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New evidence on Para-Mongolic numerals

Para-Mongolic is a technical term that designates languages that were related to the Mongolic languages, but which split off from this lineage before Proto-Mongolic times. One source of knowledge for Para-Mongolic comes from loanwords in surrounding languages, of which borrowed numerals in the Tungusic language Jurchen are a well-known example. The paper presents new evidence found in Tungusic languages that were previously almost unknown in the West and briefly sketches the place of those languages within the Tungusic family.

1. Introduction

Para-Mongolic is a technical term which refers to languages that were related to the Mongolic languages, but split off from this lineage before Proto-Mongolic times. There are several possible sources of Para-Mongolic data (summarized in Janhunen 2003b), of which loanwords found in surrounding languages constitutes one example (e.g. Doerfer 1993). This paper focuses on a particular kind of loans found in some Tungusic languages: "The most reliable source on the Para-Mongolic numerals is provided by the Jurchen-Manchu set for the teens (11–19). These were systematically borrowed from an idiom clearly related to Mongolic, but different from the lineage of Proto-Mongolic." (Janhunen 2003b: 399.) Since Grube (1896) and Laufer (1921) these numerals have been analyzed many times (see Róna-Tas 2016: 126 for a list), but the best treatment can still be found in Janhunen (2003b: 399f.). Nevertheless, new evidence suggests that some of his reconstructions have to be revised.[1]

Both Mongolic and Tungusic are part of what Janhunen (2007: 78) has called the *Ural-Altaic belt*, which is "united by a multitude of common structural features, covering all major areas of the grammar, including phonology, morphology, morphosyntax, and syntax." Any explanation of this phenomenon such as in terms of areal convergence or genetic inheritance is necessarily based on the primary reconstruction of the participating proto-languages. The comparison of these is severely impeded, however, by the fact that Proto-Uralic is much older than any of the other language families. For example, Janhunen (2003a: 1) assumes that Proto-Mongolic was spoken only about 800 years before present day. However, Mongolic together with Para-Mongolic forms a larger and considerably older language family for which the name *Khitano-Mongolic* has been proposed (Janhunen 2012a: 114f.). The necessary precondition for the reconstruction of Khitano-Mongolic, however, is a better

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understanding of all attested Para-Mongolic varieties. Eventually, this might bring us further back in time and thus put any comparison with surrounding language families on a more solid foundation. A special form of Para-Mongolic is Khitan (e.g. Kane 2009, Janhunen 2012a, Róna-Tas 2016, Miyake 2017b, and references therein), the written form of which was created by the Khitan during the Liao-dynasty (907–1125) in what is today northern China and southern Mongolia (e.g. Franke 1990: 400–412). Khitan will, however, only be briefly mentioned, as it appears to represent a slightly different or younger lineage than the language that influenced Tungusic.

Tungusic languages can be classified into four branches called Ewenic, Udegheic, Nanaic, and Jurchenic (Janhunen 2012b). The former two together form the northern and the latter two the southern Tungusic languages. Jurchenic was historically located in southern Manchuria and had contact to Koreanic languages in the southeast, to Sinitic in the south and southwest, to Para-Mongolic in the southwest and west, to Mongolic in the west and northwest, to other Tungusic languages along the entire north and to Amuric (Nivkh) in the northeast. Before giving an overview of the new evidence found, a note on the classification of Jurchenic – called "Jurchen-Manchu" above – is in order because most of the new evidence was found in previously poorly studied idioms of this branch. According to Janhunen (2012b: 6), Jurchenic encompassed three languages, namely Jurchen, Manchu, and Sibe. He claims that despite a "slight variation in the dialectal basis" they "may be classified as a diachronic sequence of a single language". However, a closer look at the evidence suggests a much more complicated picture as also recently acknowledged by Miyake (2017a: 479). According to my current understanding, Jurchenic altogether has three branches that will be called Manchuic, Balaic, and Alchukaic (1). Manchuic was named after its main representative Manchu. Several dialects from northeastern China (Manchuria) such as that from Aihui that cannot be dealt with here in detail belong to this largest of the three branches and Sibe in northwestern China is its most aberrant member (cf. Hölzl 2014: 212). The idiom formerly spoken in Shenyang appears to take a position in between Manchurian dialects and Jungarian Sibe (Aixinjueluo Yingsheng 1991). What has previously been called Jurchen really encompassed two rather different idioms (also recognized in Kiyose 2000), both of which were recorded during the Chinese Ming-dynasty (1368–1644) and will be called here Jurchen^{A} (the material from the Bureau of Translators, Kiyose 1977) and Jurchen^{B} (the vocabulary from the Bureau of Interpreters, Kane 1989). Of these, Jurchen^{B} is close to Manchu while Jurchen^{A} has similarities to an idiom called Bala. Older attested stages within the hypothetical branches (e.g. Jurchen^{A}) are not necessarily the direct ancestors of later stages (e.g. Bala). Additionally, Bala exhibits some features of a mixed Tungusic language such as a first person pronoun *mi* (Manchu *bi*) or a proximal demonstrative *əi* (Manchu *ere*) that could derive from Nanaic (Nanai *mi* and *əi*).

(1) A preliminary new classification of Jurchenic (expanding on Janhunen 2012b: 16).

0 Jurchenic

1 Manchuic

1.1 ˚Jurchen^{B}	(1)
1.2 written Manchu	(2)
1.3 $^{(\dagger)}$Manchurian dialects	(3)
1.4 Jungarian dialect(s) = Sibe	(4)

2 Balaic

2.1 ˚written Jurchen	(5)
2.2 ˚Jurchen^{A}	(6)
2.3 †Bala (dialects)	(7)

3 Alchukaic

3.1 †Alchuka (sociolects?)	(8)

˚ = only historically attested, † = no speaker left, $^{(\dagger)}$ = moribund, almost extinct

Jurchen was written from the 12th to the 15th century in two different scripts (e.g. Pevnov 2012, Miyake 2017a, and references therein) and the differentiation between written Jurchen and Jurchen^{A} is mostly a heuristic one. The written form of Manchu was first created in 1599 and is based on a modified form of the Mongolian alphabet. It is still in use in a slightly modified form by the Sibe in Xinjiang today. Alchuka is the only known representative of Alchukaic and it is within this language that we find most of the new evidence on the Para-Mongolic numerals (see Section 2). Bala as well as Alchuka are two languages that only recently went extinct and had already been described within the 1980s by Mu Yejun (穆晔骏, 1926–1988), but until today remain relatively obscure (e.g. Mu Yejun 1985, 1986, 1987, 1988). In fact, there are only very few scholars in China and Japan who have discussed the language based on Mu Yejun's description, i.e. Aixinjueluo Yingsheng (e.g. 1989), Jirō Ikegami (see 1999), and Chaoke & Zhao Aping (2001). The similarity between Alchuka and Jurchen^{A} numerals has also briefly been mentioned by Zikmundová (2013: 14), but without giving any analysis.

The name *Alchukaic* derives from the place name Alchuka where the only known representative was spoken. As for its geographical distribution, Mu Yejun (1985: 5) noted the following:

> 阿勒楚喀满语属于北方满语方言之一，东起宁古塔西部，西至伯都讷，南临通化、吉林, 北至呼兰、庆安一带, 方言区的中心位于阿勒楚喀, 即今阿城县一带。
>
> The Alchuka language belongs to the northern dialects of Manchu. In the east the dialectal area starts from the western part of Ningguta, in the west it extends to Bodoune, it reaches Tonghua and Jilin in the south, in the north it extends to Hulan and Qing'an. The area around Alchuka, i.e. the modern district of Acheng, is the center of the dialect. (my rough translation)

According to Mu Yejun (1985), all speakers of the Alchuka dialect were already over 60 or 70 years old in 1964 and most likely the language has by now disappeared. During the 18th century several Manchus from Peking speaking the Jing (or Lalin) dialect were relocated to Alchuka, which led to contact between the two idioms (e.g. Chaoke & Zhao Aping 2001).

The background for this new classification can only be briefly addressed in this short paper and must necessarily be incomplete. One of the most prominent differences between Alchukaic and the other two branches is the preservation of an initial [k-] (probably an unaspirated voiceless velar plosive but given as <g-> in Mu Yejun 1987) which is absent from almost all of Jurchenic but may be preserved in a few relics as *h-*, e.g. Alchuka ***k****atʃʻa-*, Bala ***h****atʃʻa-*, Jurchen^{A} ******h****ača-* 哈察, Jurchen^{B} **ača-* 阿察, Manchu *aca-* 'to meet'. There are about two dozen examples from Alchuka that show the initial consonant, some of which are rather spectacular and may have a huge impact in the study of several language families such as Tungusic, Mongolic, and Turkic (e.g. ***k****ai* 'what', ***k****atali* 'like', ***k****ərdəm* 'virtue', ***k****ə.r(ə)* 'this', ***k****ɔ-* 'to become, can', ***k****ɔmi-* 'to drink').[2] The limited data from Bala do not, however, contain any further cognates to these. Nevertheless, the set of correspondences appears to be Alchukaic *k-* ~ Balaic *h-* ~ Manchuic *Ø-*. There are certain irregularities, especially to Jurchen^{A} (e.g. the numerals in Section 2) and other Tungusic languages (e.g. Uilta ***x****ai* 'what' but *e.ri* 'this') that have yet to be explained. One cannot exclude the possibility of there being some secondary innovations in Alchuka, but a detailed discussion of these goes beyond the scope of this short paper. In some cases, such as that of the interrogatives, chances are close to zero that we are dealing with an innovation in Alchuka because there is a clear correspondence to Nanaic, e.g. *x-* in Uilta or *χ-* in Kilen (also cf. numeral 20 in Table 5). As we will see later, in some cases the irregular correspondences can be explained by borrowing. Furthermore, independent of the question of whether the initial consonant is an innovation, a retention, or both, the correspondences to Manchu are without exception (*ai*, *adali*, *erdemu*, *e.re*, *o-*, *omi-*). There are also two further examples showing the correspondence of Balaic *h-* to Manchuic *Ø-*, namely Bala ***h****udi.rə-*, Jurchen^{A} ******h****udi.la-* 忽的剌, but Manchu *ucu.le-*, Jurchen^{B} **učʉ.lo-* 兀出羅 'to sing' and Bala ***h****adu-*, Jurchen^{A} ******h****adu* 哈都, but Manchu *adu*, Jurchen^{B} **adu* 阿都 'clothes'.[3] The overall development probably followed the path *k-* > *h-* > *Ø-*.[4]

Another important change is the palatalization of [t^{h}] and [t] before *i* in Manchu, e.g. Bala and Alchuka ***d****i-*, but Manchu ***j****i-* 'to come' and Bala ***t****ʻihə*, Alchuka ***t****ʻiɔhɔ*, but Manchu ***c****oko* 'chicken'. Neither Jurchen^{A} nor Jurchen^{B} show palatalization, however,

2. For instance, *kərdəm* is a Mongolic loanword ultimately of Turkic origin. Among modern Turkic languages only Khalaj *här* 'man' shows that there must have been an initial *h-* which may have a connection to Alchuka *k-*. Problematically, the consonant does not appear in Mongolic and the initial *h-* in Turkic is thought to go back to an older **p-* (Doerfer 1985: 99, 1998: 280f.).

3. Kiyose (2000: 186) and Kane (1989: 358) apparently did not recognize that the words for 'to sing' may be cognates. Kiyose (1977: 122) gives Manchu *hūjila-* as a cognate, but this form does not exist. Manchu has a word *hūji-* that lacks the verbalizing suffix and does not completely fit semantically.

4. The letters <b>, <d>, <g> in Mu Yejun (1987) correspond to <p>, <t>, <k> in Mu Yejun (1986).

which must have occured later in Manchuic, e.g. **tiko* 'chicken' (替和 in Kiyose 1977: 106, 替課 in Kane 1989: 218). This is a Para-Mongolic word and, in a similar way to the numeral 12 (Section 2), there appears to have been an original diphthong that cannot be found in Khitan <te.qo.a> (Kane 2009: 88) which Vovin (2015: 160) reads as **t*[*i*].*qo.a* (also cf. Kilen ***t'iɔk'ɔ***; Ling Chunsheng 1934: 269).

Manchu is furthermore characterized by the development **p*^{h} > *f*, e.g. Bala ***p'***ə*dhe*, Alchuka ***p'***ə*dɔhɔ*, but Manchu ***f***o*doho* 'willow'. Problematic correspondences in Alchuka suggest a certain amount of dialectal mixture. Alchuka ***f***u***t'***i*hi.n* 'Buddha' (Bala ***p'***u***t***i*hi.n*, Manchu ***f***u*cihi*), for example, may be an early loan from a Manchuic dialect that does not yet show palatalization. In other words, palatalization probably occurred after the change **p*^{h} > *f*. According to the traditional view (e.g. Kiyose 1977: 39, 2000: 179), the **p*^{h} was still preserved in the Jin-dynasty (1115–1234), but changed to an *f* during Ming-dynasty (1368–1644). However, the fact that both Bala and Alchuka data preserve a *p*^{h} could indicate that our understanding of "Ming-Jurchen" is less well understood than previously thought. Correspondences of the following sort suggest that our reconstructions of Jurchen may in fact be partly erroneous: Alchuka ***p'***i*niəgə*, Jurchen^A ****f***u*nirhei* 分一里黑 (Kiyose 1977: 124), Bala ***p***i*niergə*,[5] Jurchen^B ****f***u*nhe* 分黑 (Kane 1989: 316), and Manchu ***f***u*niyehe* 'hair'. Another explanation might be that the change **p*^{h} > *f* affected several Jurchenic varieties, but not the direct ancestors of Alchuka and Bala. Whatever the solution to this rather intriguing puzzle, we can be reasonably certain that the Para-Mongolic forms with an *f* in Manchu usually go back to an older **p*^{h}. For instance, Manchu *fon* 'time' is clearly related to Khitan **p*^{h}*o* 时 (Kane 2009: 68) and must go back to an older form **p*^{h}*on* (cf. Janhunen 2003b: 396, Kane 2006: 127; aspiration added for clarity).

Additionally, Alchuka has lost many word internal consonants, e.g. Alchuka *bit'i'ə*, but Bala *bit'i****h****ə* and Manchu *bit****h****e* 'book' or Alchuka *jakə*, but Bala *ja****r****hə* and Manchu *ya****r****ha* 'leopard'. Several more instances of this innovative feature, which is sometimes indicated with an apostrophe <'> by Mu Yejun, can be found in the Alchuka numeral system (Section 2).

Further evidence for a classification as in (1) stems from phonological (e.g. Mu Yejun 1988), lexical (see the list in Mu Yejun 1987: 6–24), but also several grammatical differences that cannot be dealt with here in detail.[6] To give but one example, there is a productive participle ending *-ʐï* in Alchuka that does not exist in any Manchuic dialect and was translated with the Manchu imperfective participle form *-rA*. The limited data from Bala do not mention such a form either. The suffix very likely goes back to a form **-si* as is indicated by an identical sound change in the following pair: Alchuka *kə'u****ʐ******ï*** (note the initial *k*-), but Manchu *eb****s******i*** 'hither' (also see numeral 30 in Table 5). The suffix may be identical to a suffix *-si* that was preserved as a relic in one irregular verb form in Manchu, i.e. *bi.****si****-re* 'being' (*bi-* 'to be, there is/are') and

5. In some instances such as this Mu Yejun's recording may be erroneous as one would expect an aspirated *p*^{h} (also cf. Mu Yejun 1988: 6).
6. I am currently preparing a more comprehensive treatment of the classification of Jurchenic.

which still exists in some other Tungusic languages (e.g. Evenki *bi-**si**-n* 'be-PRS-3SG'). In Alchuka the suffix also appears in the prohibitive construction *ɔmə* V-*ʐï* which corresponds to Manchu *ume* V-*rA* (Mu Yejun 1986: 12).

2. The numerals

Evidence for Para-Mongolic numerals stems from all three branches of Jurchenic, the Tungusic languages Kilen (An Jun 1986), Oroqen (Hu Zengyi 2001), and Solon (Tsumagari 2009a), and the Mongolic language Dagur (Tsumagari 2003), which probably borrowed some of these numerals from Manchuic. Solon and Oroqen are part of the Ewenic branch of Tungusic. Kilen is a mixed language but is perhaps best classified as basically Nanaic.

Numeral 15 is preserved in the numeral system of Manchu (*tofohon*) and Kilen (*tobqon*). In several languages the numerals 11 and 12 can be found additionally in names of the eleventh (Dagur *onshum-bie*, Kilen *omʂon bia*, Manchu *omšon biya*, Oroqen *ʊjfʊn bɛɛ*, Solon *unsun bɛɛ*) and twelfth months (Dagur *jorgum-bie*, Jurchen^{B} **ǰuerhon bie* 拙兒歡別, Kilen *dʐorɢon bia*, Manchu *jorhon ~ jorgon biya*, Oroqen *ɔrɔɔn bɛɛ* (?), Solon *jurgun bɛɛ*), cf. Manchu *biya* 'month'. In addition, Manchu has a word *niolhun ~ niolhūn* 'the sixteenth day of the first month'. Jurchen material as recorded in Chinese characters during Jin-dynasty (1115–1234)—following Franke (2000) called "Old Jurchen" and perhaps best classified as Balaic—contains one of these numerals as well. This numeral was written 女魯欢, has the modern Chinese reading *nü-lu-huan*, and was reconstructed as **niolhon* '16' by Sun Bojun (2004: 239). In Bala no numerals are attested, but if anything the forms were probably similar to Jurchen^{A}. According to Aixinjueluo Yingsheng (1989: 10), the numerals were also found in Jing (or Lalin) Manchu, which in my classification can be characterized as a Manchurian dialect close to written Manchu. Following his description, he learned these numerals in the 1930s from a person already past 80 who used them in archery classes. At that time most of the numerals were already incomprehensible to his students. As we will see further below, they were most likely borrowed from Alchuka. Other modern dialects of Manchuic that preserve some of these numerals as well do not offer any additional insight, which is why they have been excluded. There are some idiosyncratic developments such as in Aihui Manchu *toqqoŋ* '15' (Wang Qingfeng 2005: 47) as opposed to Manchu *tofohon*, but this is of no particular concern in this paper.

Table 1 summarizes how good the evidence for each numeral is. Previously, five of the numerals were exclusively known from Jurchen^{A} data given in Chinese transcription. Luckily, Alchuka and Jing not only preserve all nine numerals but also display several conservative properties that were lost in all other attested cognates, such as the preservation of the initial *k-*. Only three languages have the full set which is given in Table 2. Mu Yejun (1986) mentions some variation within the Alchuka dialect, but his description remains somewhat unclear. We are probably dealing with

increasingly innovative speech varieties that existed simultaneously, i.e. sociolectal rather than dialectal variation. The numerals in these innovative sociolects have been listed in the fifth and sixth column under the heading "Alchuka".

	11	12	13	14	15	16	17	18	19
Alchuka	+	+	+	+	+	+	+	+	+
Bala	?	?	?	?	?	?	?	?	?
Dagur	+	+	-	-	-	-	-	-	-
"Old Jurchen"	?	?	?	?	?	+	?	?	?
Jing Manchu	+	+	+	+	+	+	+	+	+
Jurchen^{A}	+	+	+	+	+	+	+	+	+
Jurchen^{B}	-	+	-	-	-	-	-	-	-
Kilen	+	+	-	-	+	-	-	-	-
Manchu	+	+	-	-	+	+	-	-	-
Solon	+	+	-	-	-	-	-	-	-
Oroqen	+	?+	-	-	-	-	-	-	-

Table 1. Evidence for Para-Mongolic numerals in Tungusic languages and Dagur.

The numerals in Alchuka exhibit some idiosyncratic developments, such as the loss of the unstable *-n* and of a final *-r* (except for numeral 12). Fortunately, the Jurchen^{A}, Alchuka, and Jing Manchu data complement each other and allow a better understanding of their original forms. In general the Alchuka and Jing Manchu forms should be given more weight within reconstructions, since for Jurchen an additional analysis is necessary and the transcription was based on inadequate Chinese characters. Data from Kilen, Solon, Oroqen, and Dagur should be given lowest priority because they represent secondary loans from Manchuic. The Alchuka data indicate that the numeral 12 should probably begin with a [t] (unaspirated alveolar plosive) instead of a *j* and should contain a diphthong. In a similar way to the word for chicken (see Section 1), the *i* led to the palatalization of the preceding consonant before being lost in other languages such as Manchu, i.e. *tiɔ* > *čiɔ* > *čɔ* (and *t^{h}iɔ* > *č^{h}iɔ* > *č^{h}ɔ*), e.g. Manchu ***co**ho. me*, Alchuka ***t'iɔ**xɔ.m* 'especially, on purpose' (Mu Yejun 1986: 13). This might also explain the unexpected different vowel quality in Manchu (*jor-*) and Mongolic (**jir*). Mu Yejun (1986: 8) also mentions a form *tiɔr-*, which makes this scenario more plausible.[7] See Table 4 for an updated reconstruction of those Para-Mongolic forms that found their way into Tungusic.

7. Vovin (2015: 60) has recently argued that Tuyuhun, possibly yet another Para-Mongolic language, had a pronoun **č^{h}o* 處 'you' which he believes to be related to Mongolic *ci* < **ti* 'you' (e.g. Janhunen 2003a: 18). If his assumptions are correct there might be a similar correspondence with an original diphthong, although this remains very speculative.

	Jurchen^{A}		Alchuka			Jing	PaM
11	安朔	**anʃo*	*ənsɔ*	*ɔnsɔ*	*(**k**)ɔnsï*	*ense*	†*omshon*
12	只兒歡	**dʒïrxon*	***t**irkɔn*	***t**iɔn*	***t**ïɔ*	***c**ion*	†*jir-hon*
13	戈兒歡	**gorxon*	*kɔxɔ*	*kɔ'ɔ*	*kɔ*	*kuo*	†*gor-hon*
14	獨兒歡	**durxun*	*tuxu*	*tux*	*tu'u*	*tuhu*	†*dur-hon*
15	脫卜歡	**toboxon*	*t'ɔfxɔ*	*t'ɔ'xo*	*t'ɔ'o*	*towho*	†*tobu-hon*
16	泥渾	**nixun*	*niulxu*	*niuxu*	*niu'u*	*niolho*	†*nil-hun*
17	荅兒渾	**dorxon*	*tɔxɔŋ*	*tɔ'ɔŋ*	*tɔŋ*	*tohon*	†*dal-hon*
18	女渾	**niuxun*	*niɔkɔn*	*niɔ'ɔn*	*niɔn*	*nioho*	†*nyo-hon*
19	斡女歡	**onioxon*	***k**uniku*	***k**uni'u*	*uniu*	***k**uniu*	†*onyo-hon*

Table 2. Cognates of the numerals 11 to 19 in Jurchen^{A} (Chinggeltei 1997: 147), Alchuka (Mu Yejun 1986)[8], and Jing Manchu (Aixinjueluo Yingsheng 1989: 10). The Para-Mongolic (PaM) reconstruction was taken from Janhunen (2003b). Not all variants are listed.

One of the most striking features of Alchuka is the preservation of an initial *k-* (see Section 1) in the numerals 11 and 19 that must be added to the Para-Mongolic reconstruction. This has important consequences for their interpretation. The numeral 11 cannot be related to the Mongolic word **onca* 'special, additional' and 19 is probably not "based on 18" (Janhunen's 2003b: 399). The absence of several word internal consonants as well as the presence of an initial *k-* (both can be seen in ***k**uniu*) suggests that most of the Jing (or Lalin) numerals have been adopted from Alchuka. The initial *c-* in ***c**ion* most likely represents an integration of the numeral into the phonological system of Jing Manchu. The numeral *towho* is identical to regular Jing Manchu and could also be the origin of the Alchuka form, which does not exhibit the expected **p*^{h} (Aixinjueluo Yingsheng 1989: 11).

A word of warning is in order, however. The Alchuka data display a certain degree of internal variation of which only the sporadic loss of the initial *k-* is noted in Table 2. In fact, within all of the data the initial *k-* appears only once in the numeral 11. Sometimes it is hard to decide whether this reflects actual variation within the language or simply a spelling mistake. But, in general, the data are quite reliable. If future studies reveal that the initial consonant in these cases turns out to be an innovation restricted to Alchuka, the reconstructions will have to be adjusted accordingly.

All the numerals except '11' contain a suffix given as †*-hU/n* < **-kU/n* by Janhunen (with [k^{h}]).[9] But the data above show quite clearly that the suffix probably had a variant with a (possibly unaspirated and voiceless) velar plosive instead of an *h* in Para-Mongolic, too. In Alchuka this suffix has the form *-KU(N)*. The meaning of the suffix might simply have been '-teen' and could indicate the existence of a numeral with the meaning '10' as proposed by Laufer (1921: 113) or Pritsak (1955: 189f.). But there is a

8. A probably mistaken <g> in the numeral *tirkɔn* 'twelve' usually written <k> in Mu Yejun (1986) was corrected.
9. Kiyose (2000: 183) assumes that Jin-Jurchen still had the harmonic variants **-χon* ~ **-xön*.

different and more plausible explanation. Firstly, one would expect the reversed order of the two elements. Secondly, Erdal (1998: 144) notes that in Old Turkic "cardinals from the second to the ninth decade are formed with the digit from the lower decade plus the higher decade, e.g. *yėti otuz* '27' = 'seven thirty'". Possibly, we are dealing with a similar pattern in our data and the numerals would thus have to be analyzed as Alchuka *tir-kɔn* '2 (to) 20 = 12' and so on (cf. Benzing 1956: 102, Janhunen 2003b: 399). There may be an areal connection between Old Turkic and Para-Mongolic in this regard. According to Janhunen (2003b: 399), the numeral 20 probably had the stem **ko-* (with [k^h]) in Proto-Mongolic and may thus be compared. The final nasal could simply be the unstable *-n* that exists in both Mongolic and Tungusic. No other Mongolic language shows this type of construction which is probably one major reason why Janhunen assumes a Para-Mongolic background. Note that the reconstruction of the numerals from 2 to 9 is possible independent of the analysis of the second element *-KU(N)*. Numeral **(k)UnšU(n)*, which I propose instead of Janhunen's †*omshon*, is either a synchronically unanalyzable form meaning '11', or, somewhat less likely, contains the numeral ?**KU(n)* '20' as a first part (cf. Laufer 1921: 113). If the second analysis is true, the subpart ?**šU(n)* may be an otherwise unknown numeral meaning '1'. In this case the structure would be similar to the other numerals, but showing the reversed order. It has no resemblance, however, to Proto-Mongolic or Khitan.[10] According to this analysis we would thus not only have evidence for the Para-Mongolic numerals from 11 to 19, but also from 2 to 9 as well as 20 and perhaps 1 (Table 4). The only gap is the numeral 10 which may have been similar to Proto-Mongolic **xarba/n* (Janhunen 2003a: 16) or rather Khitan **par(a)* (Róna-Tas 2016: 129ff.).

the o could also be part of the suffix

	J^A	A	J	M	K	PM	KT
?1	**-ʃo*	*-sɔ*	*-se*	*-šon*	*-ʂon*	(**nike*)	(**mas*)
2	**dʒïr-*	***ti*ɔr-**	***cio-***	*jor-*	*dʐor-*	**ji.r* (**koxar*)	**tʃur*
3	**go**r**-*	*kɔ-*	*ku-*			**gu.r*	**γur*
4	**du**r**-*	*tu-*	*tu-*			**dö.r*	**dur*
5	**to**b**o-*	*t'ɔfɔ-*	*tow-*	*to**f**o-*	*to**b**-*	**tab*	**t'au*
6	**ni-*	*niul-*	*niol-*	*niol-*		(**jir.gu-*)	?**nir*
7	**do**r**-*	*tɔ-*	*to-*			**dal*	**dol*
8	**niu-*	*niɔ-*	*nio-*			**na(y)i*	?
9	**onio-*	***k**uni-*	***k**uni-*			(**yer(sü)*)	(**is*)

Table 3. Numerals from 12 to 19 reduced to their stems, meaning '2' to '9'. Abbreviations: J^A = Jurchen^A, A = Alchuka, K = Kilen, J = Jing Manchu, PM = Proto-Mongolic stems (Janhunen 2003a: 17), KT = Khitan (Chinggeltei 2002: 107).11 For Alchuka mostly conservative forms are shown. M = Manchu

10. Vadim Ponaryadov (p.c.) suggested that the numeral may be derived from Khitan **mas* '1', instead, which may have had an initial vowel that was not written. If the initial *k-* is secondary, this may be more plausible but in my opinion runs into too many problems.

11. Róna-Tas' (2016: 126–134) reconstruction of some of the Khitan numerals differs slightly: **jür* '2', **dür* '4', **dalo* '7', and **iši* '9'. Note that the Khitan numeral 2 is written <či.ur>.

Table 3 summarizes the evidence for the Para-Mongolic numerals from 1 to 9. Table 4 gives a tentative reconstruction for those forms that found their way into Tungusic. Recall also the forms **ǰuer-* 拙兒 '2' (perhaps better reconstructed as **ǰur-*) in Jurchen^{B} (Kane 1989: 195) and **niol-* 女魯 '6' in Jin Jurchen (Sun Bojun 2004: 239). As can be seen, there is no correspondence to the Proto-Mongolic numerals 1, 6, and 9. In Para-Mongolic these forms might simply be retentions from Pre-Proto-Mongolic that had already been lost in Proto-Mongolic. Janhunen (2003b: 399) saw this possibility only for the numeral 6 (also because **jir-gu-* is an innovation meaning '2 x 3'), but his suggestion of Pre-Proto-Mongolic **nil* should probably contain a diphthong, as can also be seen from Manchu *niol-*.[12] Nevertheless, the final **-l* is more accurate than the final **-r* proposed by Chinggeltei (2002).

Even though this paper is based on Tungusic evidence for Para-Mongolic numerals, some additional notes on Khitan are in order. The last column of Table 3 gives Chinggeltei's (2002) reconstruction for several Khitan numerals. Despite several phonological differences, six of the other numerals have correspondences in both Para-Mongolic as retrieved from Jurchenic as well as in Proto-Mongolic. On the Tungusic side only numeral 2 exhibits similarities, e.g. Nanai *ɟwər* (Ko & Yurn 2011), but a resemblance in one numeral is likely due to chance. Burushaski, for instance, is clearly unrelated to Mongolic but has a similar numeral *talo/e* '7' (Anderson 2006: 171). The hypothetical Para-Mongolic numeral **(k)UniU* '9' also has similarities to Tungusic (e.g. Uilta ***x****uyu*), but this could also be a chance resemblance as the numerals were recorded very differently as 兀也温 '9' and 斡女(歡) '(1)9' in Jurchen^{A}. This argument is only valid, however, if **uyun* 兀也温 '9' (Kiyose 1977: 133) is not a Manchuic loanword. A tentative conclusion regarding these differences could be to assume a certain degree of dialectal variation within Para-Mongolic. The language from which the numerals in Jurchenic derive may have differed from the language on which the two Khitan scripts were based. Especially interesting is what Janhunen (2003b: 398) claims to be the loss of the intervocalic plosive in Khitan in the numeral 5. But a simpler explanation would probably be the spirantization **b > w* as seen in the development from Proto-Mongolic **tabu/n* to Dagur *taaw(ung)* (also see Miyake 2017b: 492). The Para-Mongolic form that found its way into Tungusic may have had an aspirated plosive [p^{h}], which is the only explanation for Manchu *f* (and which in turn may have influenced the Alchuka form). According to Ling Chunsheng (1934: 276), the form in Kilen is *tɔ**p**-k'ɔ^{n} ~ t'ɔ**p**-hɔ^{n}* with a voiceless [p], which might be more accurate than the form *to**b**-qon* given by An Jun (1986). Nasalization of the final vowel during the loss of the nasal, here given in a modified notation based on Zikmundová (2013: 223), can also be found in Sibe *tof-χo^{n}* and is a secondary innovation. Jurchen^{A} likely had a [p], too. The Kilen form *to**f**-chon* as recorded by Jettmar (1937: 273) either has its origin in Manchuic or shows an autochthonous change of earlier **p^{h}* to *f*. Jing Manchu apparently had a voiced fricative *to**w**-ho*, but this might be an artifact of the transcription. It remains unclear whether the aspiration was lost in Kilen and Jurchen^{A} or was an innovation in earlier stages of Manchuic. Though

12. The reading of Khitan **nir ~ *nil* '6' was not, as assumed by Róna-Tas (2016: 128), based on the Tungusic word for 6 (e.g. Manchu *ninggun*).

speculative, the dialectal difference within the numeral system of Para-Mongolic may also have included a different structure for the numerals from 11 to 19 which appear to have followed a regular pattern such as 10 + 1 in Khitan (Janhunen 2012a: 119, fn. 27; Róna-Tas 2016: 132). The Khitan reading of numeral 8 is uncertain (Róna-Tas 2016: 128f.). However, based on the evidence in Table 3, it can be tentatively reconstructed as **nVV* (with an unclear diphthong most likely containing the semivowel [j]).

1	*?šU(n)* (KT **mas*)	11	**(k)UnšU(n)* ?= **KU(n) + šU(n)*
2	**tiɔr*	12	**tiɔr + KU(n)*
3	**kUr*	13	**kUr + KU(n)*
4	**tur*	14	**tur + KU(n)*
5	**$t^{h}ɔp^{(h)}ɔ$*	15	**$t^{h}ɔp^{(h)}ɔ$ + KU(n)*
6	**niUl*	16	**niUl + KU(n)*
7	**tɔl*	17	**tɔl + KU(n)*
8	**niU*	18	**niU + KU(n)*
9	?*(k)UniU (KT **is*)	19	?*(k)UniU + KU(n)
10	? (KT **par(a)*)	20	?*KU(n) (KT **jüri(n)*)

Table 4. Numerals in the Para-Mongolic idiom as tentatively reconstructed in this paper. Gaps are filled with Khitan numerals (KT, Róna-Tas 2016). Somewhat unclear elements are shown with capital letters and question marks.

I agree with Norman (2004/05: 26) that Classical Manchu <u> and <o> were probably pronounced [u] and [ɔ]. Interestingly, only these two vowels as well as the vowel [i], most likely actually a semivowel [j], appear in those Para-Mongolic numerals reconstructed in Table 4. The reconstruction of the numerals in the Para-Mongolic idiom that influenced Tungusic is of course only an approximation and in some parts unclear (note the capitalized letters). A capital *U* stands for either *u* or *ɔ* and a capital *K* for either *k* or *x*. The fact that the reconstructions are based on loanwords exclusively may have led to certain distortions resulting from an integration of the numerals into the phonological system of Jurchenic. In general, my tentative reconstruction is strongly based on the transcription in Mu Yejun (1986). It should be noted, however, that <p>, <t>, and <k> in Mu Yejun (1986) are written <b>, <d>, and <g> in Mu Yejun (1987). A comparison with Mongolic might suggest that some of the numerals indeed had voiced plosives (i.e., ****diɔr***, ****gUr***, ****dur***, ****dɔl***). However, given our limited knowledge of the nature of the source language this problem must await further investigation (e.g. Miyake 2017b: 493).

Numeral 7 may contain an element *-r* also found in the numerals 2, 3, and 4, but this is not corroborated by evidence from Mongolic and might be an artifact from the inaccurate Chinese transcription system for Jurchen^{A} (荅兒) that suggests an *r* (**tɔr*) instead of a more likely *l* (**tɔl*). As was already observed by Janhunen, the second part of numeral 9 looks identical to numeral 8, but I was unable to find any plausible explanation for the first element **(k)U-*. The similarity between **niUl* '6' and **niU* '8' also remains unclear and is perhaps accidental.

The discussion thus far excludes the numerals 20, 30, 40, and 50 that might also be connected to Para-Mongolic but deserve special treatment. They have a much wider distribution and can also be found in many other Tungusic languages (Benzing 1956: 102), which offers evidence indicating that they were borrowed at an earlier time. Table 5 gives an overview of the numerals in some Tungusic languages as well as Proto-Mongolic. Numeral 20 could simply be a borrowing of Mongolic **korï/n* (Janhunen 2003b: 397) because Alchuka has a form ***k***ɔ*ri* which preserves the initial consonant and thus contradicts Janhunen's (2003b: 400) Para-Mongolic reconstruction **xorï/n*. Khitan probably had a form **jüri(n)* (Róna-Tas 2016: 133). The Alchuka data do not provide new evidence for the numerals 30, 40 or 50.

Janhunen (2003b: 400) proposes a hypothetical Para-Mongolic numeral **gutï/n* '30' as the source for the Tungusic word, but Tungusic languages display reflexes that may suggest several borrowings from different sources or from different times (Doerfer 1985: 79). The numeral is recorded for Tabgach, probably a Para-Mongolic language itself, as **gurčin* 紇真 in Róna-Tas' (2016: 133f.) reading (cf. Vovin 2007: 193). According to Róna-Tas (2016: 131), the Pre-Proto-Mongolic forms for 30 and 40 were **gurčin* and **dörčin*. Neither can be the source for the Tungusic forms.

Numeral 40 may be connected to Proto-Mongolic **dö.c.i-* but the details are far from clear. Based on the Tungusic evidence one would expect instead a form containing a *k*, and a Para-Mongolic or Pre-Proto-Mongolic origin seems more likely. Note that the same Proto-Mongolic sound combination *ci* has different correspondences in the numerals 30 and 40 within Tungusic. This may either indicate that the source language exhibited this difference as well or rather that the forms were adopted in Tungusic at different times or from different sources. Possibly, the numeral 40 has not only found its way into Kilen, but also into Nanai, Solon, and Oroqen through Manchuic.

	20	30	40	50
Proto-Mongolic	****k***orï/n*	**gu**c**i/n*	**dö**c**i/n*	(**tabi/n*)
Alchuka	ɔ*rin*	*kɔʒï*	*təxi*	*ts'uts'əi*
	*(**k**)*ɔ*ri*	*kɔʃï*	*təjɪ*	*ts'uts'ï*
	ɔ*r(i)*	ɔ*ʃï*	*tə'i*	*ts'ïts'ï*
Jurchen[A]	**orin* 倭林	**gušin* 古申	**tehi* 忒希	**susai* 速撒一
Jurchen[B]	**ori* 斡里	**guši* 谷失	**dehi* 得希	**susai* 速賽
Kilen	*orin*	*ɢoɛin*	*dəxi*	*sudzai*
Manchu	*orin*	*gūsin*	*dehi*	*susai*
Nanai	***x**orin*	*gocin*	*dəxi*	*sosi*
Oroqen	*ʊrɪn*	*gʊ**t**ɪn*	*də**k**i*	-
Solon	*orin*	*go**t**in*	*dexi*	-

Table 5. The special numerals for '20', '30', '40', and '50' in some Tungusic languages (An Jun 1986, Hu Zengyi 2001, Kane 1989: 364f., Kiyose 1977: 133, Ko & Yurn 2011, Norman 2013, Mu Yejun 1986, Tsumagari 2009a), and Proto-Mongolic (Janhunen 2003a: 17).[13]

13. Both Solon (*yereen*) and Oroqen (*jərəən*) have additionally borrowed the numeral 90 from

Numeral 50 is the most problematic because no correspondence can be found within Mongolic or Tungusic. The most likely scenario still is a connection to Manchu *sunja* '5', but the derivation is unclear (cf. Benzing 1956: 103). Nanai and Kilen borrowed the form from Jurchenic. The origin of the Alchuka affricate is a frequent but probably irregular change (< *s*) occasionally found in all three branches of Jurchenic which also spread to Kilen (e.g. Aihui Manchu *su**dz**ɛ*; Wang Qingfeng 2005: 47).

Numerals 60, 70, 80, and 90 all exhibit structural regularities in all of Jurchenic, using a suffix *-ʈʃu* '-teen' in Alchuka (*niŋ-ʈʃu*, *natan-ʈʃu*, *ʈʃiak'un-ʈʃu*, *ujen-ʈʃu*), which is basically identical to Manchu (*nin-ju*, *nadan-ju*, *jakūn-ju*, *uyun-ju*). Again, Alchuka shows some variation and there is one form *jiŋ-ʈʃu* '60' without the initial *n-* that is otherwise only observed in Shenyang Manchu (*in-ju*) and Sibe (*in-zhi*) (Aixinjueluo Yingsheng 1991: 15).[14] Higher numerals were borrowed mostly from Mongolic and can be found in many other Tungusic languages, e.g. Alchuka *miŋan ~ miŋa ~ mi'a* '1000' (Manchu *minggan*, from Mongolic **mingga/n*, cf. Khitan **miŋ*), and *t'umən ~ t'umə ~ t'um* '10.000' (Manchu *tumen*, from Mongolic **tüme/n*, cf. Khitan **t'um*). The first decade is of Tungusic origin (Alchuka *əm*, *ʈʃuə*, *ilan*, *tui'e*, *suntʃia*, *niŋkɔ*, *natan*, *ʈʃiak'uŋ*, *ujen, ʈʃu'an*, excluding variation) and is almost identical to and probably influenced by Manchu (*emu ~ emken*, *juwe*, *ilan*, *duin*, *sunja*, *ninggun*, *nadan*, *jakūn*, *uyun*, *juwan*). Manchu numerals have also been adopted by Kilen, which illustrates that this is not an unusual phenomenon (e.g. *əmkən*, *dʐu(ru)*,[15] *ilan*, *dujin*, *sundza*, *niŋun*, *nadan*, *dʐaqun*, *uyn*, *dʐuan*). This also explains why Alchuka does not exhibit an initial *k-* and Kilen lacks initial *χ-*, cf. Uilta ***x**uyu* '9'.

Except for *uju* 'first' and *jai* 'second' (Alchuka *ʈʃai*), ordinal numerals in Manchu are usually formed by means of the suffix *-ci* (Alchuka *-t'i*). However, Alchuka uses the numeral *təri(n) ~ tiri* 'first' instead of Manchu *uju*. Interestingly, both words have the basic meaning 'head'. Their grammaticalization most likely was influenced by Khitan **nai* 耐 (Kane 2009: 75, Róna-Tas 2016: 126) or Chinese *shǒu* 首 which show a similar polysemy.

Numeral 100 (Alchuka *t'aŋku ~ t'aŋ'u ~ t'a'u*, Manchu *tanggū*) is probably not derived from Mongolic (**jaxu/n*) or Para-Mongolic (Khitan **jaw*) but is included here for the sake of completeness. Most Northern Tungusic languages have a different form, e.g. Solon *namaaji*. Because of its uniformity and distribution in those languages spoken around the lower Amur River (Table 6), we might be dealing with a borrowing from Nivkh *nˈ-raŋ̇ ~ nˈ-řaŋ̇* '1–100' (Gruzdeva 1998: 24), in which the initial consonant cluster, owing to phonotactic reasons, collapsed to [t^h] in Tungusic. Additionally, Manchu does not allow word final consonants, which is why the final vowel may have a similar origin. It is well-known that Tungusic languages had direct contact with Nivkh (Gusev 2015 and references therein). However, a borrowing from

Mongolic (**yere/n*).

14. The development of the initial nasal is not straightforward and deserves treatment in its own right.

15. Perhaps from Manchu *juru* 'pair', but Manchuic dialects also sometimes have a suffix here (e.g. Aihui Manchu *dʐo ~ dzi.vɛrə*, Wang Qingfeng 2005). This should not be confused with the original final *-r* (e.g. Nanai *jwər*) which was regularly lost in Jurchenic.

Tungusic to Nivkh appears to be more plausible. For instance, the numeral may be a derivation from a Tungusic verb (e.g. Evenki *tang-* 'to count, to read'), and thus may have an inner-Tungusic etymology (Stefan Georg, p.c.). In addition, *-raŋķ ~ -řaŋķ* probably started with a **t^h* in older stages of Nivkh, which is why a direct comparison of the stems is possible (Fortescue 2016: 116, Janhunen 2016: 14).

Language	Form	Language	Form
Alchuka	*t'anku*	Nanai	*taŋgo*
Even (Okhotsk)	*taŋun*	Negidal	*taŋgu*
Jurchen^A	**tangu* 湯古	Oroch	*taŋgu*
Jurchen^B	**tanggu* 倘古	Udihe	*taŋgu*
Kilen	*taŋu*	Uilta	*taŋgu*
Manchu	*tanggū*	Ulcha	*taŋgu*

Table 6. The numeral 100 in some Tungusic languages (Schmidt 1923: 282f., Benzing 1956: 103, Alchuka from Mu Yejun 1986, Kilen from An Jun 1986, Nanai from Ko & Yurn 2011, Uilta from Tsumagari 2009b, Jurchen^A from Kiyose 1977, Jurchen^B from Kane 1989).

This numeral also found its way into Sakhalin Ainu, where it was recorded as *taŋgu* (see Laufer 1917: 196).

3. Conclusion

The newly found data give us a unique glimpse of the prehistory of Tungusic and surrounding languages. Within Tungusic it has the potential to settle a long debate about the nature of a Proto-Tungusic initial consonant (e.g. Rozycki 1993 and references therein) and, even though such conclusions are still tentative, indicates that it also may have been present in yet unknown forms. The main focus of this paper was the rich data on numerals from a Para-Mongolic language that is closely related but not identical to Khitan and for which only very few other sources were previously available. In fact, the loanwords found in Tungusic languages constitute the only source of information for this idiom. This not only allows us to understand the variation found within the sister branch of Proto-Mongolic, but presents a rare opportunity to acquire a better understanding of Pre-Proto-Mongolic as well. Before this is possible, however, there is much more work to be done on elements other than the numerals. Luckily, Jurchenic languages preserve many more Para-Mongolic loanwords that are simply waiting for an analysis.

References

Aixinjueluo, Yingsheng 1989: Tantan manyude jingyu 3. – *Manchu Studies* 10: 4–20.

Aixinjueluo, Yingsheng 1991: Tantan manyude jingyu 6. – *Manchu Studies* 13: 3–16.

An Jun 1986: *Hezheyu jianzhi*. Peking: Minzu chubanshe.

Anderson, Gregory D. S. 2006: Burushaski. – Keith Brown (ed-in-chief), *Encyclopedia of language & linguistics*, 2nd edn. Oxford: Elsevier. 168–172.

Benzing, Johannes 1956: *Die tungusischen Sprachen: Versuch einer vergleichenden Grammatik*. Mainz: Akademie der Wissenschaften und der Literatur.

Chaoke, D. O. & Zhao Aping 2001: *Heilongjiang xiandai manyu yanjiu*. Harbin: Heilongjiang jiaoyu chubanshe.

Chinggeltei 1997: Qidanyu shuci ji qidanyu xiaozi pindufa. – *Altai Hakpo* 7: 143–152.

Chinggeltei 2002: On the problems of reading Kitan characters. – *Acta Orientalia Academiae Scientiarum Hungaricae* 55(2/3): 99–114.

Doerfer, Gerhard 1985: *Mongolo-Tungusica*. Wiesbaden: Harrassowitz.

Doerfer, Gerhard 1993: The older Mongolian layer in Ancient Turkic. – *Türk Dili Araştırmaları* 3: 79–86.

Doerfer, Gerhard 1998: Turkic dialects of Iran. – Lars Johanson & Éva Á. Csató (eds), *The Turkic languages*. London: Routledge. 273–282.

Erdal, Marcel 1998: Old Turkic. – Lars Johanson & Éva Á. Csató (eds), *The Turkic languages*. London, New York: Routledge. 138–157.

Fortescue, Michael 2016: *Comparative Nivkh dictionary*. München: Lincom.

Franke, Herbert 1990: The forest peoples of Manchuria: Kitans and Jurchens. – Denis Sinor (ed.), *The Cambridge history of early Inner Asia*. Cambridge: Cambridge University Press. 400–423.

Franke, Herbert 2000: Old Jurchen words in Chinese transcription. Some tentative reconstructions. – Lutz Bieg & Erling von Mende & Martina Siebert (eds), *Ad Seres et Tungusos. Festschrift fur Martin Gimm zu seinem 65. Geburtstag am 25. Mai 1995*. Wiesbaden : Harrassowitz. 139–146.

Grube, Wilhelm 1896: *Die Sprache und Schrift der Jučen*. Leipzig: Kommissionsverlag von O. Harrassowitz.

Gruzdeva, Ekaterina 1998: *Nivkh. Languages of the World/Materials 111*. München: Lincom Europa.

Gusev, Valentin 2015: Some parallels in grammar between Nivkh and Tungusic Languages. – *Journal of the Center for Northern Humanities* 8: 63–75.

Hölzl, Andreas 2014: Review of Zikmundová, Veronika 2013. Spoken Sibe. Morphology of the inflected parts of speech. – *Studies in Language*. 38(1): 211–219.

Hu Zengyi 2001: *Elunchunyu yanjiu*. Peking: Renmin chubanshe.

Ikegami Jirō 1999: *Manshūgo kenkyū*. Tōkyō: Kyūko Shoin.

Janhunen, Juha 2003a: Proto-Mongolic. – Juha Janhunen (ed.), *The Mongolic languages*. London. New York: Routledge. 1–29.

Janhunen, Juha 2003b: Para-Mongolic. – Juha Janhunen (ed.), *The Mongolic languages*. London: Routledge. 391–402.

Janhunen, Juha 2007: Typological expansion in the Ural-Altaic belt. – *Incontri linguistici* 30: 71–83.

Janhunen, Juha 2012a: Khitan: Understanding the language behind the scripts. – *SCRIPTA* 4: 107–132.

Janhunen, Juha 2012b: The expansion of Tungusic as an ethnic and linguistic process. – Andrej Malchokov & Lindsay J. Whaley (eds), *Recent advances in Tungusic linguistics*. Wiesbaden: Harrassowitz. 5–16.

Janhunen, Juha 2016: Reconstructio externa linguae ghiliacorum. – *Studia Orientalia* 117: 3–27.

Jettmar, H. M. 1937: Der Stamm der oberen Golden (Die Sungari-Ussuri-Gruppe). – *Mitteilungen der Anthropologischen Gesellschaft in Wien* 5: 245–276.

Kane, Daniel 1989: *The Sino-Jurchen vocabulary of the Bureau of Interpreters*. Bloomington: Indiana University Press.

Kane, Daniel 2006: Khitan and Jurchen. – Alessandra Pozzi, Juha Janhunen & Michael Weiers (eds), *Tumen jalafun jecen akū. Manchu studies in honour of Giovanni Stary*. Wiesbaden: Harrassowitz. 123–132.

Kane, Daniel 2009: *The Kitan language and script*. Leiden: Brill.

Kiyose, Gisaburo N. 1977: *A study of the Jurchen language and script: Reconstruction and decipherment*. Kyoto: Shōwado.

Kiyose, Gisaburo N. 2000: Genealogical relationship of Jurchen dialects and literary Manchu. – *Central Asiatic Journal* 44(2): 177–189.

Ko, Dongho & Yurn Gyudong 2011: *A description of Najkhin Nanai*. Seoul: Seoul National University Press.

Laufer, Berthold 1917: The vigesimal and decimal systems in the Ainu numerals: With some remarks on Ainu phonology. – *Journal of the American Oriental Society* 37: 192–208.

Laufer, Berthold 1921: Jurči and Mongol numerals. – *Körösi Csoma Archivum* 1(2): 112–115.

Ling, Chunsheng 1934: *Songhuajiang xiayou de hezhezu*. Nanjing: Guoli zhongyang yanjiuyuan lishi yuyan yanjiusuo.

Miyake, Marc 2017a: Jurchen language. – Rint Sybesma (ed.), *Encyclopedia of Chinese language and linguistics*, 5 vols. Leiden: Brill. 478–480.

Miyake, Marc 2017b: Khitan language. – Rint Sybesma (ed.), *Encyclopedia of Chinese language and linguistics*, 5 vols. Leiden: Brill. 492–495.

Mu, Yejun 1985: Alechuka manyu yuyin jianlun. – *Manchu Studies* 1: 5–15.

Mu, Yejun 1986: Alechuka manyu de shuci yu gezhuci. – *Manchu Studies* 2: 2–17.

Mu, Yejun 1987: Balayu. – *Manchu Studies* 2: 2–31, 128.

Mu, Yejun 1988: Alechukayu yuanyin fasheng de yinbian tedian. – *Manchu Studies* 7: 1–24.

Norman, Jerry 2004/05: Notes on Manchu pronunciation. – *Saksaha. A Review of Manchu Studies* 9: 25–30.

Norman, Jerry 2013: *A comprehensive Manchu-English dictionary*. Cambridge, London: Harvard University Asia Center.

Pevnov, Alexander M. 2012: On some archaic features of the Jurchen language. – *Hoppō jinbun kenkyū* 5: 57–69.

Pritsak, Omeljan 1955: Die Oberstufenzählung im Tungusischen und Jakutischen. – *Zeitschriften der Deutschen Morgenländischen Gesellschaft* 105: 184–191.

Rozycki, William 1993: A problem in Proto-Tungus reconstruction: the phoneme **k'-*. – *Ural-Altaische Jahrbücher* 12: 203–212.

Róna-Tas, András 2016: Khitan studies I: The graphs of the Khitan small script. 1 General remarks, dotted graphs, numerals. – *Acta Orientalia Hungarica* 69 (2): 117–138.

Schmidt, Peter 1923: The language of the Olchas: *Acta Universitatis Latviensis* 8: 229–288.

Sun, Bojun 2004: *Jindai nüzhenyu*. Shenyang: Liaoning minzu chubanshe.

Tsumagari, Toshiro 2003: Dagur. – Juha Janhunen (ed.), *The Mongolic languages*. London: Routledge. 129–153.

Tsumagari, Toshiro 2009a: A sketch of Solon grammar. – *Journal of the Center for Northern Humanities* 2: 1–21.

Tsumagari, Toshiro 2009b: Grammatical outline of Uilta (revised). – *Journal of the Graduate School of Letters* 4: 1–21.

Vovin, Alexander 2007: Once again on the Tabgač language. – *Mongolian Studies* 29: 191–206.

Vovin, Alexander 2015: Some notes on the Tuyuhun (吐谷浑) language: In the footsteps of Paul Pelliot. – *Journal of Sino-Western Communications* 7(2): 157–166.

Wang Qingfeng 2005: *Manyu yanjiu*. Peking: Minzu chubanshe.

Zikmundová, Veronika 2013: *Spoken Sibe. Morphology of the inflected parts of speech*. Prague: Karolinum.