

Review of *Shanggu hanyu xingtai yanjiu* by Jin Lixin 金理新, Hefei: Huangshan shushe 2006.<sup>1</sup>

In recent years, a growing body of literature has questioned the received idea that Old Chinese, like modern Chinese dialects, lacked morphology.

First, recent descriptions of languages belonging to subgroups such as Qiangic, Kiranti, or Kham<sup>2</sup> have shown that lack of morphology and isolating typology is not widespread within the Sino-Tibetan family; quite on the contrary, it is limited to a few branches (such as Lolo-Burmese, Karen, Bai and Tujia) which have suffered severe phonological attrition and lost most traces of older morphology.

Second, within the field of Chinese phonology itself, works such as Sagart (1999) and Pan (2000) have given a new impulse to the research on word families and morphological alternations, as well as a more rigorous framework of etymological studies.

The book under review, though deeply influenced by Sagart and Pan's works, is radically different from them both in its phonological reconstruction system and in his method of studying morphological alternations. Some of the new ideas proposed in this book have already been published in a series of articles in various Chinese linguistics journals (Jin 1998a, 1998b, 1999, 2000, 2001, 2002, 2004, 2005a,b,c), and it represents the culmination of more than a decade of work on Old Chinese phonology and Sino-Tibetan comparative linguistics.

### 1. *Phonological Reconstruction*

It is impossible to understand this book without having read the previous work of the author (Jin Lixin 2002), where his own system of reconstruction is described in detail. Jin's system, mostly based on Classical Tibetan comparative data and on word family alternations, is quite different from that of Li Fang-kuei (1971), of Wang Li (1982) or from the Baxter / Starostin / Zhengzhang « six vowel system »<sup>3</sup> familiar to most western linguists. The reader who does not have access to Jin (2002) may be at pains to understand the reconstructions given in Jin (2006). Therefore, this review would not be helpful without an account of the main differences between the « six-vowel system » and Jin Lixin's theory.

#### a. *vowel system*

Jin Lixin reconstructs a six vowel system for Old Chinese, but not in the same way as Baxter / Starostin / Zhengzhang. There are three major differences. First, the vowel corresponding to Baxter (1992)'s \*i in the traditional rhymes 之 \*i, 蒸 \*iŋ and 職 \*ik is reconstructed as \*e (Jin 2002 : 367). In rhymes with non-velar finals, though, Jin reconstructs \*u, as in 侵 \*um or 微 \*ur. He believes that these rhymes have the same main vowel as 宵 and 藥 (Baxter's \*aw/\*ew and \*awk/ewk), which he reconstructs as \*u and \*uŋ (see Jin 2002 : 381-7, 394).

Also, Baxter's \*e (in the traditional rhymes 支 \*e, 錫 \*ek and 耕 \*eŋ) is reconstructed as \*i (Jin 2002 : 411). According to Jin, the distinction between the rhyme 支 and the rhyme 脂 (Baxter's \*ij) is not one of main vowel (\*e against \*i) but lies in the fact that words belonging to 脂 had a final \*-r. The number of vocalic phonemes is the same in Jin's system as in Baxter's, but

<sup>1</sup> I wish to thank Aimée Lahaussois, Randy LaPolla, Jin Lixin and Laurent Sagart for their help on this review.

<sup>2</sup> It is impossible to give a list of recent monographs of languages belonging to these subgroups, but the reader may consult the articles in Thurgood and Lapolla (2003) and the reference therein.

<sup>3</sup> In this review, we shall use Baxter (1992) and Sagart (1999) to illustrate the Baxter (1992) / Starostin (1989) / Zhengzhang (2003) system. Middle Chinese is in Baxter (1992)'s transcription.

their distribution is markedly different. All other rhymes are reconstructed in a way that is very close to the six-vowel Baxter / Starostin / Zhengzhang system. The main differences between the 6 vowel system (illustrated here by Baxter 1992) and Jin's system can be summarized in this table:

yùnbù	Baxter	Jin
之	*i	*e
蒸	*iŋ	*eŋ
職	*ik	*eg
宵	*aw / *ew	*u
藥	*awk / *ewk	*uŋg
支	*e	*i
錫	*ek	*ig
耕	*eŋ	*iŋ
脂	*ij	*ir

Table 1: Old Chinese rhymes differently reconstructed differently in Baxter (1992) and in Jin (2002)

The reader is invited to read the argumentation presented in Jin (2002), as a comprehensive discussion on the system of rhymes would lie beyond the scope of the present review.

#### b. Consonantal system and Consonant Clusters

Jin Lixin's reconstruction of the consonantal system of Old Chinese departs in major ways from usual reconstruction frameworks.

One of the major problems with his approach is his reconstruction of Old Chinese laterals. After Pulleyblank (1962 :114-9, 1973) and Jaxontov 1965, most researchers have come to accept that there was an opposition between \*r and \*l in Old Chinese, the \*r changing into the initial 來 l-, while the laterals have a very complex evolution. In Baxter (1992: 196-9)'s reconstruction, for instance:

Old Chinese	Middle Chinese	Initial category
*l-	d-	定 ding
*lj-	y-	喻四 yu si
*lh-	th-	透 tou
*hlj-	sy-	書 shu

Table 2: Old Chinese laterals in Baxter (1992)'s reconstruction.

Jin Lixin, on the other hand, refuses to accept the idea that yù sì comes from a lateral, and he proposes instead that initial 來 l- comes from Old Chinese \*r with Third Division rhymes, and from \*l with First, Second and Fourth Division (Jin 2002: 61). Similarly, he reconstructs [stop+l] clusters in the Second Division (2002: 78, 99), and [stop+r] clusters in the Third Division (2002: 69, 71, 75, 171). Then, on the basis of comparative evidence with Classical Tibetan, he argues that the MC yù sì initial came from a \*fɪd- cluster instead (2002: 139, 142, 144). However, this hypothesis is highly problematic. Many of his Tibetan examples are not genuine cognates with Chinese, or are incorrectly analyzed. Therefore, his evidence is not sufficient to support his claims. Reviewing all his examples would go beyond the scope of this review, but let us cite a few problematic examples.

First, some of his comparisons use the secondary meaning of a Tibetan etymon. Chinese 餘 'I' (\*fida in his reconstruction) is compared to Tibetan *bdag* 'I' (2002: 140) whose original meaning is 'master' *bdag-po*: Its use as a first person pronoun is secondary and it should not be

compared to any other language.

Second, other comparisons are made with loanwords from other languages, which clearly do not belong to Sino-Tibetan inherited vocabulary. Among these is Chinese 牒 ‘official document’ (\*deb in Jin’s reconstruction) compared to Tibetan *deb* ‘book’ (2002 : 138). This Tibetan etymon is the abbreviation of *deb-ther* ‘book’, which in fact comes from Greek *διφθέρα* ‘skin’ through Persian.

Third, other comparisons are correct, but incorrectly analyzed. For instance, Chinese 葉 ‘leaf’ is related to Tibetan *vdab-ma* ‘leaf’ (2002: 142), but this is no proof that *yù sì* comes from \*fhd-. The preinitial v- in Classical Tibetan most certainly marks a prenasalization<sup>4</sup>. In proto-Tibetan \*Nl- clusters (where N stands for any nasal), the lateral was changed into its corresponding stop \*nl- → vd- [nd] (Jacques 2004b). Therefore, reconstructing a lateral in Chinese 葉 (\*<sup>b</sup>lap in Sagart 1999’s reconstruction) is not in contradiction with the comparative evidence.

Moreover, Jin ignores well-known cognates that prove the robust correspondence between Chinese *yù sì* and *dìng* initials with Tibetan laterals, such as Chinese 揚 \*<sup>b</sup>laŋ and Tibetan *lang-ba* ‘rise’.

His motivation for reconstructing a \*fi- preinitial in Chinese (as Pulleyblank 1973) clearly is the wrong assumption that Tibetan v- stood for \*fi in preinitial position, a controversial ideal. In order to account for contact between various initials in phonetic series that are believed to have lateral initials in mainstream Chinese Historical Phonological works, he reconstruct the following clusters (2002: 153, 2006:108-110, 124 fn.1):

Old Chinese (Jin Lixin)	Middle Chinese (Baxter)	Initial
*fith-	x-	曉 xiao
*fit-, *fik-, *sk-	‘-	影 ying
*sth-	sy-	書 shu
*sd-	zy-	船 chuan
*fhd-	y-	喻四 yu si

Table 3: Some consonant clusters reconstructed by Jin (2002: 153) to account for alternations observed in lateral series.

His reconstructions of other initials, though not without some problems, are not as controversial as this revision of the lateral series. Following an idea by Jaxontov, Jin proposes that Third Division syllables come in part from syllables with stop preinitials \*d- and \*g- (another part of Third Division syllables is for \*Cr- and \*Cj- clusters). Jin’s \*d- and \*g- are in complementary distribution (2002: 278), \*g- appearing before dentals (\*gt- → tsy 章 etc.), and \*d- before velars and labials (\*dk- → kj- 見三, \*dm- → mj- 微 etc.). This idea is inspired by the situation observed in Classical Tibetan (Li 1933: 135), but no Chinese-internal evidence is given to justify this reconstruction.

Instead of a series of labiovelars \*k<sup>w</sup>, \*k<sup>hw</sup> and \*g<sup>w</sup> as is found in all reconstruction systems based on Jaxontov’s six vowel theory, Jin reconstructs three uvular stops \*q, \*qh and \*G, whose MC reflexes are the same as those of the labiovelars in mainstream reconstruction systems.

Finally, like other Chinese scholars such as Pan (2000) and Zhengzhang (2003), Jin Lixin does not reconstruct dental affricates in Old Chinese. However, unlike the two aforementioned authors, he does not explain MC ts-, tsh- and dz- as developments of [s+stop] clusters (an idea

<sup>4</sup> On the value of v- in OT, see recent articles by Hill (2006) and Coblin (2002 没 2006).

originally conceived by Bodman 1969). Instead, he reconstructs [dental stop + j] clusters in Old Chinese that evolve into dental affricates: \*tj- → ts-, \*thj- → tsh- and \*dj- → dz-.

As there is no table summarizing all correspondences between OC clusters and MC initials in either of Jin Lixin's two books, it seemed useful to make one. *Table 4* presents the correspondences between OC [stop + j] clusters and [prefix + stop] clusters and MC. More complex clusters, such as [prefix + stop + j] are not included.

OC initial	no prefix / no -j-	-j-	*f̥-	*g-/*d-	*s-	*r-	*m-
*q	kw	kjwi	‘w	kjwi	‘jw	kjw	ngw
*qh	khw	khjwi	xw	khjwi	xjw	khjw	ngw
*G	hw	hjw	hw	gjwi	hjw	gjw	ngw
*k	k	kj	‘	kji	‘j	kj	ng
*kh	kh	khj	x	khji	xj	khj	ng
*g	h	y	h	gji	hj	gj	ng
*t	t	ts	‘	tsy	s	trj	n
*th	th	tsh	x	tsyh	sy	trhj	n
*d	d	dz	y	dzy	dzy	drj	n
*p	p	pj	pji	pji	sj	pj	m
*ph	ph	phj	phji	phji	xj	phj	m
*b	b	bj	bji	bji	hj	bj	m

*Table 4: OC clusters in Jin Lixin's reconstruction.*<sup>5</sup>

Though Jin Lixin's reconstruction of Old Chinese phonology is controversial, it is entirely consistent with Middle Chinese. While not all of his claims are likely to be accepted by the community, the majority of his ideas are entirely original and some of them might be worth considering. Moreover, Jin Lixin (2002)'s book is full of interesting new Chinese-Tibetan etymologies, many of which may eventually be shown to be correct.

## 2. Morphological Reconstruction

In Jin (2002)'s book, an important quantity of data had already been adduced in the reconstruction of many morphological elements, though this was not the main point of that book. In his 2006 book, Jin Lixin offers many more examples in the reconstructions of many prefixes and suffixes.

Given the size of the book, it will not be possible to discuss in detail all reconstructed affixes. Some of his prefixes (in particular \*s-, \*g and \*f̥-) would be not always be reconstructed as prefixes in other frameworks, and in some cases these are artifacts of his reconstruction system. Instead of reviewing each affix one by one, we will discuss grammatical categories that were not discussed in earlier works on OC morphology such as Mei (1988) or Sagart (1999).

Jin Lixin reconstructs affixes that derive transitive, causative and non-volitional verbs (自主動詞 in fact, unergative), but he also proposes the existence of two other categories: 'agentivity' and aspect.

### a. agentivity

Jin's concept of 'agentivity' (施事性) is linked to the opposition between 'agent verbs' (施事

<sup>5</sup> In this table, the reconstruction in the left column and top row are Jin's, while MC forms in the table are in Baxter (1992)'s transcription.

動詞) and ‘patient verbs’ (受事動詞). This opposition, though superficially similar to verbal valency, is in fact markedly different. The best way to explain Jin’s theory is to present one of his examples. The verb 見 has two MC readings *kenH* and *henH*, whose opposition is usually interpreted as a case of transitive ‘see’ vs. intransitive ‘appear, be visible’. On the basis of many textual examples, Jin argues that the opposition between the two readings of this verb is unrelated to valency, as the reading *henH* can appear as a transitive verb (Jin 2006: 71):

- (1) 衛侯            如    晉。    晉侯            強    見    孫林父            焉  
*hjwejH huw    nyo    tsinH    tsinH huw    gjang    henH    swon lim bjuX    hjan*  
 Prince of Wèi arrive Jin    Prince of Jin force see Sūnlínfù    3sg.

The Prince of Wei arrived to the State of Jin. The Prince of Jin forced him to see Sunlinfu (Zuozhuan, Cheng gong 14).

In example (1), though phonological glosses clearly indicate that 見 is to be read *henH*, it is obvious that the verb is transitive. In order to explain the nature of the opposition between *kenH* and *henH*, Jin argues that the participants of the sentence should be analyzed in terms of what he calls 主體 *zhǔtǐ* and 客體 *kètǐ*. Here is Jin (2006: 71)’s explanation of the opposition between the two readings: ‘When the *zhǔtǐ* is not the agent (作者), that is when the agent is the *kètǐ* or an external participant (i.e. non speech participant), then the verb 見 is read with a voiced initial h-’ – the reading with unvoiced initial k- being used when the *zhǔtǐ* is the agent.

This terminology seems to be an idiosyncrasy of the author, and it is not evident how it ought to be translated into mainstream linguistics terminology, since *zhǔtǐ* and *kètǐ* represent neither syntactic roles (patient / agent) nor syntactic functions (subject / object) nor discourse participants (topic / focus). An evaluation of Jin’s theory is made difficult by the absence of a clear definition of *zhǔtǐ* and *kètǐ* in the book. Nevertheless, his work should be praised for putting to light a huge quantity of very fine examples where the voicing of the initial cannot be explained in terms of a transitive / intransitive opposition.

#### *b. aspect*

Following an idea by Wu Anqi (1997), Jin Lixin proposes that some morphological alternations in OC mark aspectual oppositions: voiced/unvoiced initial consonant alternation (2006: 88-104), s- prefix (131-149), -s suffix (321-345) and -fi suffix (412-418).

His theory, if it could be proven, would have far-reaching consequences in the reconstruction of proto-Sino-Tibetan morphology. In particular, his ‘perfective aspect’ –s suffix is compared to the Tibetan –s ‘Past Tense’ suffix (2006: 323). However, the examples used to support this theory do not seem compelling enough to authorize such a bold idea.

The main difficulty with Jin’s idea lies in the fact for all of the pairs of verbs presented in his book, there is not a single example where an interpretation in term of aspectual opposition is needed. In all of his examples, an analysis in terms of valency is always possible.

In his section on voiced/unvoiced initial consonant alternations, he suggests that voicing marks perfective aspect. On page 95, he cites for instance the pair of readings of the character 別 *pjet* ‘separate, discriminate’ and *bjet* ‘leave, be separated’. He suggests that this pair cannot be analyzed as ‘causative’ vs. ‘non-causative’, since a ‘causative’ verb would have to be transitive and many examples are found of the reading *pjet* in intransitive contexts. He concludes that only an analysis in term of aspect is coherent with the data, the reading *bjet* being the perfective form of the verb.

There are two problems with this claim. First, if the opposition between these two readings

really was one of aspect as suggested by Jin, we would expect to find the reading *bjet* in transitive contexts, but no such example is presented in his work. Second, the voicing of the initial consonant found in such pairs (analyzable as the influence of a nasal prefix, see Sagart 1999: 74-8) usually derives a stative verb from a transitive one. This stative verb expresses a state which is the result of the action described by the corresponding transitive verb. Since a resultative state implies that the action is already completed, interpreting these forms as perfective would sometimes be possible in OC texts, but it cannot be inferred from that that marking perfective aspect is the primary function of the voiced/unvoiced initial alternation in these examples.

### 3. Conclusion.

Jin Lixin's book, by its wealth of examples and his original ideas, is an important contribution to the study of OC morphology. However, it would be dangerous to directly use his reconstructions in a comparative study on Sino-Tibetan morphology.

One of the major drawbacks in Jin's work is his relative lack of interest of Sino-Tibetan languages other than Chinese and Tibetan. Important conservative languages such as rGyalrong, Dulong and Jinghpo are barely cited, despite the fact that any reconstruction model for OC ought to draw insights from the languages that most clearly preserve old Sino-Tibetan morphology<sup>6</sup>. Tibetan verbal conjugation is often used to support his OC reconstruction, but it is clear that a considerable part of this conjugation is a Tibetan innovation that may not be reconstructible in common Tibetan (Bielmeier 2004), let alone in proto-Sino-Tibetan.

A final problem is that Jin Lixin describes several unrelated functions for nine of the twelve affixes and morphological processes discussed in his book, though in many cases these functions are semantically very close and the same pair of verbs is cited to illustrate more than one function. For instance, the pair of readings *heɿX* 'be loosened' and *keɿX* 'untie' for the character 解 is used as an example of both 'agentive' vs. 'non-agentive' verb pair (p.73) and of an 'imperfective' vs. 'perfective' verb pair (p. 94).

Despite these minor issues, Jin's book will certainly become a major reference work in studies on OC morphology, as it is the most extensive collection of verbs pairs ever published, and

<sup>6</sup> For instance, it would have been relevant to Jin's discussion to note that the OC voicing alternation might have several distinct origins: in an archaic member of the Sino-Tibetan family, Japhug rGyalrong, there are two major transitivity-decreasing devices that could be related to the voicing alternation in Old Chinese.

First, the voicing and prenasalization of the initial. It occurs in a closed class of verbs (for instance *prɿt* 'cut' → *mbrɿt* 'be cut'), where the transitive verb is changed into the corresponding unaccusative verb, without any agent (Jacques 2004: 411). Sagart (1999: 75) proposed that this prenasalisation was related to the OC voicing alternation, and concluded from this that OC voicing was caused by the influence of a lost nasal prefix.

Second, the *a-* prefix (proto-rGyalrong \*ŋa-). It makes an agentless passive out of a transitive verb (*prɿt* → *aprɿt* 'be cut by someone'), where a volitional agent is supposed to exist, but cannot be expressed in the sentence. Combined with reduplication, it can also be used to derive the reciprocal forms of verbs (*mtu* 'see' → *a-mtu-mtu* 'see each other', Jacques 2004: 432). This \*ŋa- prefix has clear cognates in Chin (Hartmann 2001) and Tangkhul (Mortensen 2003), and it is potentially very ancient within the Sino-Tibetan family. If a cognate nasal prefix \*ŋa had existed in OC, we would expect it to have been lost and have caused voicing of the initial, that is, making a pair of verbs with voiced and unvoiced initial (see Jacques and Chen 2007).

If both valency-decreasing devices were present in OC, there would be no way to distinguish between the two on the basis of MC readings, but a careful study based on textual examples as practiced by Jin Lixin could shed some light on this issue.

because textual examples taken from OC text are provided for each single verb pair discussed in the book.

### Bibliography.

- Baxter, William H. III. 1992. *A Handbook of old Chinese phonology*. Trends in Linguistics Studies and Monographs 64. Berlin: Mouton de Gruyter.
- Bielmeier, Roland. 2004. Shafer's proto-West Bodish hypothesis and the formation of the Tibetan verb paradigms, in Anju Saxena ed. *Himalayan Languages, Past and Present*. Berlin: Mouton de Gruyter.
- Bodman, Nicholas C. 1969. Tibetan sdu'd 'folds of a garment', the character 卒, and the \*st-hypothesis. *Bulletin of the Institute of History and Philology*, 39: 327-45.
- Coblin, Weldon S. 2002. On certain functions of 'a-chung in early Tibetan transcriptional texts. *Linguistics of the Tibeto-Burman Area*, 25.2: 169-84.
- Coblin, Weldon S. 2006. Two Notes on Táng-time Tibetan Transcriptions of Chinese. *Linguistics of the Tibeto-Burman Area*, 29.2: 133-36.
- Hartmann, Elga 2001. Prenasalization and preglottalization in Daai Chin, with parallel examples in Mro and Maru, *Linguistics of the Tibeto-Burman Area* 24.2:123-142.
- Hill, Nathan 2006. Once more on the letter v, *Linguistics of the Tibeto-Burman Area* 28.2:107-137.
- Jacques Guillaume 2004. *Phonologie et morphologie du japhug (rGyalrong)*, thèse de doctorat, Paris 7.
- Jacques Guillaume and Chen Zhen 2007. Chabaohua de bujiwu dongci ji xiangguan wenti. *Language and Linguistics*, 8.4:883-912.
- Jaxontov S.Je. 1965. *Древнекитайский язык*, Moscow: Nauka.
- Jin Lixin. 1998a. Han-Zangyu de mingci houzhui -m [The suffix -m in Sino-Tibetan], *Minzu yuwen* 1:43-48.
- Jin Lixin. 1998a. Han-Zangyu zhong liangge xingzhi butong de \*-g yunwei [Two distinct \*-g finals in Sino-Tibetan], *Minzu yuwen* 6:27-35.
- Jin Lixin. 1999. Gu Hanzi yu gu Hanyu de yinjie jieou [Old characters and the structure of the syllable in Old Chinese], *Yuyan yanjiu* 3:32-36.
- Jin Lixin. 2000. Lun xingtai zai queding Han-Zang tongyuanci zhong de zhongyao yiyi [The importance of morphology in determining Sino-Tibetan cognates], *Minzu yuwen* 3:41-49.
- Jin Lixin. 2001. Shanggu Hanyu de \*-l- zhongzhui [The \*-l- infix in Old Chinese], *Wenzhou shifan xueyuan xuebao* 5:18-25.
- Jin Lixin. 2002. *Shanggu hanyu yinxi* [The Phonological System of Old Chinese], Heifei: Huangshan shushe 2006.
- Jin Lixin. 2004. Han-Zangyu de shidongci houzhui \*-d [The \*-d causative suffix in Sino-Tibetan], *Minzu yuwen* 2:38-45.
- Jin Lixin. 2005a. Han-Zangyu de wanchengti houzhui \*-s [The \*-s perfective suffix in Sino-Tibetan], *Minzu yuwen* 2:1-6.
- Jin Lixin. 2005b Shanggu Hanyu \*-m qianzhui de yiyi [The meaning of the Old Chinese \*-m prefix], *Yuyan yanjiu* 1:73-77.
- Jin Lixin. 2005c. Shanggu Hanyu shengmu qingzhuo jiaoti he dongci de ti [The alternation of

- voiced and unvoiced initials in Old Chinese and verbal aspect], *Yuwen yanjiu* 4:27-31.
- Li Fang-kuei. 1993. Certain phonetic influences of the Tibetan prefixes upon the root initial, *Bulletin of the Institute of History and Philology*, 4: 135-157
- Li Fang-kuei. 1971. Shangguin yanjiu [Research on Old Chinese Phonology]. *Tsinghua journal of Chinese Studies*. IX:1-2.1-61.
- Mei Tsu-Lin. 1988. Neibu gouni Hanyu san li [Three examples of internal reconstruction in Chinese]. *Zhongguo yuwen* 3.169-81.
- Mortensen, David 2003. *Comparative Tangkhul*, ms.
- Pan Wuyun. 2000. *Hanyu lishi yinyunxue*, Shanghai: Shanghai jiaoyu chubanshe.
- Pulleyblank, Edwin G. 1962. The consonantal system of Old Chinese. *Asia Major* 9.58-144; 206-65.
- Pulleyblank, Edwin G. 1973. Some new hypotheses concerning word families in Chinese. *Journal of Chinese Linguistics* 1:1, 111-25.
- Sagart Laurent. 1999. *The Roots of Old Chinese*. Amsterdam: Benjamins.
- Starostin S.A. 1989. *Фонология древнекитайского языка*, Moscow: Nauka.
- Thurgood Graham and Randy Lapolla (ed) 2003. *The Sino-Tibetan Languages*, London: Routledge.
- Wang Li. 1982. *Tongyuan Zidian* [Dictionary of word families]. Beijing: Shangwu yinshuguan.
- Wu Anqi. 1997. Hanzangyu de shidong he wanchengti qianzhui de cancun yu tongyuan de dongci cigen, *Minzu yuwen* 6.
- Zhengzhang Shangfang. 2003. *Shangu yinxi [Old Chinese Phonology]*. Shanghai: Shanghai jiaoyu chubanshe.