 'to be, to exist'

*m-chong-ba* 'to jump, throw or cast oneself'

*m-tsher-pa* 'to feel sorrow, grief, anxiety'

WT affricates preceded by m- may reflect earlier affricates, or earlier fricatives. Contrast these examples with the pair *sub* 'wipe off' vs. *zub* 'be wiped off' given earlier, where whatever caused the initial of the intransitive form to become voiced did not result in it becoming affricated. At first sight this argues against alternation of root initial being due to m-; but it is possible that the same condition which caused m- prefixation to evolve to intransitive voicing also resulted in m- not affricating a following fricative.

With voiced stops and nasal initials there is no contrast, as one might expect: only forms marked for intransitivity by prefixed m- occur. Thus under a theory that aims at unifying intransitive m- prefixation and alternation of root initial, one may simply assume that m- was preserved before voiced sounds:

*m-dza-ba* 'to be in agreement or accord, to love'

*m-gu-ba* 'to rejoice, be glad'

*m-nal-ba* 'to sleep'

*m-nam-ba* 'to smell, stink'

*m-nar-ba* 'to suffer, be tormented'

It seems peculiar that

in a language where a voicing contrast is central to the consonant system, any parallel usage of the voicing contrast to signal a morphological distinction is probably of secondary origin, the side-effect of an older segmental distinction, presumably in the shape of a voiced prefix, as we see in Chinese and in Gyarong. And since ST already had one such intransitive prefix: \*m-, it seems unlikely that there should be a second one: it is difficult to conceive of ST as having had both intransitive m-prefixation and alternation of root initial. Indeed, we discern in the ST languages the broad outlines of a situation of complementary distribution between intransitive voicing and intransitive nasal prefixation: this makes treating alternation of root initial as a special case of intransitive m- prefixation particularly attractive.

If alternation of root initial in WT, Kiranti and Bodo-Garo is indeed a special case of intransitive m- prefixation, the mechanism behind the contrast in WT verb roots between m-prefixed intransitives with voiceless root initials and intransitives with secondarily voiced stop initials still eludes us. One possibility is that interaction of intransitive m- with a now-lost affix or several lost affixes is behind these divergent developments. The solution to that problem lies ahead. This paper is written in the hope that WT specialists will work towards a solution to this interesting historical problem.

Comments: laurent.sagart@gmail.fr

## References

Baxter, W. H. III (1992) *A Handbook of Old Chinese phonology*. Trends in Linguistics Studies and Monographs 64. Berlin: Mouton de Gruyter.

- Baxter, W. H. III and L. Sagart (1998) Word formation in Old Chinese. In Jerome L. Packard (ed.) *New Approaches to Chinese Word Formation: Morphology, phonology and the lexicon in modern and ancient Chinese*, 35-76. Berlin: Mouton de Gruyter.
- Benedict, P.K. (1972) *Sino-Tibetan: a Conspectus*. Cambridge: University Printing House.
- Chou Fa-kao (1962) *Zhongguo Gudai Yufa, Gouci bian*. Taipei: Academia Sinica.
- Dai, Qingxia (1992) Yi-Mian yu biguan shengmu de lai yuan ji fazhan. *Minzu Yuwen* 1992, 1: 42-48.
- Downer, G. (1959) Derivation by tone-change in Classical Chinese. *Bull. of the School of African and Oriental Studies* 22, 258-90.
- LaPolla, R. (2002) Overview of Sino-Tibetan morphosyntax. In G. Thurgood, R. LaPolla (eds) *The Sino-Tibetan Languages*. London: Routledge.
- Lin Xiangrong (1993) *Jiarong yu yanjiu* [researches on the Gyarong language]. Chengdu: Sichuan Minzu Chubanshe.
- Matisoff, James A. (1970) Glottal dissimilation and the Lahu high-rising tone: a tonogenetic case study. *JAOS*, 90, 1: 13-44.
- \_\_\_ (1972) *The Loloish tonal split revisited*. Occasional papers of the Wolfenden Society.
- \_\_\_ (2003) *Handbook of Tibeto-Burman*. University of California Press.
- Mei Tsu-lin (1988) Neibu nigou Hanyu san li [three examples of internal reconstruction in Chinese]. *Zhongguo Yuwen* 1988, 3, 169-81.
- Pulleyblank, E. (1973) Some new hypotheses concerning word families in Chinese. *Journal of Chinese Linguistics* 1, 1:111-25.
- Sagart, L. (1994) "Old Chinese and Proto-Austronesian evidence for Sino-Austronesian". *Oceanic Linguistics* 33 (2): 271-308.
- \_\_\_ (1999). *The Roots of Old Chinese*. Current Issues in Linguistic Theory, 184. Amsterdam: John Benjamins.
- \_\_\_ (2003) Sources of Middle Chinese manner types: Old Chinese prenasalized initials in Hmong-Mien and Sino-Tibetan perspective. *Language and Linguistics*, 4.4:757-768.
- Wang Fushi and Mao Zongwu (1995) *Miao-yao yu guyin gouni* [a reconstruction of the sound system of Proto-Miao-Yao]. Beijing: Zhongguo Shehui Kexue.
- Wolfenden, S. (1929) *Outlines of Tibeto-Burman Linguistic Morphology*. London, Royal Asiatic Society.
- Zhou Zumo (1966) *Wen Xue Ji*. Beijing: Zhonghua Shuju (2. vols.).