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Extralinguistic Factors, Language Change, and Comparative Reconstructions: Case Studies from South-West China*

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Abstract: Cross-linguistic studies on language contact suggest that the outcomes of language contact by and large depend on extralinguistic factors. The reverse of this deterministic claim entails that the potential outcomes of a language contact situation may to some extent be inferred from the extralinguistic context of that situation. In this sense, languages native to the multi-ethnic and multi-lingual “ethnic corridor” of the Sino-Tibetan borderland are, due to the complex and layered history of this area, likely to be among most extreme outcomes of language contact—that is, heavy borrowing and heavy structural interference, penetrating into all subsystems of the recipient language.

In this paper, I focus on languages of the ethnic corridor that are spoken by small-size groups with a long history of residence in the area, who are fully bilingual in their native tongue and their respective contact language. I examine local linguistic varieties of (a) well-studied subgroups with written traditions, such as Sinitic and Tibetan; and (b) lesser-researched and phylogenetically more obscure subgroups, such as Qiangic. I argue that common sociolinguistic settings for all considered varieties should lead us to examine the linguistic structures of synchronically and historically lesser-understood varieties aided by insights gained from the study of synchronically and historically better-understood varieties that fall into the same category. This approach allows us to extract falsifiable predictions from complex cases of language contact in the area, to derive testable conclusions about recurrent local processes of language change.

1. Ethnic Corridor and Its Languages: Background and Challenges

This paper focuses on the languages that are spoken in the so-called “ethnic corridor” of China, an historically and ethnically complex area. Geographically, it includes parts of Gānsù 甘肃, Qīnghǎi 青海, Sìchūān 四川, and Yúnnán 云南, as well as parts of the Tibetan Autonomous Region 西藏自治区 (Sūn 1990:1).

[INSET MAP 1 ABOUT HERE]

Map 1. Ethnic corridor (shaded)

Culturally, the area traditionally falls within the Tibetan sphere of influence. Politically, the area is characterized by a long history of political fragmentation.¹ Linguistically, the area presents numerous challenges related to heterogeneity and diversity, and especially issues of linguistic relatedness are notoriously complex.

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¹ The ethnic corridor occupies most of the historical Tibetan province of Kham and parts of the historical province of Amdo. Note that Amdo and Kham never existed as two distinct areas in an administrative sense. Instead, parts of Amdo and Kham that belong to the ethnic corridor all along consisted of a host of independent kingdoms, semi-independent principalities, and dependent districts (Gruschke 2001: 7-9).

There is broad agreement on the existence and overlap in the area of the following five subgroups of the Sino-Tibetan language family:

1. Tibetan (essentially Kham, but also some Amdo dialects)
2. Ngwi-Burmese (essentially Ngwi)
3. Sinitic
4. Na (Nàxī and Moso)²
5. Qiangic

Three of these subgroups (Tibetan, Ngwi-Burmese, Sinitic) also extend beyond the ethnic corridor, whereas the other two subgroups (Qiangic, Na) are restricted in their distribution to the ethnic corridor.

The three subgroups with a wider distribution (Tibetan, Ngwi-Burmese, Sinitic) are all coherently defined in terms of their respective historical, cultural, and linguistic homogeneity. All three groups are supported by uniquely shared innovations, which are a crucial feature in a subgrouping argument. For example, the most strongly-attested common shared characteristics of Ngwi-Burmese languages are phonological (Bradley 1979, 2010:171).³ Tibetan dialects (or languages), on the other hand, are equally well-defined in terms of phonological, lexical and morphosyntactic uniquely shared innovations (Tournadre 2005, 2008).⁴

The two subgroups whose distribution is restricted to the ethnic corridor (Qiangic, Na) have so far not been supported by common shared innovations. While the overall impression is that Qiangic and Na lexicon leans towards Ngwi-Burmese, both subgroups have been argued to lack (phonological) innovations of Ngwi-Burmese (Bradley 1975, 2008).

The scope of the little-studied and controversial Qiangic subgroup (comprising thirteen languages) is best defined by exclusion (see Sūn 1983, 1990, 2001a). The label “Qiangic” loosely brings together heterogeneous languages that are native to the ethnic corridor, but cannot be straightforwardly integrated into the neighboring and better-defined subgroups (Chirkova 2010).

The internally more homogeneous Na languages (Nàxī and Moso), on the other hand, are conventionally held to be transitional between Qiangic and Ngwi-Burmese, for they “share lexical material with both subgroups, but [...] lack the extensive morphology of [Northern] Qiangic” (Bradley 1997:37; see also Sūn 2001b). Notably, in ethnographic studies on Na groups, the scope of the Na ethnos includes, in addition to Nàxī and Moso, also a number of groups speaking Southern Qiangic languages, such as Shǐxīng 史兴 (Guō and Hé 1994:8-9) or Nàmùyī 纳木依 (Guō and Hé 1994:9, footnote 1; Yáng 2006). In linguistics, this hypothesis of a particularly close link between Na languages and some Southern Qiangic languages (essentially Shǐxīng, Nàmùyī, but possibly also Ěrsū 尔苏) appears to have a straightforward support in the important lexical overlap and salient structural similarities between these groups and is currently actively being explored (e.g. Bradley 2010, Jacques 2010).

While the problem of subgrouping and definition in terms of shared common innovations is arguably most acute in the case of Qiangic and Na languages, local varieties of

² The term “Na languages” is an alternative to the term “Nàxī language” in Chinese linguistic classification (Hé and Jiāng 1985:104-116, Gài and Jiāng 1990:70).

³ These include the development of a third reconstructed tone category in non-stop final rhymes throughout Ngwi-Burmese (Burling 1967) and the presence of prenasalised stop and affricate initials *mb *nd *nts *ɲc *ŋg in numerous etyma (Bradley 2010: 171).

⁴ Some common phonological innovations of Tibetan include palatalization of *ty, *ly, *sy, *tsy, e.g. Written Tibetan *gcig* ‘one’, *ci* ‘what’, *shing* ‘wood’, *bzhi* ‘four’. A commonly cited example of a lexical innovation in Tibetan is the form *bdun* for ‘seven’. Grammatical innovations of the group include the formation of four stems for transitive/volitional verbs (past, present, future, imperative), the use of the verbs *yin* and *yod* as copulas and the formation of negation with the forms *ma/mi* (Tournadre 2005).

better defined subgroups represented in the ethnic corridor, such as Tibetan dialects, are not without their share of controversy, albeit for different reasons.

In the popular tripartite classification of the Tibetan dialects of China, corresponding to the three namesake historical provinces of Tibet (Dbus-gtsang, Kham, Amdo), the Tibetan dialects of the ethnic corridor mostly belong to the heterogeneous Kham group, while some dialects in the northern part of the ethnic corridor belong to the Amdo group. The Kham group is controversial altogether (e.g. Denwood 1999:31-32; J. Sun 2003; Tournadre 2005, 2008; Hongladarom 2008), whereas the relationship of the Amdo dialects of the ethnic corridor to their closest relatives outside of the area is equally problematic. While all Tibetan varieties of the ethnic corridor are unmistakably Tibetan, in that they share unique (phonological, lexical, and grammatical) innovations of the Tibetan group, they are characterized by two types of problems.

First, for the relatively compact geographical area that they occupy, these dialects are typified by an unusually high degree of heterogeneity and individual innovation. As pointed out by Jackson T.-S. Sun (2003:796-797) in relation to Kham dialects, these dialects lack diagnostic shared innovations pointing to a period of common history between a subset of these dialects.

Second, these dialects do not appear to straightforwardly relate to the otherwise widely held assumption that Tibetan dialects stem from one common ancestor, Old Tibetan, and are historically linked by Written Tibetan (Tournadre 2008). Lexical and phonological comparative evidence often does not lead back directly to the Written Tibetan, suggesting rather that Written Tibetan is an “older relative” or that, alternatively, a fair amount of change took place within individual dialects obscuring the original historical connection (Bielmeier 2001, quoted from Tournadre 2008). Many local varieties exhibit sound correspondences that are not entirely regular, and in some instances plainly irregular. Of the latter cases, the Báimǎ language of northern Sichuān and southern Gānsù is probably the best-known example. This language appears to have mostly irregular sound correspondences with Written Tibetan, while exhibiting all characteristic innovations of Tibetan dialects (Tournadre 2005).

In sum, the ethnic corridor exhibits two possibly contradictory tendencies. On the one hand, there is a considerable degree of structural and lexical homogeneity which cuts across the boundaries of some linguistic subgroups (Ngwi-Burmese, Na, Qiangic). On the other hand, there is a high level of heterogeneity and individual innovation within each recognized group (e.g. Tibetan or Qiangic).

Both characteristics (homogeneity and heterogeneity) of the local linguistic varieties are commonly attributed to the effects of language contact, particularly as a source of morphosyntactic change. Indeed, the long history of multi-ethnicity, multi-lingualism, and political fragmentation in the area yield particularly conducive conditions for contact induced change.

For the present analysis, I distinguish between the following three parameters of a language contact situation:

- (a) settings or input conditions, including both language-internal and language-external factors (Language-internal factors include, for instance, typological distance between languages in contact. Language-external factors include, among others, the roles and status of the participating languages, the presence of literacy and speakers’ attitudes toward their own and their neighbors’ forms of speech.)
- (b) mechanisms involved in contact-induced change, which are dependent on the input conditions in combination with the time of exposure to contact and the extent of bilingual pressure (i.e. the extent to which bilinguals need to make frequent decisions on language choice)
- (c) output or results (synchronically observed state).

Contact as a cause for linguistic change forms an integral part of the ongoing research on the linguistic history of the area and its languages (see, for instance, papers collected in Nagano

2009). Nonetheless, there appear to be two obstacles to a consistent application of contact explanations in connection to the local linguistic situation.

First, to establish interference from one language in another language, the relevant linguistic history needs to be known, at least in part. More precisely, Sarah G. Thomason (2001:91-95, 2009a:322-324) names four methodological requisites that are necessary for a historical interpretation of a contact situation, including:

1. Proof of the existence of contact between two languages, as well as of the sufficient intensity of the contact situation to make the transfer of structural features possible.
2. Identification of diverse shared (lexical, phonological, morphological, syntactic, semantic, discourse) features from at least two different structural subsystems in the two languages in question.
3. Proof that the shared features were present in language A before A came into contact with language B.
4. Proof that the features shared by A and B were not present in B before it came into contact with A.

In addition to these four requisites, one also needs to search in B for internal sources of the shared features.

Notably, meeting these requisites in the case of many languages of the area is problematic, because of (1) the general lack of knowledge of the linguistic history of the area, and (2) the extinction of many languages (such as Tangut) that according to Chinese historiographic sources, were once spoken in the area.

Second, and more important, a wide range of factors of influence for a particular language contact situation preclude the possibility of predicting its precise outcome (e.g. Thomason and Kaufman 1988:213). Given that typical contact behavior is not analytically tractable, effects of language contact are difficult (if possible at all) to integrate into the conventional methods for developing and testing hypotheses regarding genetic relatedness of the local languages. These methods include subgrouping based on shared common innovations and recovery of antecedent language states through phonological reconstruction (cf. Bradley 1979:27 for the Southeast Asia area).

In this paper, I propose two aspects of the linguistic situation in the ethnic corridor that, in my opinion, may advantageously complement ongoing research on the linguistic history of local languages and throw light on some unresolved problems outlined above. These aspects are: (1) uniformity of sociolinguistic contact settings for all languages of the ethnic corridor, and (2) diversity of local languages, both in relation to their genetic affiliation and to the state of our knowledge concerning their respective synchronic organization and historical development.

(1) Uniformity of sociolinguistic contact settings

Cross-linguistic studies on language contact suggest that the primary role in determining the outcome of contact is played by language-external factors (e.g. Thomason and Kaufman 1988:35, 212; Matras and Sabel 2007:2, Thomason 2009b:35-39). This dependency allows us to infer to a considerable degree linguistic outcomes from factors that are external to language.

The broad extralinguistic contact context, common to all languages of the ethnic corridor, is characterized by:

- (a) political fragmentation in the context of symbiotic political and economic relations (wars, trade, migrations), under the conditions of resistance to (ethnic and linguistic) assimilation
- (b) prolonged multi-ethnicity and multi-lingualism
- (c) intensive contact among non-related languages, and relative isolation of languages from their closest relatives

The type of linguistic change that most likely occurs in this type of situation is heavy borrowing and heavy structural interference, penetrating into all subsystems of the recipient language (Thomason and Kaufman 1988:50, 72; Thomason 2001:70-71). Indeed, effects of this type of linguistic change are unmistakably evident in considerable morphosyntactic restructuring of local languages of various local subgroups (e.g. Chirkova 2010 for the southern part of the area).

(2) Diversity of local languages, including both synchronically and historically better-understood and lesser-understood varieties

An important and fortunate characteristic of the area is its multi-ethnicity and the sheer number of represented languages. Assuming the broad similarity of extralinguistic settings and language contact type (heavy borrowing and heavy structural interference), a close examination of those cases of language contact in the area that fully satisfy the four requisites of inferring linguistic history in Thomason (2001:91-95, 2009a:322-324, 2009b:34-35) allows us to obtain an introspection into those cases of language contact, where linguistic history is not known, phylogeny is obscure, and contributing languages may be extinct.

Overall, as linguistic change is both ongoing and recurrent in the ethnic corridor, the local linguistic situation is a close approximate to a controlled experiment of contact-induced language change (Li 1983:50). Hence, “controlled” observation of better-understood cases allows us to throw light on the development and synchronic characteristics of more obscure local linguistic varieties. This approach enables us to extract falsifiable predictions from complex cases of language contact in the area, to derive testable conclusions about recurrent local processes of language change.⁵ This paper presents an initial exploration of this line of inquiry.⁶

This paper consists of five parts. The first part is the present introduction. The second part discusses Sinitic (Mandarin) varieties in contact with Tibetan varieties, as the clearest cases of language contact in the area (clearest in terms of the relatively long documented history of both languages and the long tradition of descriptive and historical research). It focuses on the Wǔtún and Dǎohuà languages. The third part reviews cases in which only one of the contact languages has a relatively long documented history and a long tradition of descriptive and historical research, i.e. some Kham Tibetan dialects. The fourth part discusses cases of contact, in which neither of the languages has a documented history or a long tradition of descriptive and historical research, i.e. Qiangic.⁷ Finally, the fifth part sums up the essential findings of this paper and suggests perspectives for future research.

[INSERT MAP 2 ABOUT HERE]

Map 2. Location of the languages discussed in the paper. 1: Wǔtún, 2: Dǎohuà, 3: gSerpa Tibetan, 4: Kami Tibetan, 5: Shǐxīng

2. Sinitic Languages of the Ethnic Corridor: Wǔtún and Dǎohuà

Various Chinese dialects of the area belong to the Mandarin group of dialects, more precisely either to the Northwestern Mandarin group in the north of the ethnic corridor (hereafter NWM) or the Southwest Mandarin group in the remainder of the area (hereafter SWM). In

⁵ See John Holm (2004) for a comparable approach to some partially restructured languages, based on different European languages (such as African-American English, Afrikaans, and Brazilian Vernacular Portuguese).

⁶ A discussion of possible causes of contact-induced change is beyond the scope of this paper. For an analysis of cognitive and behavioral causes for various scenarios of contact-induced change, see LaPolla (2005, 2009).

⁷ Wǔtún data are from Janhunen et al. (2008), Dǎohuà data are from Acuo (2004, 2005), gSerpa Tibetan data are from J. Sun (2006), Kami Tibetan and Shǐxīng data are from personal research.

this section, I focus on two small-size ethnic groups, fully bilingual in their respective contact variety of Tibetan (Amdo and Kham groups), which migrated into the area two to three centuries ago:

(1) the Wütún language 五屯话 of Tóngren County 同仁县, in Huángnán 黄南 *rma lho* Tibetan Autonomous Prefecture, Qīnghǎi Province, spoken by some 4,000 people

(2) the Dǎohuà language 倒话 of Yǎjiāng *nyag chu kha* County 雅江县, in Gānzī 甘孜 *dkar mdzes* Tibetan Autonomous Prefecture, Sīchuān Province, spoken by some 2,700 people.⁸

2.1. Wütún

Wütún is a Tibetanized form of Mandarin with Altaic features. It is an example of a Chinese (Mandarin) dialect that has undergone a period of exceptionally rapid change under conditions of intensive contact with non-Sinitic languages (essentially Tibetan, but also Mongolic and Turkic), and in relative isolation from other forms of Mandarin. The basic vocabulary and most grammatical resources of Wütún are mainly of a Chinese origin, while many atypical features of Wütún are clearly due to the influence of the neighboring non-Sinitic languages. These features, however unique in the Chinese context, do not undermine the basic genealogical assignment of Wütún to Mandarin (or more specifically, to NWM). This basic assignment is corroborated by the existence of systematic correspondences between Wütún and other forms of Mandarin, in particular, NWM, and of those between Wütún and Middle Chinese (Janhunen et al. 2008:11-12). The regularity is not absolute. The lack of regularity can to a considerable extent be attributed to the fact that both Chinese and Tibetan elements occur in Wütún in several distinct layers, including inherited (Sinitic) vocabulary and various layers of (Sinitic and Tibetan) loans (from various donor dialects).

In terms of innovations, Wütún is typified, on the one hand, by some unique features, which are distinctly innovative in relation to its synchronic and historical relatives (see below), and, on the other hand, by developments that are opposite to some diagnostic changes of Mandarin dialects. These latter diagnostic changes include:

1. devoicing of Middle Chinese voiced obstruents (stops, affricates, and fricatives), eliminating voicing as a distinctive feature in the phonological systems of Mandarin dialects
2. disappearance of the original non-nasal codas *-p*, *-t*, *-k*
3. disappearance of the original entering *rù* 入 tone and the *yīn-yáng* split of the *píng* level tone, yielding systems with four tones.

⁸ The ancestors of the Wütún people arrived into the area in the Míng period (1368-1644), when the Upper Yellow River region formed a borderland of China against the non-Chinese territory of Tibet. This was the time when the local Mongol and Chinese elements were organized into hereditary borderguard units, based in fortified settlements in various parts of the region. This system was continued in the Qīng (1644-1911), when the borderguard units became known as ‘local people’ (*tǔ rén* 土人).

Speakers of Dǎohuà, on the other hand, are descendants of Chinese troops sent by Qīng Emperor Kāngxī to expell the Dzungars from Tibet (1720s).

Presently, both Wütún and Dǎohuà are the oral languages of everyday life of their respective communities. Wütún is accompanied (1) by Amdo and Written Tibetan as the language of education and higher culture, and (2) by Mandarin, both (a) the local Northwest dialect, which is traditionally used by Wütún speakers in trade contexts, and (b) Standard Mandarin, which is becoming increasingly common as the language of intercultural communication (Janhunen et al. 2008: 7, 19-20). Similar to Wütún, Dǎohuà is accompanied (1) by the local (Kham) Tibetan dialect (*Nyag chu kha* Tibetan), and (2) by Mandarin (both the local Southwest dialect and Standard Mandarin), which is gradually gaining in importance (Acuo 2004: 6).

Conversely, Wütún has a complete series of voiced stops and a complete series of voiced fricatives, it has the final *-k* in the inherited Sinitic part of the lexicon, and it is typified by the absence of tones.

An examination of the synchronic Wütún data in reference to its synchronic and historical relatives (based on data and analysis in Janhunen et al. 2008) reveals the following, cross-linguistically recurrent, contact-induced mechanisms, which have led to the formation of the phonological system of Wütún:

(1) Convergence of articulation modes and positions between donor language (the local variety of Amdo Tibetan) and recipient language (the form of NWM that served as the basis for Wütún) and incorporation of new (Tibetan) phonemes in (Tibetan) loanwords. In addition, Sinitic sequences without a counterpart in the donor language are replaced by their close Tibetan equivalents.

(2) Reorganization of the (expanded in comparison to other Mandarin dialects) phonological system resulting in the substitution of some inherited phonemes by borrowed phonemes, leading to innovative sound changes that can only be understood in reference to both the recipient language and the donor language

(3) Profound restructuring of the prosodic organization based on that of the donor language.

These characteristics of Wütún are exemplified in this order below.

Examples of (1) (convergence of articulation modes and positions, incorporation of new phonemes in loanwords):

Some examples of convergence of articulation modes and positions include:

(1) An atypical (and altogether unparalleled in other Mandarin dialects) development of the initial *w* to /ɣ/ or /ʁ/. For example, [ɣ^ua] 挖 ‘to dig’, Standard Mandarin (hereafter SM) *wā*; [ɣ^o] 网 ‘net’, SM *wǎng* (Janhunen et al. 2008:34). This development is analogous to that of a voiced labial continuant into a (labio)velar in Amdo Tibetan, i.e. Written Tibetan (hereafter WT) *w*, *db* > Amdo /ɣ/ (see Róna-Tas 1966:176-184).

(2) The development of *f* to *h*. Before vowels other than *a*, Wütún *h* corresponds to SM *f*, as in [hi] 飞 ‘to fly’, SM *fēi*. The tendency to replace *f* with *h* is synchronically active and is often applied even to modern SM loanwords, e.g. [f^hɛmpi]~[h^hɛmpi] 粉笔 ‘chalk’, SM *fěnbǐ* (Janhunen et al. 2008:35). (In the Sinitic part of the lexicon, the segment *h* also represents an earlier *f*, from a yet earlier sequence *hw*, as in [ho] < *fo < *hwe 火 ‘fire’, SM *huǒ*, and 活 ‘to live’, SM *huó*, Janhunen et al. 2008:35.) This development has a close parallel in many Amdo Tibetan dialects, namely, that of *ph* to *h* (see Róna-Tas 1966:178-184).

Examples of incorporation of new phonemes in Tibetan loanwords include:

(1) Voiced fricatives, *z*, *ʒ*, originating in Amdo preglottalized fricatives, e.g. [z^hɛŋɛ] ‘monk’s clothes’, WT *gzan shan*; [ʒ^hɛmpa] ‘other’, WT *gzhan pa*.

(2) Wütún *ʈ*, representing Amdo *ʈ* (WT *lh* or *sl*), as in [ʈ^hak^hã] ‘temple’, WT *lha khang*.

Examples of borrowed Tibetan phonemes incorporated into the inherited Wütún lexicon include: (1) aspirated voiceless sibilants *s^h* and *ʃ^h*, as well as (2) *ɲ*, which is paradigmatically the aspirated counterpart of *ɕ*. *s^h* is the standard counterpart of SM *s*, e.g. [s^hɛ̃] 三 ‘three’, SM *sān*. *ʃ^h* is the standard counterpart of SM *sh* [ʃ], e.g. [ʃ^ha] 杀 ‘to kill’, SM *shā* (Janhunen et

al. 2008:36). ɥ corresponds to SM ɕ and x in items with an original medial, as in $[\text{ɥ}^{\text{ui}}]$ 睡 ‘to sleep’, SM *shuì*, or $[\text{ɥ}^{\text{ɔ̃}}]$ ‘to go’, SM 行 *xíng*. Alternatively, ɥ has also absorbed the original velar fricative x in the Sinitic part of the lexicon before vowels other than *a*, e.g. $[\text{ɥ}^{\text{ə}^{\text{v}}}]$ 厚 ‘thick’, SM *hòu* (Janhunen et al. 2008:36).

Examples of (2) (reorganization of the phonological system resulting in the substitution of some inherited phonemes by borrowed phonemes):

To illustrate this point, I will consider (a) two features in Wütún that represent developments that are opposite to the diagnostic Mandarin changes (namely, devoicing of Middle Chinese voiced obstruents and loss of consonantal codas) and (b) the innovative, from the perspective of Mandarin varieties, incorporation of the aspirated sibilants into the inherited Sinitic part of the Wütún lexicon.

Of major influence to the reorganization of the phonological system of Wütún under the influence of Amdo Tibetan is the Tibetan system of preinitials (prenasalized, preglottalized, and pre-aspirated stops). While Wütún has not developed preinitials in the inherited Sinitic part of its lexicon, the borrowed system of preinitials in Tibetan loanwords had a significant structural impact on Wütún, triggering substitution of some inherited phonemes by borrowed phonemes.

The general tendency for the segmental identity of the preinitials in the Amdo Tibetan dialect, with which Wütún is in contact, is to become weaker over time, so that the original contrast is either lost (as in the case of preinitials before voiceless stops, nasals and some non-nasal sonorants) or its presence in the syllable is synchronically signaled by other phenomena (as is the case of the preglottalized voiced stops, which are phonetically distinguished from corresponding voiceless plain stops by the feature voice).⁹ In addition, in the case of the original sibilant initials s and ɕ , the impact of the preinitial is preserved in the distinctive voice of the innovative Wütún phonemes z and ʐ , respectively.

In the analysis of Janhunen et al. (2008:38-43), the addition of new voiced phonemes completes the consonant matrix of Wütún in a way that leaves no gaps in the system (see Figure 1).

$^{\text{n}}\text{b}$	$^{\text{n}}\text{d}$	$^{\text{n}}\text{dz}$	$^{\text{n}}\text{dz}^{\text{~}}$	$^{\text{n}}\text{dz}^{\text{h}}$	$^{\text{n}}\text{j}$	$^{\text{n}}\text{g}$
$^{\text{h}}\text{p}$	$^{\text{h}}\text{t}$	$^{\text{h}}\text{ts}$	$^{\text{h}}\text{tɕ}$	$^{\text{h}}\text{tɕ}^{\text{h}}$	$^{\text{h}}\text{cɕ}$	$^{\text{h}}\text{k}$

$^{\text{h}}\text{b}$	$^{\text{h}}\text{d}$	$^{\text{h}}\text{dz}$	$^{\text{h}}\text{dz}^{\text{~}}$	$^{\text{h}}\text{dz}^{\text{h}}$	$^{\text{h}}\text{j}$	$^{\text{h}}\text{g}$
p	t	ts	tɕ	tɕ^{h}	cɕ	k
p^{h}	t^{h}	ts^{h}	tɕ^{h}	tɕ^{h}	cɕ^{h}	k^{h}
f	t	s^{h}	ɕ^{h}	ɕ	ɥ	$\text{x}^{\text{~h}}$
w	l	z	r	ʐ	j	$\text{ɣ}^{\text{~ɕ}}$

p	t	ts	tɕ	tɕ^{h}	k
p^{h}	t^{h}	ts^{h}	tɕ^{h}	tɕ^{h}	k^{h}
f		s	ɕ	ɕ	x
w	l		z	j	

Figure 1. Wütún obstruents (left, adapted from Janhunen et al. 2008:42) as compared to Mandarin obstruents (right)

Thus, the new Wütún voiced sibilants z and ʐ complete the series of voiced continuants, which then has a member in each column ($\text{w l z r ʐ j ɣ}^{\text{~ɕ}}$). In a similar fashion, it is likely that the paradigmatic status of the two originally laminal sibilants ɕ and ɥ has been restructured, so that these phonemes take positions in the laminal and palatal columns of the

⁹ Two tendencies in the development of initial clusters in Wütún can furthermore be distinguished. On the one hand, there is a tendency to neutralize the distinction between the prenasalized stops and the preglottalized voiced stops. Therefore, many modern speakers of Wütún have only one series of voiced stops, which may or may not be preceded by an onset segment. On the other hand, there is a tendency to neutralize the distinction between the pre-aspirated stops and voiceless stops, which contrast with the corresponding (post)aspirated stops (Janhunen et al. 2008: 41).

series of voiceless continuants, which, then, also has a member in each column (f † s^h ʃ^h ʧ^h h~x). In this system, there is no place for the dental sibilant s (without a preinitial), whose phonetic distinction with regard to the corresponding sibilant s^h is contained in the absence of aspiration. This leads to s being no longer a true member of the Wütún synchronic paradigm. Hence, the unaspirated sibilant s has a very limited distribution, occurring only in a few Tibetan loanwords, for which reason s appears to be losing its phonemic status in Wütún, being regularly replaced by s^h in the inherited Sinitic part of the lexicon. In a similar fashion, ʃ is replaced by ʃ^h, as an innovative regular counterpart of SM ʃ and a continuant counterpart of the affricates tʃ and tʃ^h.

Another example of the incorporation of borrowed morphemes into the inherited Sinitic part of the lexicon, regularly substituting some inherited Sinitic phonemes with borrowed Tibetan phonemes, is the reorganization of the final system (Janhunen et al. 2008:45-47).

Middle Chinese originally had three non-nasal consonantal finals (-p, -t, -k). These finals are likely to have already been lost in the forms of NWM that served as the basis for Wütún (as part of the diagnostic changes of Mandarin dialects). Conversely, the Wütún final -k (which transcription stands for an archiphonemic velar obstruent), was reintroduced to Wütún from its Amdo Tibetan donor dialect, in which -k is the single non-nasal final that still survives from the original set of six non-nasal consonantal finals in WT, i.e. b, d, g, s, l, r, e.g. [tʃ^heʷ], WT *brag* ‘rock’ (Janhunen et al. 2008: 46).

-k can be combined in Wütún with three vowel qualities: *ok* [oʷ] *ak* [eʷ] *ek* [əʷ]. Of these, the sequences -ak and -ok only occur in Tibetan loanwords. The sequence -ek, on the other hand, has expanded its distribution into the Sinitic part of the Wütún lexicon, taking over the distinctive status of a high central vowel that once represented the monophonemic counterpart of the SM sequence *ou* /ew/ (consisting of a vowel and a final), e.g. [ʃ^heʷ] 手 ‘hand’, SM *shǒu*; [ku^heʷ] 骨头 ‘bone’, SM *gǔtǒu* (Janhunen et al. 2008:46-47).

As detailed in Janhunen et al. (2008:47), the segmental loss of the original semi vocalic finals *w y* in NWM was accompanied by the raising of the preceding main vowel. In the case of the main vowel *a*, the result was a new set of mid high vowels *o* (< *aw*) and *e* (< *ay*). In the case of the main vowel *e*, one of the results was *i* (< *ey*), which merged with the regular *i* (< *i*), whereas the other result was the corresponding back vowel **i* (< *ew*), which did not merge with *u* (< *u*), but remained a distinct vowel phoneme. In Wütún, this was the only vowel that did not have a counterpart in Amdo Tibetan, for which reason it was replaced by the Amdo sequence -*ek*.

The sequence -*ek* also appears to have regularly replaced the syllabic retroflex segment represented as *er* in SM, which has no counterpart in the contact variety of Amdo Tibetan. For example, [əʷto]~[ʷəto] 耳朵 ‘ear’, SM *ěrduo* (Janhunen et al. 2008:47).

Examples of (3) (profound restructuring of the prosodic organization based on that of the donor language):

An important feature that separates Wütún from its closely related NWM varieties is the absence of tones. Similar to other forms of Chinese in the northern Sino-Tibetan borderland, Wütún is likely to have lost its original tones at a relatively early stage of its development. This is because there is no evidence suggesting that the original tonal distinctions were replaced in Wütún by any other types of suprasegmental distinctions, or that they are synchronically reflected by functional differences at the segmental level. The absence of tones is historically an areally conditioned feature of the northern Sino-Tibetan borderland. It also renders Wütún phonology more compatible with that of its contact language, Amdo Tibetan, which does not have tones either.

At the same time, similar to Amdo Tibetan, Wütún has a prosodic pattern, whereby words of over one syllable exhibit a prosodic prominence (higher pitch or, alternatively, stress) on the second syllable (Janhunen et al. 2008:26-27).

2.2. Dǎohuà

A close parallel to Wütún is the Dǎohuà language, for which a standard reference is Acuo (2004, 2005). Acuo argues that Dǎohuà is a mixed language. Mixed languages are those “whose grammatical and lexical subsystems cannot all be traced back primarily to a single source language” (Thomason 2003:21). Dǎohuà is considered a mixed language, for it supposedly combines Chinese lexicon with Tibetan grammar. A closer investigation of Dǎohuà data, however, suggests that while Dǎohuà, similar to Wütún, is considerably restructured through language contact, its basic vocabulary and material resources of grammar allow its basic assignment to (Southwestern) Mandarin (cf. Chén 2005:49). Hence, in my view, Dǎohuà is a Tibetanized form of Mandarin.¹⁰

Dǎohuà data and analysis provided in Acuo (2004) and Mǎ (2010) suggest that contact-induced mechanisms involved in the developments of its phonological system are by and large consistent with those observed in Wütún, including:

(1) Convergence of articulation modes and positions between the donor language (the local variety of Kham Tibetan) and the recipient language (the form of SWM that served as the basis for Dǎohuà), and incorporation of new (Tibetan) phonemes in (Tibetan) loanwords. In addition, Sinitic sequences without a counterpart in the donor Tibetan variety are replaced by close their Tibetan equivalents.

(2) Reorganization of the phonological system (expanded in comparison to Sinitic varieties), resulting in the substitution of some inherited phonemes by borrowed phonemes. This process leads to innovative sound changes that can only be understood in reference to both the recipient language and the donor language.

(3) Profound restructuring of the prosodic organization based on that of the donor language.

Examples of (1):

Incorporation of new phonemes from the donor language

Similar to Wütún, Dǎohuà has a composite phonological system that combines both inherited Sinitic phonemes and innovative phonemes incorporated from the contact Tibetan variety (hereafter Nyag chu kha Tibetan). Dǎohuà has a total 40 initial phonemes, including such characteristic Kham Tibetan elements, as voiced stops and affricates (b, d, g, dz, dẓ, dz̥) and corresponding prenasalized stops and affricates (mb, nd, ŋg, ndz, ndẓ, ndz̥) (see Figure 2).

mb	nd	ndz	ndẓ	ndz̥	ng
b	d	dz	dẓ	dz̥	g
p	t	ts	tʂ	tʂ̥	k
p ^h	t ^h	ts ^h	tʂ ^h	tʂ̥ ^h	k ^h
f		s	ʂ	ʂ̥	x

p	t	ts	tʂ	tʂ̥	k
p ^h	t ^h	ts ^h	tʂ ^h	tʂ̥ ^h	k ^h
f		s	ʂ	ʂ̥	x

¹⁰ Some characteristic features of SWM present in Dǎohuà are as follows: (1) initials *n-* and *l-* are not distinguished in many cases, e.g. [ŋ̃²] 南 ‘south’, SM *nán* (Acuo 2004:291); (2) Middle Chinese initials *k-* (见母) and *x-* (匣母) develop, when followed by the rhyme *ai* (蟹摄开口二等字), into *kai* and *xai*, respectively, e.g. [kɛ¹] 街 ‘street’, SM *jiē* (Acuo 2004:285); [xɛ²tsɿ] 鞋子 ‘shoe’, SM *xié* (Acuo 2004:301); (3) syllables, such as 国, SM *guó*, have the final *-ue*, e.g. [kue²tɕia¹] 国家 ‘country’, SM *guójiā* (Acuo 2004:280).

w	l	z	ʐ	j	
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w	l		ʐ	j	
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Figure 2. Dǎohuà obstruents (left, adapted from Acuo 2004:46) as compared to SWM obstruents (right, based on Lǐ 2010)

Replacement of inherited sequences without a counterpart in the donor language by their close equivalent in the donor language

All Dǎohuà vowels have counterparts in its contact Tibetan variety, whereas those that do not, have been replaced by their nearest Tibetan equivalents. For example, the syllabic retroflex segment, represented as *er* in SM, has been regularly replaced by the Dǎohuà innovative vowel ϵ , e.g. [ʔ ϵ^3 to¹] 耳朵 ‘ear’, SM *ěrduo* (Acuo 2004:38).

Convergence of articulation modes and positions between the donor language and the recipient language

Many sound changes in the inherited Sinitic part of the Dǎohuà lexicon have a close analogy to some diagnostic sound changes of Kham dialects (Gésāng and Gésāng 2002:78). These diagnostic developments include, for example, that of *-ang* to *-ō*, e.g. [tʂ^hō²] 长 ‘long’, SM *cháng* [tʂ^hɑŋ³⁵] (Acuo 2004:38); [pō¹] 帮 ‘to help’, SM *bāng* [paŋ⁵⁵]; [p^hō⁴] 胖 ‘fat’, SM *pàng* [p^hɑŋ⁵¹]; [k^hō¹] 康 ‘healthy’, SM *kāng* [k^hɑŋ⁵⁵] (Acuo 2004:44).

All original consonantal codas in Dǎohuà and Nyag chu kha Tibetan are lost, transforming all closed syllables into open syllables. For example, in Dǎohuà, the segmental loss of the original semi vocalic finals *w* and *y* in SWM was accompanied by the raising of the preceding main vowel, yielding many innovative vowels. For example, SM *ai* corresponds to Dǎohuà ϵ , e.g. [l ϵ^2] 来 ‘to come’, SM *lái*; [t ϵ^4 jō²] ‘sun’, SM *ei* corresponds to Dǎohuà e , e.g. [x e^2] 黑 ‘black’, SM *hēi* (Acuo 2004:43); respectively, *ei* corresponds to *i*, e.g. [mi²] 眉 ‘eyebrow’, SM *méi*; *au* corresponds to ω , e.g. [x ω^3] 好 ‘good’, SM *hǎo*; *iau* corresponds to ω , e.g. [t^hi ω^1] 挑 ‘to choose’, SM *tiāo*; *uo* corresponds to ω , e.g. [t ω^1] 多 ‘many’, SM *duō* (Acuo 2004:44).

Similar to Wütún, Dǎohuà (and Nyag chu kha Tibetan) has reduced the original system of three nasal finals (*-m*, *-n*, *-ŋ*) to only one nasal final, which typically merges with the preceding vowel into a nasalized vowel. For example, [tʂ ϵ^4] 站 ‘to stand’, SM *zhàn*; [ʂ ϵ^1] 山 ‘mountain’, SM *shān*; [tō¹] 东 ‘east’, SM *dōng*, [t^hō³] 桶 ‘bucket’, SM *tǒng* (Acuo 2004:44).

Dǎohuà is characterized by the process syllable boundary re-adjustment, which is a characteristic feature of many Tibetan dialects. This process, whereby the original coda makes part of the following onset, creates consonant clusters in the second-syllable initial position. Hence, nasal vowels in the first syllable lead to the formation of prenasalized clusters in the second-syllable-initial position, accompanied by the process of intervocalic voicing. For example, [z ϵ^2 ŋdzia] 人家 ‘other people’, SM *rénjiā* (Acuo 2004:273), [tu ϵ^1 ŋdz ϵ] 端正 ‘upright; good-looking’, SM *duānzhèng* (Acuo 2004:278).

Examples of (3) (profound restructuring of the prosodic organization based on that of the donor language):

The prosodic organization of Dǎohuà has a close parallel in that of its contact variety, Nyag chu kha Tibetan, whereby, in its essentials, monosyllabic words have four contrastive tones, whereas words of over one syllable have only two contrastive tones: high (44 or 55) and low (33).¹¹ Overall, the latter contrast has a close analogy to the primary register contrast in tonal

¹¹ The four contrastive tones on monosyllabic words in Dǎohuà appear to regularly correspond to the four contrastive tones in many SWM varieties.

Tibetan dialects (see J.Sun 1997:489). Furthermore, similar to tonal Tibetan dialects, the tonal contrast in words of over one syllable in Dǎohuà is borne by the word-initial syllable, whereas tones on all remaining syllables are neutralized. For example (Mǎ 2010: 19):

[tʰiɛ̃⁵⁵⁴] 天 ‘sky’ + [tɕʰ³³²] 晴 ‘sunny’ > [tʰiɛ̃⁵⁵ tɕʰ³¹] ‘sunny weather’

[tso⁵¹] 左 ‘left’ + [ɣəu⁵¹] 手 ‘hand’ > [tso⁴⁴ ɣəu⁵¹] ‘left hand’

[xõ³³²] 红 ‘red’ + [tɕʰ³³²] 旗 ‘flag’ > [xõ³³ tɕʰ³¹] ‘red flag’

[jiu³²⁴] 右 ‘right’ + [ɣəu⁵¹] 手 ‘hand’ > [jiu³³ ɣəu⁵¹] ‘right hand’

Discussion of (2) (reorganization of the phonological system resulting in the substitution of some inherited phonemes by borrowed phonemes):

While convergence of articulation modes and positions between the donor language and the recipient languages and incorporation of new phonemes through medium of loanwords are evidently characteristic of Dǎohuà, the impact of these developments on the synchronic phonological make-up of Dǎohuà, also in relation to innovative sound correspondences between Dǎohuà and its closely related SWM varieties, is difficult to ascertain due to the following two reasons.

On the one hand, standard reference works on Dǎohuà do not provide exhaustive overviews of sound correspondences between Dǎohuà and SWM and Middle Chinese. On the other hand, present analyses of the phonology and lexicon of Dǎohuà essentially focus on the inherited Sinitic phonemes and the inherited Sinitic part of the Dǎohuà lexicon to the exclusion of borrowed phonemes, even though some borrowed phonemes have evidently been integrated into the Sinitic part of the lexicon. For example, while voiced stops and affricates and prenasalized stops and affricates are nominally part of the consonantal inventory of Dǎohuà, they are not included in the analyses in Acuo (2004) and Mǎ (2010), for it is stated that “most of voiced initials and prenasalized stop and affricate initials in Dǎohuà are attested in Tibetan loanwords” (Acuo 2004:48, Mǎ 2010:7, my translation and emphasis). The issue of the incorporation of voiced obstruents into the inherited part of the Dǎohuà lexicon remains thus unexplored. Some examples of Sinitic words with voiced obstruents in Dǎohuà include [gõ⁴] 虹 ‘rainbow’ (Acuo 2005:4), SM *hóng*, Middle Chinese *huwng*; [bi²kʰõ³] 鼻孔 ‘nostril’, SM *bikǒng*; or [bi²liõ²ku³] 鼻梁骨 ‘bridge of the nose’, SM *biliánggǔ* (Acuo 2004:272; Middle Chinese *bjijH* for the first syllable, but see the same root with a voiceless initial on p. 38, [pi²tsɿ] 鼻子 ‘nose’, SM *bízi*). In light of the structural impact of the system of preinitials of Amdo Tibetan on the reorganization of the Wütún system of consonantal initials, it is conceivable that the reintroduction of voiced obstruents in Dǎohuà may possibly be due to the reorganization of its phonological system triggered by the incorporation of borrowed Tibetan phonemes (voiced obstruents and prenasalized stops and affricates).

2.3. Summary

A preliminary comparison of two unrelated Mandarin dialects of the ethnic corridor (Wütún and Dǎohuà) suggests close parallels in the related mechanisms of contact-induced change. These mechanisms include (1) convergence of articulation modes and positions between the donor language and the recipient language, incorporation of borrowed phonemes, replacement of sequences without a counterpart in the donor language by their close equivalent in the donor language; (2) reorganization of the phonological system of the recipient language leading to the substitution of some inherited phonemes by borrowed phonemes; and (3) profound restructuring of the prosodic organization based on that of the donor language. At the same time, the precise synchronic outcome of these parallel mechanisms of contact-induced change is in each case different, essentially depending on the differences in the respective donor languages. For example, Amdo and Wütún do not have tones and have

consonantal codas, whereas Nyag chu kha Tibetan and Dǎohuà have tones and do not have consonantal codas.

Overall, changes observed in Wǔtún and Dǎohuà by and large conform to cross-linguistic tendencies in language contact situations. Notably, tendency for convergence of articulation modes and positions, incorporation of new borrowed phonemes with the possibility of the replacement of some inherited phonemes by borrowed phonemes are all argued by Yaron Matras (2007:38) to be functionally motivated by aiming to ease the burden of having to maintain complete separation of two distinct systems in different settings of conversational interaction. This tendency towards convergence is counteracted by social norms and awareness of identity and loyalty toward the group associated with the home language, so that the process of phonological borrowing is the outcome of compromises between these two pressures (Matras 2007:36-37).

On the other hand, prosody appears cross-linguistically to be a domain of phonology that is particularly prone to contact. Hence, in frequency-based hierarchies of likelihood of convergence in the phonological system, the adoption of prosodic features mostly precedes that of segmental phonological features (Matras 2007:38-39).

Finally, tendency toward reorganization of the phonological system with a concomitant readjustment of sound correspondences leading to innovative—in relation to closely related varieties and antecedent states—sound changes is likely to be due to the property of optimization of phonemic systems, whereby structure emerges as the result of self-organization under constraints of perception, production and learning. Experimental work with vowel systems using computer simulations by Bart de Boer (2000, 2001) shows that coherent sound systems can emerge as the result of local interactions between the members of a population. Optimization or self-organization (in our case, the emergence of order in systems enriched by borrowed phonemes) is hence likely to be the result of self-organization in a population of language users.

In conclusion, the two highly heterogeneous, language-like Mandarin dialects of the ethnic corridor considered in this section (Wǔtún and Dǎohuà) exhibit close parallels in terms of the mechanisms of contact-induced change that need to be taken into account when analyzing sound correspondences between these varieties and their closest (synchronic and historical) relatives. While both Wǔtún and Dǎohuà allow basic genealogical assignment on the basis of their core vocabulary and the respective grammatical resources of their grammars, extensive contact-induced restructuring does not allow to straightforwardly resolve the issue of their precise affiliation within Mandarin dialects. Given the long and documented history of the donor and the recipient languages in the two considered cases, it is possible, in hindsight, to almost fully account for the precise developments in each case. Conversely, recovery of antecedent language states through phonological reconstruction based on the Sinitic part of the vocabulary without the knowledge of the developments in the donor language may be more problematic (cf. Chén 2005:50).

3. Tibetan Dialects of the Ethnic Corridor

From relatively well-understood cases of language contact in the area (Wǔtún and Dǎohuà), in which both contact languages are relatively well-documented and well-researched, let us now turn to cases in which only one language in a contact situation is well-studied and has a written tradition, namely Tibetan dialects. The ethnic corridor hosts a great variety of highly heterogeneous and language-like Tibetan dialects. Due to pioneering work by Jackson T.-S. Sun, these dialects in recent years increasingly gained the attention of linguists.¹²

Language contact indubitably played a significant role in the formation of many a Tibetan dialect of the ethnic corridor, as obvious from idiosyncratic lexical items apparently unique to each dialect, sharp divergences in vocabulary from other Tibetan dialects and Written Tibetan, and extensive grammatical restructuring.

¹² See, for instance, Sun's work on Zhongu (2003a), Chos-rje (2003b), gSerpa (2006), Khalong (2007).

In most cases the donor languages that contributed to the formation of these dialects are unknown. In some cases, however, donor languages can be ascertained. This is the case for gSerpa Tibetan spoken in Gānzī Prefecture, which is mostly in contact with the Showu rGyalrong from the neighboring Rāngtáng 壤塘 *dzam thang* County (J. Sun 2006:107).

Overall, Tibetan dialects of the ethnic corridor are typified by typologically uncommon developments and unusual sound correspondences which hinder cognate recognition and obscure the determination of the precise affiliation of these dialects within modern Tibetan. For instance, some examples of such unusual developments in gSerpa Tibetan include (J. Sun 2006:109-113): (1) development, apparently, from widely disparate sources, of typologically uncommon diphthongs *ua* and *uo* that carry a characteristic velar onglide; (2) merger of Old Tibetan **ak(s)* and **ok(s)*; (3) innovative *-ɛ-* rhymes, which developed from certain closed rhymes containing nuclear vowels **i*, **u* or **e*; (4) retention of Old Tibetan **-l*, which has disappeared in most Tibetan dialects represented in China; and (5) extensive vocalic alternation, conditioned by word-internal location of a morpheme.

In my analysis, heterogeneous and language-like Tibetan dialects of the ethnic corridor can be said to share with the two heterogeneous and language-like Mandarin dialects of the ethnic corridor considered above not only one common extralinguistic contact context, but also many synchronic characteristics regarding in-group heterogeneity (Kham and Mandarin, respectively), language-like characteristics and the innovative nature of correspondences with their respective synchronic and historical relatives. These similarities on both the input and the output ends of the language contact situations in the case of Mandarin and Tibetan dialects of the ethnic corridor suggest that parallel mechanisms of contact-induced change may be responsible. In other words, convergence of articulation modes and positions between the donor language and the recipient language, incorporation of new phonemes, replacement of sequences without a counterpart in the donor language by their close equivalent in the donor language, reorganization of the phonological system resulting in the substitution of some inherited phonemes by borrowed phonemes, and profound restructuring of the prosodic organization of the recipient language based on that of the donor language are all likely to have contributed to the development of the local Tibetan dialects. For instance, an example of the incorporation of new phonemes in Kami Tibetan (spoken in Mùlǐ 木里 *rmi li* Tibetan Autonomous County, in contact with the local Qiangic languages Púmǐ 普米 and Shǐxīng as well as with the local Northern Ngwi dialect) include the diphthong *ua*, which is attested only in words of uncertain etymology, e.g. /^hg^hua-^hfju/ ‘yak’, /^hk^hua-^hla/ ‘basin’ (cf. Shǐxīng /q^hua³³-la⁵⁵/, Púmǐ /k^hua³⁵la³⁵/). Another innovative characteristic of this dialect is the presence of uvular allophones of velar phonemes (Chirkova under review). This feature is of interest in connection to the present discussion of contact-induced convergence, because, cross-linguistically, increase in allophonic variation (which may ultimately lead to a shift in articulation) is a process that is concomitant to convergence of articulation modes and positions between the donor language and the recipient language in a contact situation (Matras 2007:38). In other words, increase in allophonic variation in Kami (uvular allophones of velar phonemes) is likely to be due to convergence with its unknown donor language(s) (which had uvular phonemes).

In a similar fashion and, again, by analogy to the two Sinitic cases above, idiosyncratic and typologically unusual character of some observed sound correspondences with WT may be due to the processes of convergence and reorganization of the phonological system. (Overall, given that the donor languages that have contributed to the formation of the Tibetan dialects of the ethnic corridor are mostly unknown, the precise elucidation of sound changes between individual local Tibetan dialects and Old Tibetan may be prohibitively difficult.) This perspective throws new light on the determination of the precise affiliations of the Tibetan dialects of the ethnic corridor within modern Tibetan and the problematic nature of the Kham group, as mentioned in the introductory part of the paper. In this connection, I note that Kham dialects of the ethnic corridor do share a set of characteristic (phonological)

developments.¹³ Furthermore, I argue that the observed language-like qualities of these dialects and a high degree of individual innovation are tentatively due to intensive contact of these dialects with non-related languages in relative isolation from their closest relatives. Therefore, similar to the Mandarin dialects of the ethnic corridor considered above (Wütún and Dǎohuà), Kham group, comprising the heterogeneous Tibetan dialects of the ethnic corridor, can in reality be considered as a valid grouping, held together by the fact that these dialects are the result of one specific type of language change, that is heavy borrowing and heavy structural interference, penetrating into all subsystems of the recipient language.

4. Qiangic Languages

From cases transparent on both the recipient and the donor language side (part 2), to cases clear only on the recipient language side (part 3), let us now turn to cases in which neither the recipient nor the donor language are well-understood. Of the languages of the ethnic corridor, phylogenetically least understood are the Qiangic languages. Qiangic is currently held to be a genetic subgroup, i.e. a group with one common recent ancestor (Sūn 1983a, 2001a). A closer look at these languages, however, suggests that most of the purported diagnostic morphosyntactic features of this subgrouping are transparently areal, i.e. features that are also found in the local varieties of the languages of other genetic subgroups and are absent from their nearest relatives outside of the area. This furthermore suggests that, contrary to the received idea, Qiangic languages are not likely to be closely genetically related. Instead, these languages may be either (a) related to the neighboring genetic subgroups, or (b) unrelated to the neighboring genetic subgroups and, possibly, also to each other. Either way, these languages are considerably restructured through contact to make them more similar to their non-genetic areal neighbors (Chirkova 2010).

By analogy to Sinitic and Tibetan cases considered above, contact-induced mechanisms of change in the area are bound to have contributed to individual Qiangic languages becoming highly heterogeneous language-like varieties. Furthermore, and also by analogy with the Sinitic cases above, basic phylogenetic assignment of individual Qiangic languages has to rely on core vocabulary and the material resources of the grammar, whereas sound correspondences with possible synchronic and historical relatives may be characterized by unusual and typologically uncommon changes triggered by the processes of convergence, incorporation of borrowed morphemes and system reorganization leading to the incorporation of borrowed morphemes into the inherited part of the lexicon.

I will test these assumptions on the basis of the Shǐxīng language, which is spoken by a small group of circa 1,800 speakers, multilingual in Shǐxīng, the neighboring Tibetan dialect, Kamī, and the local variety of the Púmǐ language. Shǐxīng is currently classified as member of the Qiangic subgroup, but it appears to be rather closely related to Na languages. More precisely, Shǐxīng displays significant similarity with Na languages in all its linguistic subsystems. Furthermore, there is substantial continuity between Na languages and Shǐxīng in terms of their morphology and syntax (as a productive combination of meaning and form). Hence, the basic phylogenetic assignment of Shǐxīng on the basis of its core vocabulary and the material resources of its grammar, is tentatively to Na languages. In sum, Shǐxīng is likely to be a Na variety, which is extensively restructured through contact with Tibetan and Púmǐ (Rock 1947:110, footnote 60; Guō and Hé 1994:8-9; Chirkova 2009, 2010).

¹³ Some characteristic features of Kham dialects include, among others, (Gésāng and Gésāng 2002: 73-79, Tournadre 2005, Hongladarom 2007: 122): (1) tones, (2) voiced obstruents, (3) prenasalized consonant clusters, (4) voiceless nasals, (5) aspirated fricatives, (6) loss of the finals *-l*, *-s*, *-d* without phonological traces, (7) loss of the final *-b* and *-m* with phonological traces, (8) glottal stop codas, (9) changes from Old Tibetan (hereafter OT) *sl* to *ts*, and from *zl* to *dz*, (10) palatalization of OT *ky*, *khy*, *gy*. In addition, recurrent features of the Tibetan dialects of the ethnic corridor are uvular phonemes, developed in different dialects from disparate sources, changes from OT *l-* to *j-*, OT *y-* to *z-*, or OT *Py-* to *s-*.

Shǐxīng has one of the largest systems of initials among Qiangic languages (a total of 43 consonantal phonemes). If the basic phylogenetic assignment of Shǐxīng is taken to be to Na languages, the phonological inventory of Shǐxīng is considerably larger than those in Na languages and includes some non-inherited phonemes (due to the incorporation of borrowed phonemes from its donor languages). For example, the system of prenasalized stops and affricates in Shǐxīng is likely to be borrowed into Shǐxīng from its contact variety of Tibetan (Kami Tibetan). Note that (a) prenasalized consonant clusters are a characteristic feature of local (Kham) Tibetan dialects, and that (b) in Shǐxīng, prenasalized stops and affricates appear to be restricted to Tibetan loanwords. For example, [ʰndzj] ‘chess’ (Kami [ʰndzj], WT **brel*), [ʰɲi-ʰndzj] ‘solar eclipse’ (Kami [ʰɲi-ʰndzj], WT *nyi 'dzin*); [ʰpa-ʰndao] ‘blunderbuss’ (Kami [ʰpā-ʰndɔ], WT ? *mda*). To take another example, voiceless nasals, yet another characteristic feature of local (Kham) Tibetan dialects, are likely to be borrowed in Shǐxīng from Tibetan too. While voiceless nasals occur in Shǐxīng predominantly in Tibetan loanwords, as in [ʰm̥ɛ] ‘medicine’ (WT *sman*), [ʰŋa-ʰtsʰɜ] ‘ink’ (WT *snag tsha*) and [ʰŋa] ‘spell, curse’ (WT *sngags*), voiceless nasals also occur in the inherited part of the Shǐxīng lexicon, as in [ʰm̥iæ-ʰtsũ] ‘tail’ and [ʰŋo] ‘hair, fur, feather’. To compare, these two words are, respectively, [ma³³ta⁵⁵] and [fv³³] in Nàxī, and [ma³³ko³¹], and [xo³³] in Moso (Hé and Jiāng 1985:141).

The incorporation of some possibly borrowed phonemes into the inherited part of the lexicon (such as voiceless nasals above) is suggestive of some reorganization of the phonological system leading to the substitution of some inherited phonemes by borrowed phonemes with a concomitant adjustment of sound correspondences. These processes may have been of impact on the complexity, unusualness and occasional irregularity of sound correspondences between Shǐxīng and other Na languages. As an illustration of the complexity of sound correspondences between Shǐxīng and Na languages, consider one diagnostic sound correspondence between Nàxī and Moso (namely, that of prenasalized initial clusters to Nàxī to plain voiced initials in Moso, Gài and Jiāng 1990:68) and its correspondences in Shǐxīng:

(1) in some words, the Nàxī-Moso prenasalized-plain distinction corresponds to words with a nasalized vowel in Shǐxīng. For example, ‘pus’: Nàxī mbə³¹, Moso ba¹³, Shǐxīng bā⁵⁵; ‘hail’: respectively, ndzo³³, dzo³³, dzō³⁵; ‘mountain’: ndzy³¹, dzi³³o⁵⁵, dzũ⁵⁵; ‘sick’: ŋgu³¹, gu³³, gō⁵⁵.

Conversely, some words with nasalized vowels in Shǐxīng correspond to words with plain initials in both Nàxī and Moso. For example, ‘guest’: Nàxī bə³³, Moso xī⁵⁵ba³³, Shǐxīng bā⁵⁵; ‘horse’: respectively, zuo³¹, zuæ¹³, rō³⁵; ‘little sister / little brother’: Nàxī gu³³me³³ / gw³³zu³³, Moso gv³³mi³³ / ge³³zu³³, Shǐxīng, both meanings: gō⁵⁵; ‘to be late’, respectively: xo³¹, xo³³, a⁵⁵hā⁵⁵.

(2) in yet some other words, the regular prenasalized-plain distinction between Nàxī and Moso corresponds to words with a plain vowel in Shǐxīng. For example, ‘snow’: Nàxī mbe³³, Moso bi³³, Shǐxīng dzyɜ³⁵; ‘to fall’: respectively, ndzu³¹, dzu³¹, (miæ³³)zyæ⁵³ (from /dzyæ/); ‘nine’: ŋgv³³, gv³¹, guɜ³³(ku⁵⁵)

In this paper, I argue that assuming one common sociolinguistic setting for all considered varieties, examination of synchronically and historically lesser-understood varieties (such as Shǐxīng) can be aided by insights gained from the study of synchronically and historically better-understood varieties (such as Wūtún and Dǎohuà) that fall into the same category (small-size groups with a long history of residence in the area, who are fully bilingual in their native tongue and their respective contact language). In this logic, those mechanisms of contact-induced change that have been detected in better-understood cases of language contact in the area (Sinitic) are likely to have also been responsible for the formation of

lesser-understood cases (Qiangic). In relation to Shǐxīng it would imply that convergence of articulation modes and positions between the donor language and the recipient language, incorporation of borrowed phonemes, replacement of sequences without a counterpart in the donor language by their close equivalent in the donor language; reorganization of the phonological system of the recipient language leading to the substitution of some inherited phonemes by borrowed phonemes; and profound restructuring of the prosodic organization based on that of the donor language need to be taken into account when analyzing sound correspondences between Shǐxīng and its supposed relatives. Hence, examination of developments in Shǐxīng in the light of its contact varieties, Kami Tibetan and Púmǐ, may provide explanations to the innovative and at times possibly typologically uncommon and even erratic sound correspondences observed between Shǐxīng and Na languages.

5. Conclusions

In this paper, I discuss challenges related to linguistic heterogeneity, complexity of language contact situations and the applicability of the conventional methods for developing and testing hypotheses regarding genetic relatedness (common innovations and phonological reconstruction), all in relation to the languages of the ethnic corridor. First, I would like to assert the fecundity of the approach, consisting of using better-understood cases to get insights into parallel developments into lesser-understood cases. Further research in this direction, taking into consideration a broader range of case studies, may confirm or contradict the essential findings, which can be summed up as follows.

A preliminary investigation of several unrelated cases (languages of the ethnic corridor that are spoken by small-size groups with a long history of residence in the area, who are fully bilingual in their native tongue and their respective contact language) reveals recurrent parallel patterns in unrelated languages. This suggests that a common set of sociolinguistic settings shared by various languages of the ethnic corridor contributes to their independent and convergent development towards one common type: heavy borrowing and heavy structural interference penetrating into all subsystems of the recipient language. From the viewpoint of phonological developments, which are in the focus of this paper, some recurrent mechanisms include:

- (1) Convergence of articulation modes and positions between the donor and the recipient languages, incorporation of new phonemes in loanwords and replacement of sequences without a counterpart in the donor language by a close equivalent in the donor language
- (2) Reorganization of the phonological system (expanded in comparison to kin or parental varieties) resulting in the substitution of some inherited phonemes by borrowed phonemes, which process leads to innovative sound changes that can only be understood in reference to both the recipient and the donor language
- (3) Profound restructuring of the prosodic organization based on that of the donor language.

The better-understood cases considered above (Tibetanized Mandarin varieties) also suggest that:

- (1) Innovations may be obliterated through contact-induced developments (as the latter developments may be opposite to diagnostic change); in addition, innovations related to the prosodic organization are particularly susceptible to contact influences
- (2) For composite phonological systems, such as typical for the languages of the area, investigations of sound changes have to rely on the historical phonology of both the donor and the recipient language and need to be based on the overall lexicon (i.e. not excluding loanwords)

(3) Possibility of the reorganization of the phonological system of the language under the influence of the donor language, leading to the substitution of some inherited phonemes by borrowed phonemes, may complicate the recovery of antecedent language states through phonological reconstruction, especially if the relevant donor language is not known or not sufficiently documented

In sum, heavy borrowing and heavy structural interference contribute to the formation in the area of highly heterogeneous language-like varieties. These varieties allow basic phylogenetic assignment based on core vocabulary and the material resources of the grammar, whereas drawing finer decisions on the internal classification, appears less feasible.

On a broader scale, a common set of principles suggested by disparate cases reviewed in this paper allows for a common approach and development of tools needed to their systematic analysis, modeling, and theoretical prediction. In my analysis, local processes of language change that are characterized by complexity, unpredictability of ongoing language contact situations, and the possibility of optimization of linguistic subsystems, as discussed in relation to phonological systems, have salient similarities to complex dynamic (i.e. changing over time) systems, as handled in scientific studies in complexity (e.g. Nicolis 1995, Weisbuch 1991 [1989], Nicolis and Nicols 2007, Bedau and Humphreys 2008). Complex systems are systems whose global behavior depends not only on the behavior of the constituent parts, but also on interaction between these parts. Disorder and randomness that inevitably exist in complex systems at the local level are controlled, resulting in states of order and long range coherence, brought by self-organization or optimization, which is the inherent property of complex system.¹⁴ Long-term behavior of complex systems cannot be described in terms of linear equations, making irreducibility, unpredictability, unexplainability, conceptual novelty, and holism their central characteristics.

In this connection, it is reasonable to believe that new insights can be afforded by viewing local linguistic developments from the standpoint of complex system research to complement the traditional linguistic approaches centered on common shared innovations and phonological reconstruction. In my opinion, one of the immediate consequences of the complex system approach is the manifest need for a holistic multi-level approach to the languages of the ethnic corridor that would integrate both deterministic and probabilistic views. Furthermore, holistic approaches, investigating situations in which several interrelated linguistic subsystems (including, in addition to phonology and lexicon, also morphology and syntax) function in an integrated manner, are bound to provide a reliable idea about the linguistic history of a language in question.

In connection to the research area, developing and testing hypotheses regarding genetic relatedness and historical linguistic development of individual varieties naturally requires to be supplemented by alternative approaches, which would take into consideration (a) areal tendencies, as gleaned through restructuring of local varieties of languages whose genetic affiliation is not disputed; (b) typological profiles of the neighboring genetic subgroups to serve as reference points for comparison; and (c) linking historical and social factors to observed structural and typological characteristics. In sum, an interdisciplinary approach, combining studies on language typology, language contact, and comparative-historical linguistics, appears to be both promising and effective to resolve unsettled issues related to the complex linguistic history of the Sino-Tibetan borderland.

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¹⁴ Recent developments in linguistics indicate that self-organization might also play an important role in language, see de Boer (2001:24-37, 124-143) for a detailed discussion as well as references therein.

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