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The morphologization of verb suffixes in Northern Chinese*

CHRISTINE LAMARRE

1. Introduction

In 1958, a short description of "Verbal inflection marking perfective aspect in the Shāngxiàn dialect" was published in the Chinese linguistic review *Zhōngguó Yǔwén* (Chinese Language). The Shāngxiàn 商縣 (now rebaptized Shāngzhōu 商州) dialect is a Northwest Mandarin dialect spoken near Xī'ān 西安 in Shaanxi. The term "verbal inflection" (in Chinese 内部屈折 *nèibù qūzhé*) went against the widely shared opinion that Chinese is an analytic language with no morphology. Until recent years, we had no idea of the exact nature of the phenomenon described by Zhang Chengcai in 1958. More than 50 years later, recent descriptions of similar phenomena in other northern dialects, as well as our own fieldwork, provide enough data for us to claim that in some areas of Northern China, verbs have developed what can be called "inflected forms".

The common opinion is that Chinese, as an isolating language, ignores the last stages of *morphologization*, which leads to grammatical formatives suffixed on, or even fused into the verb stem. This opinion was developed for instance by Wu Fuxiang, a leading specialist of Chinese diachronic syntax and grammaticalization (Wu: 2005a:25, our translation except for the quote from Traugott and Heine 1991):

> Why don't the evolution patterns of Chinese grammatical words or clitics follow the general grammaticalization cline sketched by Hopper and Traugott 1993? The reason is that typologically speaking Chinese is an analytic-isolating language, and that in such languages, "grammaticalization is unlikely to lead to the development of inflectional morphology" (Traugott and Heine, 1991:8). Therefore, the main reason why grammatical words or clitics undergo lexicalization but do not undergo morphologization lies in Chinese morphology's typological characteristics: Chinese is an analytic language that lacks inflectional morphology.

The data discussed here to illustrate the morphologization of verb suffixes contradict these views. On the other hand, such phenomena in northwestern Mandarin also raise the question of whether they may be triggered by language contact, i.e. contact between "typical" analytic varieties of Sinitic and one or several non-Sinitic languages spoken at the Northwestern margin of the Sinitic speaking world that are known for their developed morphology, be they Tibetic, Mongolic or Turcic. This paper aims to discuss these two issues.

Considering that there is up to now no common framework in Chinese dialectology to describe and analyze these verb forms, we will first give an outline of the various phenomena of morphologization of verbal suffixes known in Northern Chinese, including cases of partial or total coalescence of the suffix with the verb stem. In section 2, we provide a preliminary typology of these fusion phenomena, and a sketch of their geographical distribution. In section 3, we investigate the morphosyntactic function of what we call "inflected forms". We give in the discussion (section 4) a more nuanced appreciation of what previous studies call "typological constraints on grammaticalization" in Chinese, and a tentative answer to the following questions on Northwest Chinese: to what extent can we consider that we are dealing with a contact-triggered phenomenon? Does the distribution we observe point at language changes specific to Northwest Sinitic?

2. Inflected verb forms in Northern Sinitic: a first outline

2.1 Nominal suffixation and verbal suffixation

Since Chinese research on dialectology was reactivated in the 1980's, several studies have mentioned or described various types of suffix coalescence and syllabic fusion. However, no common framework is available to fieldworkers that would provide a list of the basic features to be identified, and a preliminary typology. This is especially true for phenomena related to verbal categories. More research has been conducted on the phenomena of syllabic fusion related to nominal morphology, for instance to diminutive or derivative suffix coalescence with nominal stems (see Li Rong 1978 on the Wēnlíng 溫嶺 dialect of Zhejiang, or Tsao 2006 on the grammaticalization cycle exhibited by diminutives). Actually, some of the morphophonemic mechanisms involved in suffix coalescence are very similar with those discussed here for verbal stems, and we found many cues in the typology proposed by Wang Futang (1999) and Wang Hongjun (2008/1999).

There are several reasons for the scarce number of works describing, analyzing and classifying the morphological and phonetic characteristics of coalesced verbal suffixes, and identifying the syntactic patterns where they occur. A proper description of coalesced verbal suffixes requires investigating full utterances, not only word lists, i.e. grammar, not only lexicon. On the other hand, a full training in dialectology is needed to account for tone sandhi patterns and various phonetic adaptation phenomena, which often differ according to the rime (which means investigation on the phonological system and the whole lexicon of the dialect, to grasp phonetic changes and sandhi rules). Eventually, one also needs to overcome the bias of character writing (one syllable = one character) and the widespread dogma that Chinese has no morphology.

In this section, we provide a preliminary typology based on direct observation conducted during the last 15 years in Hebei and Shaanxi, and on a survey of second-hand descriptions, completed when possible by discussion with fellow researchers working on northern Mandarin. Mainly based on the type of morphological modification undergone by the stem, it develops the typology proposed in Lamarre (2009) for goal markers.

2.2 Fusion of verb suffixes into the stem: types and distribution

This section describes the five types A-E we identified, and shows what we know about their geographical distribution. Standard Chinese verb suffixes usually exhibit a loss of phonetic substance (neutralisation of tone distinction, shorter syllables, vocalic reduction etc.). Types A-D display further phonetic erosion, including the loss of the phonetic segments that characterize the whole syllable (loss of syllabic onset, main vowel, and coda). In type C some syllable length remains, but we observe a drastic loss of phonetic autonomy, and a through adaptation to adjacent phonetic units. In the case of type A, B and D, we observe a loss of the whole syllable.

A: ○ [Rime alternation]. This pattern is mainly found in northern Henan, in Central plain dialects, and also in some Jin dialects spoken in neighboring areas (not in the core Jin-speaking area).

B: △ [Tone alternation]. Its origin can usually be traced to a tone sandhi undergone by the verb stem before an atonal suffix, in dialects where verb suffixes may suffer total syllable loss.

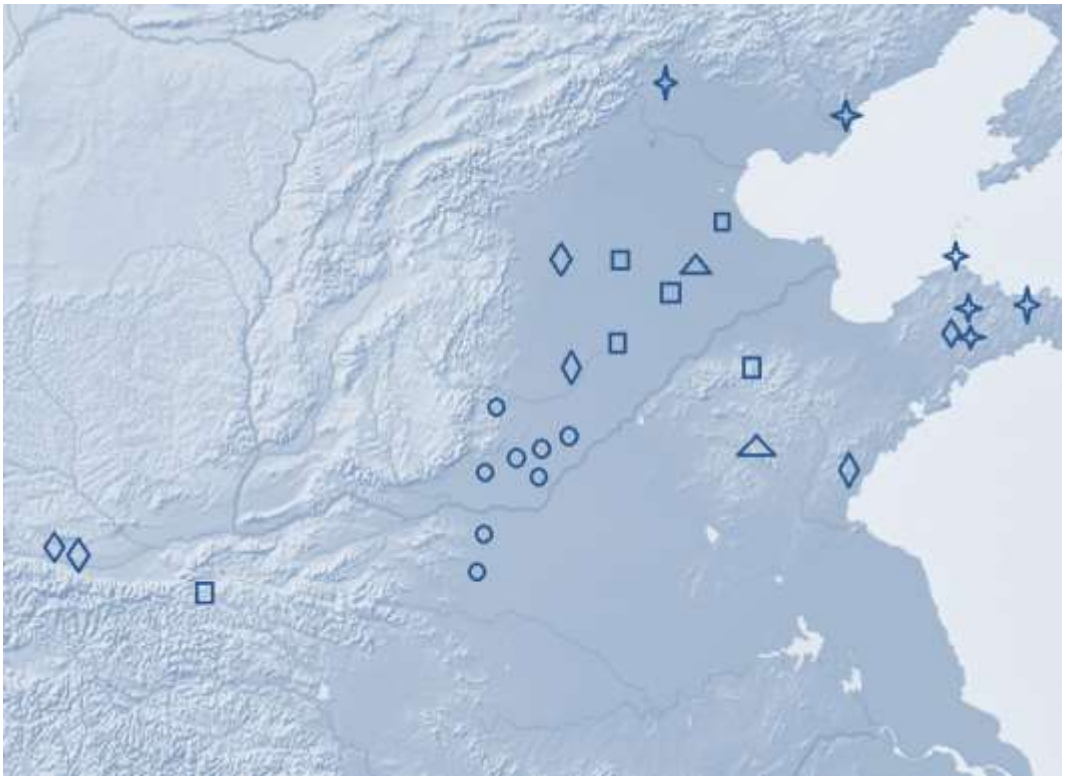
C: ◇ [Rime lengthening + tone contraction]. This complex pattern is often combined with tone sandhi on the syllable of the verb stem). The pattern observed in western Shaanxi (Lamarre's fieldwork) is strikingly similar with that described for dialects spoken in Hebei and Shandong.

D: ✦ [Rhoticization]. This pattern, where the rime of the stem verb undergoes rhoticization, is decribed for several eastern Shandong dialects.

E □ is a cover category that includes unclear cases (for instance when the available description is incomplete or contradictory) and mixed types (the specific phonetic modification depends on the rime of the verb stem etc.).

In the next sections (2.3 to 2.7), we introduce each type and provide a short description, together with some examples. In order to simplify the presentation of the data, we give these various types of morphological modification a unified gloss INFL (i.e. "inflection"). Map 1 shows how various types are distributed in the Mandarin-speaking area.

Map 1: Distribution of types A-E in Northern China



2.3 Type A: rime alternation

This type is sometimes called D *biànyùn* (D 變韻, D stands for *dòngcí* ‘verb’, and *biànyùn* means “rime modification”), which also refers to rime modifications triggered by nominal suffixation (with a diminutive and nominalizing function). The first detailed description of such phenomena was provided by He Wei for the Huòjiā 獲嘉 and the Jìyuán 济源 dialects (He 1965, He 1989, He 1981), located in Northwestern Henan in a Jin-speaking area close to Shanxi, then by Wang Sen for Xíngyáng 滎陽, near Zhèngzhōu 鄭州 (Wang 1998), and by Xin Yongfen for Xùnxiàn 浚縣 (Xin 2006a, Xin 2006b), also located in northern Henan (see also Zhao 1998 for Chánggě 長葛). We give below an illustration of Xùnxiàn morphophonemic alternations that affect verbal stems, based on Xin (2006b:57). Rimes of inflected forms appear on the right of the > symbol, and are in smaller number than uninflected forms. Some rimes do not undergo any phonetic change and keep their original shape. This reminds us that allomorphy “arises mainly from morphological coalescence” (Lehmann 2002:134).

Table 1: Rime change in Xùnxiàn (adapted from Xin 2006b:57)

ə/ ər / ʅə / uə / yə / ɥə / a / ia / ua / ɛ / iɛ / uɛ / yɛ --- *no modification*				
ʅ > ʅə	ai ei ən > ɛ	an > æ	aŋ > æŋ	au ou əŋ > o
ɿ > ɿə	i in > iɛ	ian > iæ	iaŋ > iæŋ	iau iou iəŋ > io
u > uə	uai uei uən > uɛ	uan > uæ	uaŋ > uæŋ	uəŋ > uo
ɥ > ɥə	y yən > yɛ	yan > yæ		yəŋ > yo

Rime alternation is compulsory in a set of specific environments. We provide here four minimal pairs[1], to illustrate the way these inflected forms of the verb work in Xùnxiàn. For each of these four cases we provide the corresponding form in Standard Mandarin, [V-X], to show the suffix X that would occur after the verb to produce a similar meaning.

a) The inflected form corresponds to a verb suffixed by 了 *-le* in Standard Mandarin. It may be followed by an object ([V-*le* O]), often quantized and preceded by a numeral and a classifier. Example (1) shows the alternation of rime [ai] (uninflected form) vs. rime [æ] (inflected form) in the verb 'buy':

(1) 買一斤鹽 vs. (1') 買❍一斤鹽
mai^{55} i^{24} tɕin^{24} ian^{42} — mæ^{55} i^{24} tɕin^{24} ian^{42}
buy one pound salt — buy-INF one pound salt
'[I'll] buy one pound of salt.' — '[I] bought one pound of salt.'

b) The inflected form corresponds to a verb suffixed by 著 *-zhe* in Standard Mandarin, with a resulting state meaning. Such verb forms usually appear in sentences ended by particle [.lɛ], which corresponds to Standard Mandarin clause-final continuative particle *ne* 呢. Example (2) shows an alternation of rime [tʰaŋ^{55}] (uninflected form) vs. [tʰæŋ^{55}] (inflected form). The corresponding Standard Mandarin sentence is given in (3).

(2) 躺一會兒吧 vs. (2') kɛ^{21}床上躺❍嘞
tʰaŋ^{55} .yi.xur .ba — kɛ^{21} tʂʰuaŋ^{42}-.ʂaŋ tʰæŋ^{55} .lɛ
lie a.moment HOR — at bed-on lie-INFL CONT
'Please lie down for a while!' — 'is lying on the bed'

[1] Data presented in (1)-(5) are taken from Xin 2006a and 2006b (p. 58), minimal pairs were checked with Prof. Xin Yongfen during two recording sessions, first in Kaifeng (Henan) in March 2009 then in Japan in December 2009. In order to represent modified stems in examples transcribed in Chinese characters, we use a circle '❍' after the character that represents the verb stem. Italic is used for Pinyin transcription to represent Standard Chinese morphemes, [ ] for API transcription. A dot before the API transcription notes an atonal syllable.

(3) 在床上躺著呢
zài *chuáng-shang* *tǎng-zhe* *ne*
at bed-on lie-STAT CONT
'is lying on the bed'

c) The inflected form corresponds to the verb followed by a goal marker such as Standard Mandarin *dào* 到 'to' that introduces the goal of motion, a locative noun phrase (the whole pattern is [V + goal marker + NP_{Loc}]). Rime change is compulsory when the verb is followed by a goal NP.

(4) 躺❍床上
tʰæŋ^{55} tʂʰuaŋ^{42}-.ʂaŋ
lie-INFL bed-on
'lie onto the bed'

d) The inflected form is compulsory before a deictic directional. It corresponds to an obsolete Mandarin pattern where a dummy resultative complement is inserted between the verb and the deictic directional. In some northern dialects spoken in the neighboring Hebei province, this dummy complement is homophonous with perfective suffix 了 *le* (see Lamarre and Liu 2001, Lamarre 2002), therefore we represent this environment as [Verb + 了 *le* + 來 *lai*]. There is no possible minimal pair in this case. The uninflected form 搬 [pan^{24}] can be found for instance in the V-O compound 搬家 [pan^{24}tɕia^{24}] 'to move'.

(5) 啥時搬❍來
ʂa^{55}ʂʅ^{42} pæ^{22} lɛ^{4}
when move-INFL-come
'when does [she] move in?'

Rime alternation phenomena described in Xíngyáng (Wang 1998) and Huòjiā (He 1989) are similar with Xùnxiàn as for their phonetic patterns and their distribution. We will come back in section 3 to the latter issue, i.e. the distribution of inflected forms and the morphosyntactic category they encode.

2.4 Type B: [Tone alternation]

Meng Zimin (Meng 2000) described a 'grammatical tone sandhi' (語法變調 *yǔfǎ biàndiào*) that he claimed to be the most usual device to express perfective aspect in the Píngyì 平邑 dialect of Shandong, a Central plain dialect with some features of a Jì-Lǔ[2] dialect. The inflected form is compulsory when the verb is followed by

[2] The Jì-Lǔ subgroup of Mandarin Dialects (*Jìlǔ guānhuà* 冀魯官話) refers to the dialects spoken in most of Hebei (Jì 冀) and in western Shandong (Lǔ 魯). The Central Plain subgroup (*Zhōngyuán guānhuà* 中原官話) refers to dialects spoken in the Henan and Shaanxi area.

a goal NP. When the verb is followed by a quantized patient NP, the inflected form encodes a completed event, whereas the uninflected form encodes a non-past event. Example (6) shows a minimal pair taken from Meng (2000:16), where the noun phrase may be interpreted either as the place of the cup where one takes it (uninflected form), or as the goal when one takes something to one's ear to listen (inflected form). Following the usual notation adopted in Chinese dialectology, the modified contour is given after the basic tone contour, after a hyphen.

(6) 拿耳朵間 vs. (6') 拿❍耳朵間

na^{53}	ɭə$^{44\text{-}214}$.tɔ-.tɕiã	na$^{53\text{-}44}$	ɭə$^{44\text{-}214}$.tɔ-.tɕiã
take	ear-near	take-INFL	ear-near
'take it near the handle'		'take (it) to one's ear' (to listen)	

The verb 'take' is normally pronounced with a *yángpíng*, rising tone contour 53, whereas the inflected form is pronounced with a modified tone contour 214. Actually, tone alternation in Píngyì is but a manifestation of a widespread sandhi phenomenon known in Northern Mandarin as 'tone change before toneless syllables' (輕聲字前變調 *qīngshēngzì-qián biàndiào*, see Qian et al 2001: 107-115 for an overview of this type of tone sandhi in Shandong dialects). Suffixes are typical cases of unstressed syllables, and in many Northern Mandarin dialects this triggers a tone sandhi in the preceding syllable (i.e. the verb stem). Therefore, even after the loss of the suffix as a syllable, it leaves this suprasegmental 'trace' on the verb. We observed a similar phenomenon before goal NPs for some verbs in the Jìzhōu dialect (Hebei, see Lamarre 2003), where the goal marker shows various stages of syllable coalescence, according to speakers and to the rime of the verb stems. In Píngyì, the prevalent way to mark perfective aspect on the verb is tone change (total loss of the suffix).

This analysis is convincingly supported by the fact that sandhi patterns are dialect-specific, regular, and apply to a large part of the lexicon of a given dialect, which leaves no space for coincidence. Table 2 shows tone sandhi patterns observed for Jìzhōu 冀州 and Píngyì verbs followed by weakened verbal suffixes.

Table 2: Tone sandhi patterns in Jìzhōu and Píngyì

tone category and tone contour of the verb stem	*yīnpíng*	*yángpíng*	*shǎngshēng*	*qùshēng*
Jìzhōu (Hebei)	213	53	55	31
Píngyì (Shandong)	214	53	44	412
when followed by an atonal suffix changes to:	> *qùshēng*	> *shǎngshēng*	> *yīnpíng*	> *yángpíng*
Jìzhōu (Hebei)	> 21	> 55	> 213	> 53
Píngyì (Shandong)	> 412	> 44	> 214	> 53

These patterns correspond in both dialects to those observed in the first syllable of dissyllabic words when the second syllable is atonal (based on Lamarre 2009 and Meng 2000). Both dialects have the same tone categories as Standard Mandarin (*yīnpíng* 陰平, *yángpíng* 陽平, *shǎngshēng* 上聲, *qùshēng* 去聲).

Let us look now at a minimal pair provided by Zhang Shuzheng (2004) for the Línqīng 臨清 dialect (Shandong). In Línqīng, both stages of phonetic weakening coexist: atonal syllabic suffixes, for instance perfective [.lɔ] (which corresponds to Standard Mandarin *le* 了), and suffix loss, that leaves a trace (tone change 323>44) on the preceding verb stem, as in (7') and (7''). This contrasts with the uninflected form of the verb, where the tone sandhi follows the regular sandhi pattern 323>34 observed before a *qùshēng* tone syllable such as [fɛ̃^{31}] 'rice', as in (7).

(7)	吃飯	vs.	(7')	吃了飯	or (7'')	吃❍飯
	tsʰɿ$^{323\text{-}34}$ fɛ̃^{31}			tsʰɿ$^{323\text{-}44}$ lɔ^{0} fɛ̃^{31}		tsʰɿ$^{323\text{-}44}$ fɛ̃^{31}
	'to eat'			'ate'		'ate'

This distinguishes the inflected form of the verb (tone contour 44) from the uninflected form in the verb compound 'to eat', and of course from the basic form of the verb pronounced in isolation (tone contour 323). Such tone sandhi patterns before atonal syllable are unknown both in Standard Mandarin and in the Běijīng dialect: in the corresponding SM verb phrases 吃飯 *chī fàn* and 吃了飯 *chī-le fàn*, the verb *chī* is pronounced with the contour 55 (*yīnpíng* tone), no matter the tone of the following syllable.

The last example proposed here to illustrate type B is that of the Níngjīn 寧津 dialect of Shandong, which belongs to the Jì-Lǔ Mandarin group (see Cao Yanjie 2002:242-243). Goal markers show various weakened shapes such as [.ta] or [.tə]. In case of total attrition, the verb stem undergoes tone sandhi, following the pattern induced by a following atonal syllable (Cao 2002:63-64). Examples (8') and (8'') show that the verb 'to run' 跑 [pʰɔ^{44}] (*shǎngshēng* tone) undergoes a tone sandhi (44 > 324) before atonal goal marker [.tə]. The same tone sandhi occurs in utterances where the goal marker has totally disappeared as a syllable. The Standard Mandarin sentence that corresponds is given in (8):

(8) 跑到城裡去了
pǎo-dao chéngli qu le.
run-to town-in go CRS
'ran to the town.'

(8')	跑的 + locative NP	=	(8'')	跑❍ + locative NP
	[pʰɔ$^{44\text{-}324}$.tə] + locative NP			[pʰɔ$^{44\text{-}324}$] + locative NP
	run-to + locative NP			run-INFL + locative NP
	'ran to' followed by a goal NP in Níngjīn			

Note that a similar phenomenon has been described for the Běijīng dialect to account for a tone sandhi triggered by the attrition of the generic classifier *ge* (see Dong Xiufang 2003, Liu Xiangbo 2004, Chirkova 2004). The only trace left by the disappeared classifier is the pronunciation of numeral *yi* 一 as a *yángpíng* (rising 35) tone. Numeral *yi* in its count function is normally pronounced with rising tone contour *yí* 35 before a *qùshēng* tone (falling tone contour 51), but with a falling *qùshēng* tone contour when followed by a classifier pronounced with one of the other tones (55, 213 or 35, ex. 一天 *yì tiān*,一年 *yì nián* or 一點兒 *yìdiǎnr*). Classifier *ge*, which was originally pronounced *gè* with a contour tone 51 before it became unstressed, triggers a sandhi to a rising tone contour 35 in numeral *yi*, as in *yí ge rén* 一個人, *yí ge péngyou* 一個朋友. In the Běijīng 北京 colloquial, classifier *ge* sometimes undergoes further attrition, and totally disappears, but for the trace left on the preceding numeral *yí* by a tone sandhi from 53 to 35, for instance in *yí péngyou* 一朋友 'a friend' (= neutral style *yí ge péngyou*), *yí rénr* 一人兒 'someone' (lit. 'one person', = neutral style *yí ge rén*).

Lehmann (2002:150) remarked that alternations may not be direct continuations of segmental formatives. He pointed that "Germanic umlaut is an indirect reflex, since it does not continue a former plural morpheme, but was triggered by one." This is in our view how Type B works: the suffix totally disappears, leaving but a trace left on the verb stem, i.e. the tone sandhi caused by a former atonal syllable. Here, tone sandhi is neither the direct continuation of the segmental formative, nor the result of a fusion. The same sandhi occurs when the suffix is present in its phonetic integrity (a full syllable with onset and rime but toneless, as in examples 7 and 8). Triggered by the atonal suffix, it remains even after this formative has disappeared as a segment. However the opposition, i.e. the alternation between an inflected stem and an uninflected stem is meaningful.

2.5 Type **C:** Rime-lengthening and tone contraction

This type is the most complex. The suffix has lost both its onset and its rime, and has totally coalesced with the verb stem, but some of its syllabic length remains. The inflected form is significantly longer than an average syllable. Its tone contour corresponds to the contour of the two coalesced syllables (the verb stem and the suffix), i.e. to the contraction of the tone contour of the verb stem and that of the atonal suffix. As far as we know there are two subtypes: in some dialects such as Wēixiàn in Hebei, Fèngxiáng in Shaanxi, or Jǔxiàn in Shandong, the verb stem undergoes tone sandhi before atonal syllables, and the final output of coalescence associates the modified tone contour of the verb to that of an atonal syllable, in a contracted pattern (increase of syllabic length is often mentioned). In some other dialects, the verb does not undergo tone sandhi (Hebei Zhàoxiàn).

We found the first type of morphologization at work for verb suffixes during fieldwork in western Shaanxi in 2008-2010. It took us some time to unravel, but then we realized that a similar morphological modification had been documented for nominalizing suffixes (兒化 *érhuà* and 子變 *zǐbiàn*), and had been analyzed by Wang Futang (1999) and Wang Hongjun (2008, chapter 9) for some southern Shanxi dialects. Wang Futang (1999:138-139, 176-177) describes the tone contour of the fused syllable as "the addition and fusion of the tone values of the two morphemes". He considers that in such cases the tone contour of the suffixed word actually represents the coalescence of the modified tone contour (after the sandhi) of the first syllable and of the atonal second syllable. Interestingly, this pattern is also reported in Hebei, and at the other end of the Northern Mandarin area, in Shandong.

Let us first look at what happens in the Wēixiàn 威縣 dialect, a Jì-Lǔ Mandarin dialect spoken in the Xíngtái 邢台 area, in southeastern Hebei. Cao Muchun (Cao 2007) uses the term 'rime change' (D *biànyùn*), the same term used by HE Wei (1989) for the rime alternation type in Huòjiā (our type A). However, Cao explicitly links this fusion pattern to a tone sandhi that occurs before toneless syllables. Whereas in Huòjiā or in Xùnxiàn the verb stem does not undergo any tone change, in Wēixiàn, the inflected verb form is characterized by a lengthening of the main vowel of the verb stem, and a tone sandhi (noted here by >). This new tone actually corresponds to the modified tone of a verb stem σ1 when followed by an atonal syllable, plus the tone contour of that atonal syllable σ2, whose rime has vanished (but for the lengthening effect on the rime of the verb stem). The pattern which produces the tone contour of the coalesced verb form can be represented as in Table 3 below.

Table 3: Suffix coalescence with the verb stem in Wēixiàn (Hebei)

tone category and tone contour of the verb stem σ1 before coalescence:	tone sandhi undergone by the verb stem σ1 before atonal syllable (verb suffix) σ2:	inflected form V❍: σ1+σ2 contract into:
yīnpíng 35	> 21 (*qùshēng*) + σ2	> 214
yángpíng 51	> 55 (*shǎngshēng*) + σ2	> 552
shǎngshēng 55	> 35 (*yīnpíng*) + σ2	> 353
qùshēng 21	> 51 (*yángpíng*) + σ2	> 511

The last part of the tone contour evokes the pronunciation of atonal syllables in Standard Mandarin: higher than the preceding syllable when following a low tone (such as SM 3rd tone), lower than the preceding syllable when following a high rising tone (such as SM 2nd tone) etc. Besides, a glance at Table 2 above will

suffice to show the striking similarity in the sandhi patterns of these three dialects. In Píngyì (Shandong), perfective aspect is generally marked by tone change of the verb stem rather than by a perfective suffix with a full syllabic shape. In Jìzhōu (Hebei), we observed various types of marking according to speakers and verb rimes. Cao (2007) notes that in the Wēixiàn dialect the coalesced forms are the usual forms in normal speech, but that when the suffixed verb occurs at the end of a sentence, or when the speaker speaks particularly slowly and spells each syllable separately, the suffix recovers its syllabic shape. For instance Standard Mandarin stativized form *tǎng-zhe* 躺著 'be lying' is usually pronounced as [tʰãːŋ^{353}] but may recover its full form [tʰaŋ$^{55\text{-}35}$ .lei] if it is located at the end of an utterance. Similarly, the perfective suffix may be realized as [.lau], and complementizer as [.lei] in some specific environments.

Li & Ai (2008, 2009) described a similar phenomenon in the Jǔxiàn 莒縣 dialect of Shandong, that they called 'syllable contraction with tone sandhi' (*héyīn biàndiào* 合音變調), the term used by Wang Futang for nominal suffixation (1999:176-177, see above). For instance, the verb [tiɔ^{31}] 掉 'to fall' has low falling default contour tone 31. Before an atonal syllable, it undergoes tone sandhi according to the rules governing tone sandhi before unstressed syllables, and changes to a high level tone 55. For instance before goal markers [.tɔ] or [.lə] (two variants), 'fall to' becomes 掉到 [tiɔ$^{31\text{-}55}$tɔ^{4}] or 掉了 [tiɔ$^{31\text{-}55}$lə^{4}] before a locative noun phrase. When the suffix disappears, its former tone contour leaves a trace in the tone contour of the inflected form, which becomes 551. Example (9) gives the Standard Mandarin sentence and the corresponding Jǔxiàn forms in (9') and (9''). Li & Ai (2008) do not mention rime lengthening.

(9) 被子掉到楼下去了

bèizi	*diào-dao*	*lóu-xià*	*qu*	*le*
quilt	fall-to	building-bottom	go	CRS

'the quilt fell down onto the ground'

(9') 掉了 + locative NP = (9'') 掉❍ + locative NP

[tiɔ$^{31\text{-}55}$.lə]	+	locative NP	[tiɔ^{551}]	+	locative NP
run-to	+	locative NP	run-INFL	+	locative NP

'ran to' followed by a goal NP in Juxian

The last case chosen here to illustrate type C is taken from our own fieldwork data on the Qíshān 岐山 and the Fèngxiáng 鳳翔 dialects (western Shaanxi). Phonetic modification of the verb stem was reported for several Shaanxi dialects: it was termed "verbal inflection" by Zhang Chengcai (1958) for Shāngxiàn (now Shāngzhōu), more recently it was described as "partial reduplication" (*júbù chóngdié* 局部重叠) for Qíshān (see Han 2006), and "rime change" (D biànyùn

變韻) of the verb stem was reported for Fèngxiáng (see Wang Junhu 2012), as well as for Xī'ān 西安 (Lan Binhan 2011: 239-241). However, no exhaustive description of these phonetic changes was ever provided, and there is no agreement on the nature of the morphophonemic phenomena involved. Wang Junhu (2012) mentions that rime change can in Fèngxiáng freely replace stativizing suffix (SM *-zhe*), complementizer (SM *-de*) that introduces degree complements, goal markers, and also some achievement resultatives (SM *-shàng*).

According to our fieldwork observations in western Shaanxi, the perfective suffix [.lia] 了 is not usually morphologized in Fèngxiáng, it keeps its syllabic shape (an atonal syllable). Similarly, in most of the cases we investigated, the nominal suffix [.tsɿ] 子 keeps its syllabic integrity. For other verbal suffixes, however, we could observe the loss of both the onset and the rime of the suffix, and its total fusion into the verb stem, leading to a longer syllable. Stativizing suffix [.tʂɔ] and complementizer [.ti] are systematically realized as inflection on the verb. Inflected forms are also the default way of realizing the goal marker before a goal locative NP. Inflection that corresponds to a dummy resultative inserted between the verb and the directional is also attested (see below).

Through a systematic investigation of various verb stems showing a wide array of tones and rimes[3], we could find evidence that the tone contour of the inflected stem was produced by the contraction of the tone of the verb stem (σ1) after it underwent tone sandhi, and of the tone contour of the unstressed syllable (σ2). The parallelism of tone patterns is particularly conspicuous for the tone sandhi that occurs on *yángpíng* syllables 24, which triggers a "heavy", stressed realization of the "atonal" suffix as 53 (this phenomenon is mentioned in Xing 2010: 387-388). These specific tone sandhi patterns, together with their distinctive tone contours, allowed us to trace and identify the mechanism that leads to the tone contour of inflected forms of the verbs without any doubt.

Table 4 shows for the Fèngxiáng dialect (Shaanxi) the parallelism between the tone contours of syllables σ1+σ2 in a dissyllabic word with an unstressed second syllable and the tone contour of an inflected verb form after syllable coalescence and tone contraction.

[3] Field data were mainly collected in March 2008 in Qíshān 岐山縣 (Púcūnzhèn 蒲村鎮) and in August 2010 in Fèngxiáng 鳳翔縣 (虢王鎮 Guówángzhèn) in Shaanxi 陝西. In Guówángzhèn, our language consultants were Mr. Hou Shengke (68) and Mr. Zhang Wenke (67), while Prof. Itsuku Ota (太田齋, Kobe University of Foreign Studies) was in charge with the description of tone sandhi patterns. We consulted the handout of the talk delivered by Prof. Wang Junhu at the Conference on Mandarin dialects held in Ānkāng 安康 (Shaanxi) in October 2007 (Wang 2012).

Table 4: Patterns of tone sandhi and tone contraction in Fèngxiáng (Shaanxi)

Basic tone value of the nominal (N) or verbal (V) stem σ1	σ1 (Nominal stem) undergoes tone sandhi before an atonal syllable σ2 (nominal suffixation, reduplication, etc., no syllabic coalescence)	tone of the inflected form V❍ = σ1 after syllabic coalescence with suffix and tone contraction
yīnpíng 21	21 + atonal σ > 53 + 21	532 (σ1+σ2)
N 辣 la^{21}, 刀 tɔ^{21} V 端 tuæ̃^{21} 'carry' V 搬 pæ̃^{21} 'move'	辣子 la$^{21-53}$ tsɿ^{21} 'chilli' 刀刀 tɔ$^{21-53}$ tɔ^{21} 'knife'	 端❍ tuæ̃ː^{532} 搬❍ pæ̃ː^{532}
yángpíng 24	24 + atonal σ > 21 + 53	153 (σ1+σ2)
N 黄 xuãŋ^{24}, 瓶 pʰiŋ^{53} V 拿 na^{24} 'take' V 藏 tsʰãŋ 'hide'	黄瓜 xuãŋ$^{24-21}$kua^{53} 'cucumber' 瓶瓶 pʰiŋ$^{24-21}$ pʰiŋ^{53} 'small bottle'	 拿❍ naː^{153} 藏❍ tsʰãːŋ^{153}
shǎngshēng 53	53 + atonal σ > 44 + 21	442 (σ1+σ2)
N 眼 ɲiæ̃^{53}, 管 kuæ̃^{53} V 躺 tʰãŋ^{53} 'lie' V 躲 tuə^{53} 'avoid'	眼睛 ɲiæ̃$^{53-44}$ tsiŋ^{21} 'eye' 管管 kuæ̃$^{53-44}$ k uæ̃^{21} 'tube'	 躺❍ tʰãːŋ^{442} 躲❍ tuəː^{442}
qùshēng 44	44 + atonal σ > 45 + 32	453 (σ1+σ2)
N 肚 tu ^{44}, 袋 tɛ^{44} V 放 fãŋ^{44} 'put'	肚子 tu $^{44-45}$ tsɿ^{32} 'belly' 袋袋 tɛ$^{44-45}$ tɛ^{32} 'bag'	 放❍ fãːŋ^{453}

The following example illustrates one of the morpho-syntactic environments where verbal inflection is compulsory: between a verb and a deictic directional, to produce a resultative, causative meaning. In example (10), the inflected, longer form 端 [tuæ̃ː^{532}] 'carry with both hands' may be uttered for instance in the kitchen, to order the hearer to carry a dish to the guests who are waiting in the main room, and corresponds to directional compounds *duānguoqu* 端過去 or *duānqu* 端去 in Standard Mandarin. In (10'), the uninflected form of the verb fails to produce a resultative construction, and the deictic motion verb after the verb can only take a purposive reading: the speaker is in the main room and orders the hearer to 'go (to the kitchen) in order to fetch the dish'. Note that in the latter case, the andative directional is also unstressed, and triggers tone sandhi on the preceding verb 端 [tuæ̃^{21}] 'to carry with both hands', which becomes [tuæ̃^{53}].

(10) 端❍去 vs. (10') 端去
tuæ̃:^{532}tɕʰi$^{44\text{-}21}$ tuæ̃$^{21\text{-}53}$ tɕʰi$^{44\text{-}21}$
take-INFL-go take go
'take it (the dish) to the guests' 'go and fetch it' (the dish)

The subtype "without tone sandhi" was described by Li Qiaolan (Li 2013) for another Hebei dialect, Zhàoxiàn 趋縣. Although Zhàoxiàn is not located very far from Weixian, it differs from the latter in that the syllable of the verb stem does not undergo any tone sandhi. As in Wēixiàn, the suffix vanishes as an autonomous segment, looses both its onset and rime. The segmental part of the coalesced syllable corresponds to that of the verb stem (with for some rimes minor vocalic changes) with conspicuous lengthening. Its tonal contour corresponds to the contour of the verb stem followed by the contour of a mid-low atonal syllable 33 or 22. For instance, [faŋ^{51}] 'put' changes to the inflected form [faːŋ^{5133}] when followed by a goal locative NP.

2.6 Type D [rhoticization]

This type is well documented for dialects spoken in the eastern part of Shandong (belonging to the Jiāo-Liáo 膠遼 Mandarin subgroup) and the northern part of Hebei. Liu Cuixiang (2007a/b) gives a detailed account for Qīxiá 棲霞, Qian et al. (2001: 261, 290) mentions rhoticization replacing the perfective suffix and the goal marker for a dozen of eastern Shandong dialects, including Mùpíng 牟平, Wēihǎi 威海, Láiyáng 萊陽, Yāntái 煙台, Róngchéng 榮成 etc. An early mention of rhoticization as a variant of verb suffixes [.tʂə], [.liou] and [.ti] (which respectively correspond to stativizing *-zhe*, perfective *-le* and goal marker *–dao*) is found for Chānglí 昌黎 in the *Monograph of the Changli dialect* (Hebei 1960: 26-28). In (11), the rhotic coda corresponds to a weakened goal marker, whereas example (11') uses the syllabic form of goal marker [.ti] (Hebei 1960:145).

(11) 掉兒地下咧 = (11') 掉得地下咧
tiɑur$^{55\text{-}43}$ ti^{24}.ɕie .lie tiɑu^{55}.ti ti^{24} .ɕie .lie
fall-INFL ground-bottom CRS fall-to ground-bottom CRS
'fell to the ground'

Again, this type of weakening is not unknown in the Běijīng dialect. For instance, as a rule, the second syllable of a three-syllable word is not stressed. When this mid-word syllable has a retroflex onset (*r-* [ʐ], *sh-* [ʂ], *zh-* [tʂ], *ch-* [tʂʰ]), it may weaken and be realized as the rhoticized coda of the first syllable. These variants can be transcribed in pinyin as *bùzhīdào* > *bùzhidào* > *bùrdào* 'don't know', *túshūguǎn* > *túshuguǎn* > *túrguǎn* 'library', or 顺治门 *Shùnzhìmén* > *Shùnzhimén* > *Shùnrmén* 'Shunzhimen (Place name)' (see for instance Fang 2007).

2.7 Type E [Unclear or mixed types]

We attributed a separate symbol on the map to keep trace of phenomena which were clearly related to some type of morphologization, but for which we only had unclear, uncomplete or sometimes contradictory reports, or which seemed to belong to a mixed type (according to the rime). For instance the exact tonal features of inflected forms are unclear in descriptions of western Shandong dialects such as Línqīng 臨清, which seems to involve lengthening too (Zhang Hongkui 1990:165), Dézhōu 德州 (Cao Yanjie 2000), and Láiyáng 萊陽 (Gong and Luan 2010). Bóshān 博山 (also located in Shandong) has been described in several studies with slightly contradictory data (Qian 1993, Chen Ning 2006, Li & Ai 2009). This is why, although Bóshān dialect has become a "classical" case of syllable coalescence widely discussed in works on grammaticalization (see for instance Jiang Lansheng 2000, who considers it as a case of phonetic attrition leading to a zero form), we do not discuss it in detail. Similarly, Zhang Chengcai's description of the Shāngzhōu dialect (Zhang 1958) is actually unclear as for tonal modification, and is therefore put here in type E.

2.8 Summary

To summarize our findings, in Mandarin dialects, tone sandhi tends to occur on the first syllable of a dissyllabic word or compound (Xing 2010:369-389). This factor probably accounts for some of the phonetic characteristics of the morphologization types B and C discussed above. Xing (2010: 388-389) pointed that in Mandarin dialects, we often find specific patterns of tone sandhi before atonal syllable. Qian et al. (2001: 107-115) provided a comprehensive overview of tone sandhi before atonal syllables for the Shandong area, but we have no complete picture of the frequency and the distribution of these phenomena. We illustrate in Table 5 the various phenomena described in section 2 above.

Table 5: Morphophonemic manifestation of verbal inflection

Type	D	C	B	A	C	C	C
	Changli	Juxian	Pingyi	Xunxian	Weixian	Zhaoxian	Fenxiang
	掉 'fall'		拿 'take'	放 'put'			
V	tiau^{55}	tiɔ^{31}	na^{53}	faŋ^{213}	faŋ^{21}	faŋ^{51}	faŋ^{44}
V❍	tiaur^{43}	tiɔ^{551}	na^{214}	fæŋ^{213}	faːŋ^{511}	faːŋ^{5133}	faːŋ^{453}

3. Patterns requiring an inflected form of the verb

3.1 Inflected form of the verb used in specific morphosyntactic patterns

Present accounts of the morphologization of verb suffixes remain rather vague about its exact morphosyntactic functions. He Wei (1989:51-79) distinguishes 27 patterns where rime change occurs in Huòjiā, and this list is discussed in Zhao Rixin (2007) and Chen Weiheng (2011), in an attempt to identify a more conprehensive meaning. Chen Weiheng (Chen 2011:195-199) hypothesize that rime alternation may encode [± realization] (*wèirán* 未然 vs. *yǐrán* 已然). Although this holds for cases where the inflected form corresponds to the verb suffixed by a perfective marker and followed by a quantized NP, Lamarre (2002, 2003, 2009), and Lamarre & Liu (2001) showed that this view does not fit with hortative sentences that were clearly irrealis, frequently found for patterns related with the deictic directional and the goal marker. Li Qiaolan (2013) also argued that there was no correlation between the inflected form and tense features.

The data presented above show that we have enough ground to consider verb forms where the suffix has coalesced into the verb stem as a kind of "inflected form" of the verb. Inflected forms can be analyzed as "bounded" or "perfective" forms. The verb suffixes delt with here are a kind of "bounders", i.e. they have a bounding effect on the verb phrase (or developed from phase complements).

In order to illustrate the consistent and systematic pattern followed by inflected forms, we selected 5 core morphosyntactic patterns where inflected forms are attested or compulsory. They are listed below together with corresponding Standard Mandarin patterns.

1) Inflection replaces perfective suffix *-le* 了 in sentences where the verb takes an object (for instance in pattern [V-*le* + Numeral + CL+ Object]), see example (1) which reflects the Xunxian dialect (Henan).

2) Inflection replaces stativizing suffix *-zhe* 著 in locative constructions such as [在 *zài* + NP_{LOC} + V 着呢 *zhene*] like the Standard Mandarin sentence in (12):

(12) 在椅子上坐著呢
zài yǐzi-shang zuò-zhe-ne
at chair-on sit-STAT-CONT
'is sitting on the chair'

Mandarin suffixes involved in 1) and 2) are often thought to belong to the same paradigm of aspectual suffixes, and to mark perfective and imperfective aspect, respectively. In the northern dialects involved here, progressive aspect mainly relies on adverbs such as *zhèng* 正 and on clause-final particles marking continuative aspect, such as Standard Mandarin *ne* 呢 (pronounced as [.nə / .ŋ̩i / .li / .lɛ] etc.). This means that *-zhe* 着 and *-le* 了 would not occur in the same environment, and explains why they may both morphologize the same way. The stativizing suffix encodes resulting state after posture and placement verbs, or a

background activity in specific patterns. Clause-final continuative particles tend to be compulsory in independent imperfective clauses.

3) Inflection replaces a goal marker (introduces the goal, like Standard Mandarin [V 到 *dao* + goal NP]):

(13) 放到桌子上
fàng-dao zhuōzi-shang
'put it onto the table'

Note that in the Běijīng colloquial, total phonetic attrition of the goal marker is frequent in this environment. Sentence 13 is correct without *–dao* (see Chirkova and Lamarre 2005). The position of the locative NP is sufficient to convey the goal meaning. This is not the case of all varieties of Mandarin, which often require overt (syllabic) goal-marking, or in case of syllabic fusion, the inflected form of the verb. In a comprehensive account of goal marking in Sinitic languages, Lamarre (2009) addressed the issue of coalescence of the goal marker into the verb stem (see also Lamarre 2003, Lamarre 2007).

4) Inflected form replaces a dummy complement inserted between the verb and a deictic directional (such as 來 *-lai* 'hither' or 去 *–qu* 'thither', and also in some areas 走 *-zou* 'away'). In 18th and 19th century novels (*Hóng Lóu Mèng* 紅樓夢, *Érnǚ Yīngxióng Zhuàn* 兒女英雄傳 etc.) that reflect Northern Mandarin, this slot was often filled by *-le* 了. This type of directional compounds is still found in mainstream Chinese up to the 20th century, but has become obsolete in Standard Mandarin, where deictic directionals may directly follow the verb, as in *nálai* 拿來 'bring' (toward the speaker). Sentence (14) is taken from *Xiǎo É* 小額, an early 20th century novel reflecting the Běijīng colloquial (see Lamarre 2002), example (15) is taken from Lao She's novel *Four generations under the same roof* 四世同堂, considered to reflect the Beijing colloquial of mid-twentieth century.

(14) 兩個人早把青皮連給拉了走啦。 (*Xiǎo É*, 7-11)
liǎng ge rén bǎ Qīngpílián gěi lā-le-zǒu la (= SM *gěi lāzǒu le*)
2 CL person OM Qingpilian GIVE take-DUM-away CRS
'They had taken Qingpilian away a long time ago'

(15) 假若他搬了來… (*Four generations*, Part 1, Chapter 19)
jiǎruò tā bān-le-lai,…
if 3SG move-DUM-come
'If he moved to their place…')

In contemporary Standard Mandarin, *lā-le-zǒu la* 拉了走啦 and *bān-le-lai* 搬了來 would become *lā-zǒu le* 拉走了 and *bān-lai* 搬來, respectively. Lamarre and Liu

(2001) described this morpho-syntacticpattern with [.lɑo] 了 in a central Hebei dialect (Jizhou). In earlier stages of Chinese, this slot was filled by *jiāng* 将 or *dé* 得. These etymons are still attested in more conservative dialects (Jin and Wu dialects), where they are compulsory. Note that the inflected form (the rhoticized form) is compulsory in Qixia (Shandong, type D, see Liu Cuixiang 2007b). Lamarre (Lamarre 2002, Lamarre & Liu 2001) and Wei (2011) analyzed these various forms as a kind of dummy resultative complement[4]. This shows that in order to understand what links inflected forms in environment 4) and in environments 1) to 3), we have to look into early vernacular texts and non-standard varieties of Northern Mandarin (and Jin), rather than into Standard Mandarin.

5) Inflection replaces complementizer *-de* 得 to introduce a manner or an extent complement (like Standard Mandarin [V 得 *de* + Adjective Phrase], as in *hǎo-de-hěn* 好得很 'very good'). Although from a synchronic point of view, complementizer *-de* 得 is less obviously related with perfectivization, it is thought to have evolved from an achievement marker (see Yang Ping 1990). In other Sinitic languages we also find etymons that developed form achievement markers or directionals (Lamarre 2001a/b). Besides, complementizer *-de* 得 has in Mandarin a default realis value (as opposed to complementizer *-ge* 個 for instance), and verbs suffixed by *-de* are uncompatible with perfective suffix *-le* 了 or stativizing suffix *-zhe* 著. The following example is taken from field data in Qíshān and Fèngxiáng, with the verb 說 [ʂʅə^{21}] 'to say', both sentences are natural.

(16)	說〇好	=	(19')	說得好
	[ʂʅə:$^{21\text{-}532}$-xɔ^{53}]			[ʂʅə$^{21\text{-}53}$-ti^{21}-xɔ^{53}]
	say-INFL-good			say-CPL-good
	'Well said!"			

Table 6 shows whether inflected forms were reported for the five morphosyntactic environments presented above. Symbol √ is used when the use of an inflected form was documented (please note that the descriptions vary and that a blank cell just means that we found no data). The set of northern Mandarin dialects selected here is in no way exhaustive. The Standard Mandarin equivalent is also provided in the line "SM suffix".

[4] Prof. Wang Sen (personal communication, 2007) approved of Lamarre & Liu's analysis of the Xingyang data he presented in Wang (1998), that show a compulsory rime change when the verb is followed by a deictic directional (including *-zou* 'away'). Actually the reason why we were able to provide an accurate analysis of Xingyang's data lies in their similarity with Jizhou data (central Hebei). In Jizhou, some speakers use a weakened form of [.lɑo] on the verge of coalescence. In both Jizhou and Xingyang, verbal marking is compulsory in this pattern.

Table 6: The morphosyntactic environments of the inflected form of the verb

morphosyntactic patterns:	1	2	3	4	5	type of morphophonemic modification of V
replaces SM suffix	*le*	*zhe*	*dao*	*le*	*de*	
Shāndōng 山東						
Jǔxiàn 莒縣	√	√	√	√		C: lengthening, tone change
Láiyáng 萊陽	D	C	D			D rhoticization or C
Qīxiá 棲霞	√		√	√		D: rhoticization
Bóshān 博山	√	√	√		√	E: schwa [ə] or C
Píngyì 平邑	√		√			B: tone change
replaces SM suffix	*le*	*zhe*	*dao*	*le*	*de*	
Héběi 河北						
Chānglí 昌黎	√		√			D: rhoticization
Wēixiàn 威縣	√	√	√		√	C: lengthening, tone change
Zhàoxiàn 趙縣	√		√	√		C: lengthening, tone contraction
Hénán 河南						
Xùnxiàn 浚縣	√	√	√	√		A: rime change
Xíngyáng 滎陽	√	√	√	√	√	A: rime change
Huòjiā 獲嘉	√	√	√	√	√	A: rime change
Shǎnxī 陝西						
Fèngxiáng 鳳翔		√	√	√	√	C: lengthening, tone change
Qíshān 岐山		√	√		√	C: lengthening, tone change

In some cases, both the inflected form and the uninflected form are possible (pattern 1), which may produce an opposition between past and non past in independent clauses, see example (1), or perfective vs. non perfective (in a subordinate clause). Some morpho-syntactic patterns will require the inflected form of the verb. This is the case for pattern 3 (before goal NP), pattern 4 (before deictic directionals), pattern 5 (before manner and degree complements).

In pattern 2, inflected forms derive verb forms that a denote resulting state from a verbal stem that denotes a change of posture or a change of location, as in English for ‘is sitting’ vs. ‘sit’, or in French for ‘être assis’ vs. ‘s’asseoir’, but also for ‘hold in one’s hand’ vs. ‘take in one’s hand’. In this case, verbal inflection plays a key-role in structuring the lexicon. Thus, the specific function and meaning of the inflected form relies on the morpho-syntactic pattern where it occurs.

Let us now look at a case of “utter morphologization” observed in potential forms of patterns 3 (goal markers) and 4 (dummy resultative).

3.2 Cases of utter morphologization: No way back to segmental autonomy

In these cases, there is no way back from coalescence for the suffix: morphologization blocks the recovering of a full syllabic shape, even in morphosyntactic patterns where the weakend suffix should recover its full shape and be dissociated from the verb stem, i.e. in potential forms. Such phenomena were reported in Henan, Xíngyáng (type A) and Shandong Qīxiá (type D).

The following examples show that once the goal marker has coalesced into the verb, it may not find its way back to autonomy, and gets sticked in the inflected form, even when it should recover its full form, in the potential form. In Northern Mandarin, suffix-like resultatives and directionals usually undergo phonetic weakening (are toneless). In potential forms, however, where the negation *bu* separates the verb stem and the resultative, they recover their full phonic shape:

(17)	踢進去了	>	potential form	(17’)	踢不進去
	tī-jin-qu le				*tī-bu-jìn-qù*
	kick-enter-go CRS				kick-NEG-enter-go

Potential forms are higly productive, and the same rule applies to goal markers. (18) shows in Standard Mandarin a sentence with the verb ‘put’ followed by a goal marker (usually atonal) and an goal NP, (18’) shows the corresponding potential form, which can be represented by the formula [V-NEG-to + NP_{LOC}].

(18)	放到頂上了	> potential form	(18’)	放不到頂上
	fàng-dao dǐng-shang le			*fàng-bu-dào dǐng-shang*
	put-to roof-on CRS			put-NEG-to roof-on
	[V-to + NP_{LOC}].			[V-NEG-to + NP_{LOC}].
	‘put onto the roof’			‘cannot put onto the roof’

In Xíngyáng, the normal pattern [V-NEG-to + NP_{LOC}] becomes [V-INFL + NEG + NP_{LOC}], where the verb takes its inflected form 放❍ [fɔ^{31}] instead of the uninflected form 放 [faŋ^{31}], and the negation is directly followed by a locative NP (Wang Sen 1998:279). The same phenomenon occurs for pattern 3: the potential form of [V❍+*lai*] ‘walk over here’ is [V❍-NEG-lai] ‘cannot walk over here’ (because of aching feet)’ instead of the “normal” pattern found in Jìzhōu for instance: [V-NEG-*liao-lai*], 走不了來 ‘cannot walk here (come here walking)’.

A similar mechanism produces the “weird” pattern [V-INFL + NEG + NP_{LOC}] in the Qíxiā dialect (Shandong, type D, Liu Cuixiang 2007a). The verb keeps its rhoticized form, i.e. the goal marker stays coalesced with the verb. Example (19) gives the Standard Mandarin sentence, example (19’) the Qíxiā pattern where the goal marker corresponding to ‘to’ is still marked on the verb, as a rhotic coda. Note that the respective order of the constituants [V-INFL + NEG + NP_{LOC}] is

totally abnormal from the point of view of Mandarin syntax. It thus provides evidence for an analysis of this potential form as working at the word domain rather than at the phrasal domain.

(19) 老人年紀太大, 一個人都走不到門口。
Lǎoren niánjì tài dà, yígerén dōu zǒu-bu-dào ménkǒu.
old.person age too big, alone even walk-NEG-to door

(19') 老人年紀太大,一個人都 走兒不門口。[5]
old.person age too big, alone even walk-INFL- NEG-door
'that old person is too old and cannot even walk alone to the door.'

The following sentence is given by Xin Yongfen (Xùnxiàn, Henan, Xin 2006a:52) for the verb [kuan^{213} yɔ^{24}] 灌药 'drink, take a medicine'. In the potential form, goal marking stays on the inflected form of the verb (the rime is [uæ], vs. [uan] for the uninflected form).[6]

(20) 藥灌❍不嘴□
yɔ^{24} kuæ^{213}-.pu-tsuei^{55}-.liou
medicine pour-INFL-NEG-mouth-in
'cannot take his medicine' (lit. 'I am unable to put it into my mouth', because of old age, illness, etc.)

We still need many more data and discussions before we can get a full picture of these phenomena of morphologization, their distribution, their types. Let's mention one issue that could not be properly addressed here: many descriptions give scarce information on the relative frequency of the full-syllable form and the coalesced form when both are attested. Obviously, dialects such as Xùnxiàn where there is no "syllabic" variant to encode perfective aspect or goal-marking on the verb compell us to address complete morphologization of verb suffixes as one type of marking attested in Northern Mandarin. But in some cases, it is quite difficult to rule out the possibility that the degree of morphologization just may depend on speech flow, or on a distinction between formal and informal speech.

4. Discussion

Now we have introduced the main patterns of suffix fusion into the verb stem attested in Northern Mandarin, and the suffixes that are likely to undergo morphologization, we discuss two related issues:

[5] Liu (2007a) does not provide any phonetic transcription for this sentence.
[6] Prof. Xin kindly recorded and elicited the sentence and similar examples in a working session in Kaifeng in March 2009. Here [.liou] is the fused form of dissyllabic locative *litou* 裡頭 'inside'.

1) To what extent does this morphologization process question the prevalent view on Chinese, i.e. Chinese, as an analytic-isolating language, cannot go further up the grammaticalization cline?

2) To what extent can we link these morphological phenomena to language contact, and more precisely to language contact specific to Northwestern Mandarin?

4.1 Chinese and the "language-internal constraints" on grammaticalization

Bybee, Perkins and Pagliuca (1994: 118) reflected the common view on Chinese when they stated in their chapter on the correlation between phonetic weakening and grammaticalization that:

> In particular, isolating languages do not carry grammaticization as far as fusional or agglutinating languages do. Not only do they not affix, they also do not have grams with meaning as abstract and generalized as synthetic languages do. The stability of certain isolating languages, such as Chinese, over time further attests to typological constraints on grammaticalization..."

Bisang (1996:520) agreed with this point of view, adding other comments:

> The main typological characteristic of the languages of East and mainland South East Asia seems to be the high degree of indeterminatedness of their nouns and verbs. This appears to be the main reason why even highly grammaticalized items tend to preserve their phonological shape. Thus, there seem to be only a few examples of phonological and semantic coevolution of grammaticalization as postulated by Bybee, Perkins & Pagliuca (1994).

Ansaldo and Lim (2004:345) completed the picture and made a generalization on isolating tonal languages (ITL). They claimed that "In Sinitic languages, where syllable boundaries and phonotactic constraints rule out reduced syllables of the kind observed elsewhere, the material available for reduction is not easily found at the morphological level". However, Comrie (2003:255), in an article discussing the process leading to the creation of morphophonemic alternations, warned us on the importance of prosodic features:

> …note that even in the case of isolating languages like the Chinese languages that lack or virtually lack segmental morphonemic alternations, there are nonetheless often quite complex phenomena of tone sandhi, i.e. morphonemic alternations involving tone and therefore at the prosodic level.

To what extent do the dialect data presented here question these common views on Sinitic languages? We chose the therm "morphologization" to qualify what happens in the dialects described here because it can be seen as a phase of the grammaticalization process which reduces an analytic construction to a synthetic one (Lehmann 2002:12), with an increase of boundedness between the function

word and the verb stem. Lehmann (2002: 131-145) proposes various grammatical tests to determine the morphological status (degree of boundedness) of a grammaticalized item as: (a) a free, stressable morpheme, (b) a clitic morpheme, (c) an agglutinative affix, (d) a fusional affix, (e) an amalgamated in a flexional affix, (f) an infix or symbolic alternation. According to Lehmann's definition, in Standard Mandarin, aspect markers would be considered as clitics rather than suffixes: their pronunciation depends on the tone of the verb stem, but the verb stem may appear without any suffix. However, in the dialects discussed here, suffixes become "an integral part of another morpheme", i.e. reach the "fusion" stage, discussed by Lehmann (2002:138).

> Another phenomenon of extreme fusion is what has traditionally been termed (by Humboldt and Sapir among others) symbolism or **symbolic expression**. This means that a grammatical category does not have a morpheme or segment reserved for its expression, but that it is embodied in the formal relation between two alternative forms of a stem.

Lehmann mentions vowel alternation such as the English verb forms 'sing' vs. 'sang', but also processes such as vowel lengthening (quantative apophony), consonant mutation, accent shift and tone change as representative examples of a hig degree of fusion. From the data presented above in section 2, types A, B, C and D obviously show a loss of morpheme boundaries, and fall into what Lehmann (2002:146) described in terms of "coalescence", i.e. "Item is affix or even phonological feature of carrier". This is undoubtedly a kind of morphologization, that should be taken into account when discussing grammaticalization in Sinitic languages.

These data also challenge another claim by Bisang (2008, 2009) and Wu Fuxiang (2005b), i.e. that many categories (among which aspect) are not obligatory in Chinese. We suggest that this is not necessarily true in non-standard varieties of Sinitic. This issue needs to be further discussed in a separate work.

4.2 The language contact factor

The Shāngzhōu dialect we mentioned in the introduction is a Central Plain Mandarin (中原官話) dialect, according to Norman's classification (1988: 191), it belongs to Northwest Mandarin. When we decided to investigate the Qíshān dialect (in 2008) and the Fèngxiáng dialect (in 2010), both located in the western part of Shaanxi, we considered the possibility that the various rime changes reported by Zhang Chengcai (1958), Han Baoyu (2006), or Wang Junhu (2012), could be contact-induced and specific to Northwest Mandarin. After a careful investigation of the geographical distribution of these phenomena, and comparison with similar syllable coalescence patterns observed central and eastern Mandarin-speaking areas (Jìzhōu, Cāngzhōu in Hebei, etc.), we reached

the conclusion that morphologization of verbal suffixes is rather to be linked with Northern Mandarin as an innovative area. The area where these morphological modifications of the verb stem occur shares a bundle of syntactic features such as the lack of progressive marker *zài* 在 and the prevalent use of clause-final TAM (Tense-Aspect-Mood) particles, the lack of potential construction [V-de-R], and paticularly an innovative potential form [V-R-liao] (see Lamarre 1995, 2006).

Northern Mandarin shares many grammatical features with the Jin dialects, which may now also be considered as a subgroup of Mandarin (see for instance Qian 2010:6-8), although they are more conservative. Liu Xunning (1995, 2008) adopts a two-level classification, and keeps the term « Mandarin » for innovative dialects, in order to catch both the "northern" features of Jin dialects and their conservative features (the latter features are not surprising, considering that the Jin dialects are spoken in a mountainous area).

Mandarin dialects (include Southwestern Southern Mandarin)	vs.	*non-Mandarin dialects* (include the Jin dialects)
Northern dialects (including Jin dialects)	vs.	*Southern Dialects* (also includes southern Mandarin)

Shanxi dialects are well described. We suppose the lack of data on suffix coalescence among Shanxi Jin dialects may be reflecting this more conservative feature (the rime change pattern described in the Qixian dialect is quite different, see Wang Ailu 1992). This also links morphologization to innovation.

Although we conclude here that the distribution of suffix morphologization is consistent with the distribution of other innovations that appeared in the same area, we do not rule out the possibility that Northern Sinitic phonetic features as a whole may have been influenced by the contact with Altaic or Tibetic languages. Mantaro Hashimoto remarked years ago (Hashimoto 1978:122-126) that Sinitic languages on the southern extremity of the Chinese continent show a phonotactic organisation quite close to the neighbouring non-sinitic languages, whereas Northern Chinese is dominated by stress, and stress is determined by the structure of the word (Hashimoto 1978:199, quoting a 1930 study by Polivanov, [7] see also Norman 1988: 148-149 on stress in Chinese). This approach is likely to be fruitful to shed light on the morphophonemic phenomena we deal with here. We showed that some of the phenomena triggered by phonetic weakening leading to types B and D were actually close to those observed in Běijīng colloquial. Unstressed syllables have been shown to trigger vowel reduction and consonant reduction.

[7] Hashimoto also noted the diminution of the number of tones, getting closer to an High/Low type of tones on the northern side, and the diminution of the sets of final nasals –m/n/ng and obstruents –p/t/k to 1 final nasal and no final obstruent.

Based on descriptions of Standard Mandarin, Schiering (2006: 168-169) classifies Mandarin Chinese as a language where the segmental effect of stress (vowel and consonant reduction, assimilation etc.) is high. His summary of the segmental effects of cliticization in mora-based, syllable-based and stress-based rhythm shows tendencies that fit very well with our non-standard Northern Mandarin varieties (Schiering 2006:260, also pointed by Bisang 2008).

All of the types presented in section 2 can be viewed as phonetic weakening, phonetic reduction, assimilation and sound change related with stress (more precisely to phonetic reduction of a part or of the whole unstressed syllable). To know the exact role played by both prosodic and syntactic factors in the various patterns of suffix coalescence found in Northern Mandarin (toneless syllables, tonal sandhis) we need to compare them with other cases of morphologization attested in southern dialects. Gan Yu'en (2010:20-28) uses the term 'morphological tone sandhi' (*xíngtài biàndiào* 形態變調) for tone sandhi with a derivative function, as in Wu. The use of tonal sandhi instead of a cliticized syllable to mark perfective aspect has been reported for several Yue dialects. The most favored hypothesis is that of a phonetic weakening of aspect suffix [tsɔ^{35}]: [sɪk^{22} tsɔ$^{\mathbf{35}}$] > [sɪk$^{\mathbf{35}}$] (see Gan 2010, 2012). Future studies will probably enable us to understand the extent of the north-south difference in terms of morphological sandhi and patterns of suffix coalescence.

Conclusion

The non-standard data presented above show that we have to nuance some of the statements made on Chinese typological constraints on grammaticalization. Just like nominal and adjectival morphology, Sinitic verbal morphology often manifests itself "locally". Standard Written Chinese may be the worst variety of Chinese to observe in order to shed light on the various morphological processes at work in Sinitic. The complex morphological patterns we uncovered here are not easily compatible with what is required of a unified, standardized language.[8] We suggest that the discrepancy between Standard Mandarin and the Northern dialects described in this paper can be ascribed to the widespread tendency for koines to pick up simpler systems and discard marked variants, known as 'dialect leveling' (Trudgill 1986, chapter 3). Trudgill also noted a related feature in koineization processes that he called 'simplification', i.e. even minority forms may be the ones to survive if they are linguistically simpler, for instance if they show simpler morphophonemics (Trudgill 1986: 103). Last but not least, the loss

[8] On the other hand, a recent study (Shan 2013) shows the correlation in Cantonese, a regional koine, between the use of an overt, syllabic suffix and the level of education of the speakers: less educated speakers more often use tone sandhi of the verb stem to mark perfective aspect.

of morpheme boundaries is hard to capture through the Chinese script. A systematic survey and analysis of intermediary stages of coalescence will help to draw a clearer picture of the phonetic mechanisms of rime change. To conclude, one should probably give up generalizations on "Chinese" on this issue, that mix data from Cantonese, Běijīng Mandarin and Ancient Chinese.

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Abbreviations used in glosses, examples or tables

CL	classifier
CONT	continuative aspect
CPL	complementizer (introduces manner and degree complements)
CRS	current relevant state
DUM	dummy resultative complement (before a deictic directional)
HOR	hortative particle
INFL	inflexion (mark of a suffix coalesced with verb stem)
NEG	negation
NP	noun phrase
NP_{LOC}	locative noun phrase
O	object
OM	object marker
R	resultative complement
SG	singular
SM	Standard Mandarin
STAT	stativizing marker
V	Verb
σ	syllable
1, 2, 3	1st, 2nd, 3rd person pronoun

ABSTRACT

The morphologization of verb suffixes in Northern Chinese

北方漢語裏形態化的動詞後綴

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This paper describes various types of the morphologization of verb suffixes at work in Northern Mandarin, and provides a tentative classification based on fieldwork in Hebei and western Shaanxi, as well as on an extensive survey of second-hand descriptions. What we call the 'inflected form' of the verb regularly corresponds in Standard Mandarin to the verb followed by perfective or stativizing suffixes, goal markers, and complementizers. We discuss the following issues: 1) To what extent does this morphologization process question the prevalent view on Chinese, i.e. Chinese, as an analytic-isolating language, cannot go further up the grammaticalization cline? 2) More than half a century after the first study which pointed at "verbal inflection" in a Shaanxi dialect, to what extent can we link these morphologization phenomena to language contact, and more precisely to language contact specific to the Northwest Mandarin area?

Keywords: morphologization, verbal suffixes, inflection, contact-induced change, Northwest Chinese, aspect marking.

本文首先對北方官話中所能觀察到的動詞後綴形態化現象進行了描述，並且對其進行了嘗試性的分類，這一分類主要是基于我們在河北和陝西西部的田野調查以及一些二手材料。我們所說的動詞的“屈折形式”與標准官話中附加在動詞後表示完成或狀態持續的後綴、終點標記以及補語標記等成分顯示出很整齊的對應關系。本文主要討論兩個問題：（一）這一形態化過程似乎會讓我們懷疑大家對漢語的共識，即漢語因為屬於分析型語言，其虛詞的语法化就不可能導致屈折形态成份的产生。（二）五十多年前的研究曾指出陝西某些方言的動詞完成體有“內部屈折”。如今能否判斷這些形態化現象與中國西北部特有的語言接觸緊密相關？

關鍵詞：形態化，動詞後綴，屈折，語言接觸引起的變化，西北漢語，體標記

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