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MIDDLE MONGOL AFFRICATES AND THE RECONSTRUCTION OF (PRE-)PROTO-MONGOLIC AFFRICATES*

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The present paper deals with some particularities of affricates in Middle Mongol (13th–16th centuries) as related to the problem of reconstructing the (Pre)-Proto-Mongolic consonant system. Three particularities of Middle Mongol affricates are especially highlighted: (1) *č* ~ *ǰ* alternation; (2) alliteration of the type *č* – *ǰ* or *ǰ* – *č*; (3) underdifferentiation of the medial *č* and *ǰ* in Uighur-Mongol script. Examples of the non-distinctive use of affricates in the Modern Mongolic languages as e.g. those spoken in Qinghai and Gansu provinces (Eastern Yugur and Shirongol) and the central Mongolic group (Khalkha, Buryat, Kalmyk) are given as well. The author comes to the conclusion that in Proto-Mongolic the distinction between **č* and **ǰ* may have been a phonemic one, while at the Pre-Proto-Mongolic stage **č* and **ǰ* were presumably free-variant allophones of the same consonant phoneme ***C*. Our reconstruction seems to be confirmed by the evidence from Khitan where alternation of the segments <c> and <dz> occurred, probably dating back to the Pre-Proto-Mongolic stage.

Key words: Mongolic languages, Middle Mongol, Uighur-Mongol script, (Pre)-Proto-Mongolic reconstruction, historical phonology.

1. Introduction

Proto-Mongolic reconstructions currently presented e.g. in the works by Ramstedt (1908, pp. 6–7, 13; 1957, pp. 58–59, 60–61, 94–95), Vladimircov (1929, pp. 397–400, 405–407), Sanžeev (1953, pp. 18–19, 91–103), Poppe (1955, pp. 110–119; 1956; 1960, pp. 25–28, 62–64), Clauson (1962, pp. 191, 194, 207), Tömörtogoo (1992, pp. 118, 123–127), Darbeeva (1996, pp. 77–82), Nugteren (1997, p. 213;

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2011, pp. 58, 73, 217–219), Janhunen (2003a, pp. 5–7), Svantesson et al. (2005, pp. 102, 109, 118–121), and others traditionally distinguish between two affricates, **č* and **ǰ*, which are reflected in Middle Mongol as *č* and *ǰ*, respectively. Modern researchers, mainly belonging to the Finnish school, consider Middle Mongol, not without reason, to be very close to Proto-Mongolic,[1] and emphasise its importance for the reconstruction of Proto-Mongolic phonological system (Janhunen 2003a, p. 1; 2012, pp. 2–3; Rybatzki 2003a, p. 62; cf. Svantesson et al. 2005, p. 99). In view of this, it would be appropriate to carefully analyse the phonemic qualities of Middle Mongol affricates, which could contribute to further clarification of their position in the (Pre-)Proto-Mongolic consonantal system.

As is well known, Middle Mongol is represented by monuments written in three different scripts:

(1) Arabic script → the affricates *č* and *ǰ* are usually written indiscriminately with the letter ﭽ < > (*ǧīm*), apparently due to the lack of a voiceless affricate in Literary Arabic or because of the influence of writing conventions used for transcribing Turkic words (Ho Kai-lung 2008, pp. 41–42; Saitô 2011, pp. 60–61; cf. Watson 2002, pp. 13, 15–16);

(2) Chinese script → *č* and *ǰ* are differentiated and written (a) by characters with Ancient Mandarin/Standard Chinese retroflex initials [tʂ^{h}] vs. [tʂ], or occasionally (b) by characters with Standard Chinese alveopalatal initials [tɕ^{h}] vs. [tɕ] (in late monuments);

(3) ’Phags-pa script → *č* and *ǰ* are differentiated and written by the special consonant letters 𡀔 <č> vs. 𡀟 <ǰ>.

Phonological features of Middle Mongol affricates related to voice onset time (VOT) are clarified from the analysis of their Chinese and ’Phags-pa transcriptions (see e.g. Svantesson et al. 2005, pp. 102–105, 109, 118–121; cf. also Karlsson–Svantesson 2012, pp. 217–218; Svantesson–Karlsson 2012, pp. 461–463):

č – [voiceless], [+aspirated]
ǰ – [voiceless], [–aspirated]

As can be seen, this is a privative opposition of voiceless affricates based on the distinctive feature <aspiration> in which *č* is a marked member.

As for the feature <place of articulation> realised by Middle Mongol affricates, it cannot be specified with certainty. Chinese and ’Phags-pa transcriptions suggest either retroflex ([tʂ^{h}] vs. [tʂ]), or alveopalatal ([tɕ^{h}] vs. [tɕ]) interpretation, although palatal ([cç^{h}] vs. ([cç]) articulation of both affricates is not to be excluded as well, according to one of the possible interpretations of ’Phags-pa affricate letters pointed out in Coblin (2007, p. 42), which is additionally favoured by the use of the Preclassical Uighur-Mongolian letter <y> (*yod*) for both *ǰ* and *y* (phonologically, /j/) in word-initial position. In addition, a number of researchers usually characterise Middle Mongol affricates as palato-alveolar ([ʧ^{h}] vs. [ʧ]), relying mainly on their reflexes in most modern Mongolic languages (see e.g. Poppe 1955, pp. 110–111, 114–115; Šongqor

[1] Cf. however, Kempf (2013, pp. 18–19), where this view is disputed, but without detailed reasoning.

1996, pp. 60–62; Гarudi 2001, pp. 225–228; Svantesson et al. 2005, pp. xv, 119–120). Each of these types of affricate articulation is amply presented in modern Mongolic languages and dialects.[2] Thus, strictly speaking, a broad interpretation of č and ǰ as postalveolar/palatal consonants can be the only valid, but in this paper the narrow palato-alveolar interpretation is accepted for convenience.

The phonemic status of *č* and *ǰ* in Middle Mongol as the smallest distinctive linguistic units is beyond doubt, as evidenced by a number of examples in which they are mutually contrasted both word-initially (1a), and word-medially (1b) (they were phonotactically inadmissible in word-final position):

(1a)

čaqa /ʧʰakʰa/ ‘boy, child’ (SHM)[3]	vs.	*ǰaqa* /ʤakʰa/ ‘collar’ (SHM; ZY; HY; DGZ; YY [*ǰaχa ~ ǰa’a*])

[2] *Palato-alveolar articulation*: Chakhar (Daobu 1983, pp. 6–7; Sun Zhu 1985, pp. 49–50; Türgen 1985, pp. 19–21, 29–31; Uuda 1987, pp. 260, 263], Ordos (Sečen–Baγatur–Sengge 2002, pp. 41–42, 48; Iraγu 2011, pp. 70–72), Baarin (Bayarmendü 1997, pp. 67–68), some subdialects of the Khorchin group (Sun Zhu 1985, pp. 325–326; Saraγul 2009, pp. 23–24; Saran-a 2010, pp. 26, 29–30), Monggoljin (Sečentungγalaγ 2011, pp. 34, 36), Dagur (the Buthaa and Hailar dialects) (Poppe 1930, pp. 127, 128, 130, 135; Namcarai–Qaserdeni 1983, pp. 72–73; Sun Zhu 1985, p. 566; Engkebatu 1988, pp. 115–117), Old Bargu (Bousiyang–J̌irannige 1996, pp. 86–88, 101; Yu Wonsoo 2006, pp. 134, 137), New Bargu (Pürbü 1987, pp. 305–306, 308; Saraγul 2009, pp. 23–24), Eastern Yugur (Bulučilaγu–J̌alsan 1992, pp. 111–113; Nugteren 2011, p. 218), Kangjia (Siqinchaoketu 1999, p. 29; Nugteren 2011, p. 218), Moghol (Weiers 1972, pp. 88, 98; 2003, p. 251; Böke 1996, pp. 41–42, 66);

Alveopalatal articulation: Khalkha (Svantesson 2003, pp. 156–157; Kuzmenkov 2004, pp. 158–161; Svantesson et al. 2005, pp. 13, 25; Coloo 2008, p. 63), Ordos (Iraγu 2011, pp. 70, 72), Dagur (the Buthaa, Hailar and Qiqihar Meilis dialects) (Poppe 1930, pp. 127, 128, 130–131, 135; Sun Zhu 1985, p. 567; Yu Wonsoo–Kwon Jae-il 2004, pp. 177–178), Old Bargu (Yu Wonsoo 2006, pp. 134, 136–137), Baoan (Buhe–Liu Zhaoxiong 1982, p. 10; Chen Naixiong 1987, pp. 60–62; Fried 2010, pp. 24–26; Nugteren 2011, p. 218), Mongghul (Zhaonasitu 1981, pp. 6–8; Čenggeltei 1991, pp. 77–78, 99–103; Juu Engkebayar 2011, p. 32; Nugteren 2011, p. 218), Mangghuer (Slater 2003, pp. 45–48; Nugteren 2011, p. 218), Kharachin-Tümed (Sečenbaγatur 2005, pp. 357–358);

Retroflex articulation: Dongxiang (Liu Zhaoxiong 1981, p. 12; Böke 1986, p. 52; Kim 2003, pp. 349–350; Nugteren 2011, p. 218), Mangghuer (Slater 2003, pp. 45–48; Nugteren 2011, p. 218), Kharachin-Tümed (Sečenbaγatur 2005, pp. 357–358), for which, however, an alternative palato-alveolar interpretation is proposed (He Guiling 2008, pp. 27–30);

Palatal articulation: Khamnigan (Janhunen 1990, pp. 35, 40), the Mongolian dialect of southeastern Tuva (Ulanova 1988, p. 5), probably the Oirat and Kalmyk dialects (Posch 1964, pp. 205, 207–208; Bitkeev 1965, pp. 39, 47–48; Benzing 1985, pp. 26, 72, 190; Sambuudorǰ 2002, pp. 127, 133–134; Ubušaev 2006, pp. 87–88), although the Oirat-Kalmyk affricates are considered by some authors to be alveopalatal (Pavlov 1983, pp. 146–150; Yu Wonsoo 2006, p. 134; Balogh 2012, pp. 181–182) or palato-alveolar (Sečenbaγatur 2005, p. 404; Mönggüntuyaγ-a 2007, pp. 31, 32; Oyunčečeg 2009, pp. 27–29; Gegentan-a 2010, pp. 25–26; Qastuyaγ-a 2011, pp. 85–86, 89; Rákos 2012, p. 36).

[3] In all the examples, Middle Mongol words are given both in standard academic transcription and in phonemic, or broad, transcription using the IPA symbols. Abbreviations for the sources are enclosed in parentheses. Square brackets are used to set off “non-standard”, or idiosyncratic, forms occurring in individual sources.

čida- /ʧʰita/ ‘to be able’ (SHM; Ph; HY; DGZ; YB)	vs.	*ǰida* /ʤita/ ‘spear’ (SHM; ZY; HY; DGZ; YY; DY; YB)
čö’en /ʧʰøʔen/ ‘few’ (SHM; HY)	vs.	*ǰö’en* /ʤøʔen/ ‘cold’ (HY; DGZ; SHM [*ǰü’en*])

(1b)

eči’e /eʧʰiʔe/ ‘father’ (SHM)	vs.	*eǰi’e* /eʤiʔe/ ‘until now’ (SHM; HY; DGZ)
oroču /oroʧʰu/ ‘late-born’ (SHM)	vs.	*oro-ǰu* /oroʤu/ ‘to enter-CVB.IPFV’ (SHM)
qačar /kʰaʧʰar/ ‘cheek’ (SHM; HY; DGZ)	vs.	*qaǰar* /kʰaʤar/ ‘earth, place’ (SHM; Ph; HY; DGZ; ZY [*qaǰir*]; YY [*γaǰar*]; DY [*χaʣar*]; YB [*χaǰar ~ γaǰar*])
qaraču /kʰaraʧʰu/ ‘commoner; common people’ (SHM; HY)	vs.	*qara-ǰu* /kʰaraʤu/ ‘to look at-CVB.IPFV’ (SHM; HY)

At the same time, the use of Middle Mongol affricates reveals some remarkable particularities, which are difficult to explain in terms of their phonemic distinctiveness as exemplified by minimal pairs in (1). Let us consider these particularities in turn.

2. Particularities of Middle Mongol Affricates

2.1. č ~ ǰ *Alternation*

In Middle Mongol, a large number of examples are attested, in which alternation of *č* and *ǰ* takes place in nominal and verbal stems without affecting their meaning. Some of these examples are given below. They are divided into two groups depending on where the alternation occurs: word-initially (2a) or word-medially (2b):

(2a)

čaqa:n /ʧʰakʰa:n/ (SHM–13[4]; ZY–1; HY–2; Ph–6 [*čaqa’an*]; YY–7 [*čaχa:n*]; DY–11 [*čaχa:n*]; YB–8 [*čaχa:n*])	~	*ǰaqa:n* /ʤakʰa:n/ (ZY–2)	‘white’

[4] Hereinafter, abbreviations for the sources are followed by the number of occurrences indicated for each monument or group of monuments after a dash. Statistical data on the SHM and HY are drawn from the indices published by Kuribayashi (2003; 2009), Kuribayashi and Choijinjab (2001); as for the remaining monuments, statistics of occurrences are provided by myself. In braces are put instances of incomplete correspondence of stems due to phonetic changes occurred in one or both of them.

činana /ʧʰinana/ (SHM–5)	~	*ǰinana* /ʧinana/ (ZY–1)	‘beyond, yonder’
Činggis /ʧʰiŋkis/ (SHM–340; Ph–1; HY–3)	~	*J̌inggis* /ʧiŋkis/ (Ph–29)	title/personal name
ǰa’ud quri /ʧaʔut kʰuri/ (SHM–1)	~	*ča’ud quri* /ʧʰaʔut kʰuri/ (SHM–1)	military title
J̌oči Darmala /ʧoʧʰi tarmala/ (SHM–4)	~	*Čoǰi Darmala* /ʧʰoʧi tarmala/ (SHM–1)	personal name
{*ǰöge* /ʧøke/ (ZY–1)	~	*čögei* /ʧʰøkei/ (DY–1; YB–1)	‘bee’}

(2b)

a’uljа- /aʔulʧa/ (SHM–16; HY–3)	~	*a’ulča-* /aʔulʧʰa/ (SHM–1)	‘to present oneself in audience’
bečin /peʧʰin/ (Ph–1; HY–1; DGZ–1)	~	*beǰin* /peʧin/ (YB–1)	‘monkey, ape’
ečige /eʧʰike/ (SHM–142; ZY–2; HY–3; YB–2)	~	*eǰige* /eʧike/ (YY–2; DY–2 [*öǰige*])	‘father’
hiriče- /hiriʧʰe/ (SHM–2)	~	*hiriǰe-* /hiriʧe/ (SHM–1)	‘to part, separate’
küǰü’ün /kʰyʧyʔyn/ (HY–1; DGZ–1; SHM–6 [*güǰü’ün*])	~	*kučü’ün* /kʰyʧʰyʔyn/ (YY–1)	‘neck’
Qači’un-beki /kʰaʧʰiʔun pekʰi/ (SHM–2)	~	*Qaǰi’un-beki* /kʰaʧiʔun pekʰi/ (SHM–1)	personal name
urǰi /urʧi/ (ZY–1; DY–1)	~	*urči* /urʧʰi/ (YY–1; YB–1)	only in NP *u. üdür* (*ödür*) ‘the day before yesterday’, *u. sara* ‘two months ago’
{*ertinču* /ertʰinʧʰy/ (HY–2)	~	*yėrtinǰü* /jertʰinʧy/ (Ph–3)	‘world’}
{*kökörčigen* /kʰøkʰørʧʰiken/ (HY–1; DGZ–1; DY–1 [*kögerčigene*]; YB–1 [*kökerčigenne*])	~	*kügürǰin* /kʰykyrʧin/ (ZY–1)	‘pigeon, dove’}

A total of 30 examples were revealed in which the affricates alternate in such a way, both in Common Mongolic words and in lexical borrowings represented e.g. by the Turkic loanwords *bečin* ~ *beǰin*, *ertinču* ~ *yėrtinǰü*, *kökörčigen* ~ *kügürǰin* (2b),

as well as by the title of an unknown (Khitan? Jurchen?) origin *ǰa'ud quri ~ ča'ud quri*[5] (2a). The alternation of affricates in Turkic loans is especially noteworthy, since it cannot be explained in terms of the rules of their Mongol phonetic adaptation as demonstrated in Clark (1980, pp. 43–44), according to which Turkic *č* in word-medial position was substituted by Mongol *č* (intervocalically or after a sonant) or *š* (elsewhere), but not normally assimilated to *ǰ*.

Note that in the examples of type (2) we are dealing not with a living, contextually conditioned alternation, since no specific phonological environments can be established for neutralisation of phonemic contrast between the affricates.[6] The situation is further complicated by the fact that the classes (1) and (2) are not to be considered as strictly contrastive, due to the fact that the same stem, although in its different phonetic shapes, could belong to both classes. Thus, we have a case of alternation in the word *ečige ~ eǰige* 'father' (2b), which in its "non-standard" shape *eči'e* forms a regular minimal pair with the adverb *eǰi'e* 'until now' (1b). Strictly speaking, it cannot be completely ruled out that all the members of minimal pairs as in (1) may have had alternating forms, however, unattested in the existing Middle Mongol materials if only for the reason of the latters' relative scarcity.

In addition to primary word stems, the *č ~ ǰ* alternation in Middle Mongol occurs also in grammatical morphemes, derivational (3a) as well as inflectional (3b):

(3a) *+bči ~ +bǰi* (NDS)

geǰige+bči /ketʃikepʧʰi/ (DY–1)	~	*geǰige+bǰi* /ketʃikepʧi/ (YY–1; YB–1)	'neckstrap of bridle'

+či ~ +ǰi (NDS)

{*em+tɕi* /emʧʰi/ (DY–1)	~	*em+ǰi* /emʧi/ (ZY–1)	'physician'}
+či- ~ +ǰi- (VDS)			
qada'u+či- /kʰataʔuʧʰi/ (SHM–2)	~	*qada'u+ǰi-* /kʰataʔuʧi/ (SHM–2)	'to be careful'

(3b) *-čU ~ -ǰU* (CVB.IPFV)

ab-ču /apʧʰu/ (SHM–46)	~	*ab-ǰu* /apʧu/ (HY–1)	'to take-CVB.IPFV'

[5] For this title see Rachewiltz (2006, vol. 1, pp. 492–493) and Šagdarsürėn (2009).

[6] In Middle Mongol, the phonemic contrast between consonants based on the feature <aspiration> seems to have been lost in word-final position in which *č* and *ǰ* do not occur in principle, as well as word-medially before stops where only a few occurrences of *č* (irregularly developed from **s*) before the velar *k ~ g* are observed (on these occurrences see Clark 1980, pp. 49–51; Šongqor 1996, p. 60; Nugteren 2011, pp. 74, 80).

emüs-čü /emysʧʰy/ (SHM–2)	~	*emüs-ǰü* /emysʃy/ (HY–1)	‘to put on-CVB.IPFV’
gür-čü /kyrʧʰy/ (SHM–47)	~	*gür-ǰü* /kyrʃy/ (SHM–2; HY–6)	‘to reach-CVB.IPFV’
nis-ču /nisʧʰu/ (SHM–2)	~	*nis-ǰu* /nisʃu/ (SHM–1)	‘to fly-CVB.IPFV’

-čU’U ~ -ǰU’U (NONFIRSTH.PFV[7])

asaq-ču’u /asakʰʧʰuʔu/ (SHM–6)	~	*asaq-ǰu’u* /asakʰʃuʔu/ (SHM–1)	‘to ask-NONFIRSTH.PFV’
od-ču’u /otʧʰuʔu/ (SHM–1)	~	*od-ǰu’u* /otʃuʔu/ (HY–1)	‘to set forth-NONFIRSTH.PFV’
-lčA- ~ -ljA- (SOC)			
šileme-lje- /ʃilemelʧe/ (SHM–2)	~	*šileme-lče-* /ʃilemelʧʰe/ (SHM–1)	‘to drivel-SOC’

A total of 14 examples of the affricate alternation in grammatical morphemes were revealed by us. It should be noted that the suffixes *-čU ~ -ǰU*, *-čU’U* (*-čUGU*) ~ *-ǰU’U* (*-ǰUGU*) alternate in Classical Written Mongol as well, however, on a purely morphophonological basis depending on the type of the verbal stem’s final segment: the allomorphs with *-ǰ* are attached to stems ending in a vowel, diphthong, or the sonant *-l*, while the allomorphs with *-č* are used elsewhere (Poppe 1974, §§ 352, 372). The same rule generally applied to the use of these suffixes in Middle Mongol, as was demonstrated e.g. by Street (1957, p. 10) and Godziński (1985, §§ 221, 240–241), but at least some cases of their choice on a number of stems are obviously not to be regarded as morphophonological alternations, as is clear from (3b). For these cases, only non-automatic alternation of segments on the principle of free variation can be observed.

2.2. Alliteration of Type **č – ǰ** *or* **ǰ – č**

Alliteration is traditionally considered as one of the most, if not the most, important metrical devices, which was widely used in Mongolian poetry since ancient times (cf. e.g. Poppe 1937, pp. 115–117, 123; Tudenov 1958, pp. 45–51; Krueger 1961, p. 17; Gerasimovič 1975, pp. 13–16; Kesigtoγtaqu 1985, pp. 23, 25, 27–36; 1998, pp. 95–

[7] Our interpretation of the grammatical meaning of the affix *-čU’U ~ -ǰU’U*, traditionally considered to be a marker of *praeteritum imperfecti*, is based on Street (2009, pp. 131–132, 141–147, 153–154, 156–157) and Brosig (2012, pp. 33, 35).

109; 2003, pp. 96–108; Cėrėnsodnom 1987, pp. 252–253, 262–266).[8] As far as I know, no detailed phonological analyses of Mongolian alliteration have ever been made. According to Kara (1970, p. 215), alliterating segments at the beginning of verses or words within a verse are "identical or phonetically close (*identiques ou phonétiquement apparentées*)". In Mongolian poetry of the Classical period, as e.g. in poetical passages in the *Erdeni-yin tobči* by Saγang Sečen (1662) extensively studied by Krueger (1961), alliteration extends over nothing but the same segments, with *č* and *ǰ* never alliterating between each other. However, in the *Secret History of the Mongols*, the largest monument of Middle Mongol, a number of examples of *ǰ – č* or *č – ǰ* alliteration are attested:

(4a)	(4b)	(4c)
***ǰ**irüge minu amu'ulba ǰe ta* ***č**e'eǰi dotora minu aduqai* (SHM 03:48:10–03:49:01)	***ǰ**idatu ere-yi ǰi'uǰu* ***č**isutu tonoq tonoqčin* (SHM 07:35:04–05)	***ǰ**irim ülü kin bayiǰu* ***ǰ**irüge amu'uluqsan* ***č**iŋ setkilten kebte'ül minu* ***ǰ**irqalaŋ oron-tur gürgebe* (SHM 10:01:08–10)

As can be seen, the following Middle Mongol words alliterate: *ǰirüge* 'heart' with *če'eǰi* 'breast' (4a), *ǰidatu* 'having a spear' with *čisutu* 'bloody' (4b), *ǰirim* 'a short rest' and *ǰirüge* 'heart' with *čiŋ* 'sincere' and *ǰirqalaŋ* 'joy' (4c). In the *Secret History* 5 cases of such an alliteration are observed, all of them belonging to the category of initial (vertical) alliteration, which connects the beginnings of adjacent verses. However, alliteration of the "classical" type *ǰ – ǰ* (9 cases) and *č – č* (12 cases), of an initial as well as internal (verse-medial) varieties, is also attested there.

It is noteworthy that later Middle Mongol and Preclassical Mongol texts contain almost exclusively alliteration of the "classical" type. We have found only two clear instances of *č* alliterating with *ǰ*: one in a quatrain from the Buddhist verse inscription in 'Phags-pa script carved on the western wall of the arched gate tunnel in Juyongguan (5a) and another in a stanza from the Preclassical Mongol version of the *Lalitavistara* (5b).

(5a)	(5b)
***č**aqa'an ǰa'an-u ǰuljiqan-u sudur ////u :* ***ǰ**aya'an tutum altan ǰa'an kölgen-i olu'ad :* ***č**aq-un hečüs-dür naḵabali ne[r]etü bolu'ad kürtebei* ***č**aqlaši ügeı amuqulaŋ-i tere kürteǰü'üı ::* (Ph XL 1)	***č**indan-ača sayin ünür-ḏen :* ***č**itiri erdinis-iyer čimegten :* ***č**inu minu ǰalaγu-daγan :* ***ǰ**irγalduy-a kemeǰü irebei bida ::* (Bur 61b)

[8] However, the presence of non-alliterative verses in old Mongolian literature, which are dealt with specifically in Kara (1972; 2001), cannot be denied as well.

In the examples above, alliteration occurs between the words beginning with *ča/ǰa*: *čaqa'an* 'white', *ǰaya'an* 'reincarnation', *čaq-un* 'time-GEN', *čaqlaši ügeı* 'immeasurable' (5a), as well as between those beginning with *či/ǰi*: *čindan-ača* 'sandalwood-ABL', *čitiri* 'various', *činu* 'your', *ǰirγa-ldu-ya* 'to be happy-REC-VOL' (5b).

2.3. Underdifferentiation of the Medial č *and* ǰ *in Uighur-Mongol Script*

In recent studies (see e.g. Janhunen 2003a, pp. 1–2; 2003b, pp. 30, 33, 34, 40, 43; 2003c, p. 391; 2012, p. 6; Rybatzki 2003a, p. 57), the Uighur-Mongol script has often been considered as representing a specific literary language of the Mongols based on one of as yet unidentified spoken idioms, which was very close to Proto-Mongolic and Middle Mongol, but in some respects distinct from them, while reflecting a still earlier stage in the development of Mongolic languages – the so-called Late Pre-Proto-Mongolic.

In Preclassical monuments in Uighur-Mongol script (13th–16th centuries), the affricates *č* and *ǰ* are differentiated only word-initially, where *ǰ* is expressed by the letter <y> (*yod*), however, standing also for the palatal glide /j/,[9] while *č* is rendered by the initial allograph of the grapheme <č> (*ṣādhē*). In word-medial position, both affricates are written indiscriminately by the medial allographs of the grapheme *ṣādhē* in the form of a "smooth horn" or, less commonly, "angular horn" (Kara 1964, pp. 146, 154, note 12; 1996, p. 545; 2005, pp. 82, 86, 88–89; Rachewiltz 1982, pp. 68–69, note 143; Bousiyang 1984, pp. 58–59; Türgen et al. 1988, pp. 754, 760–761, 763, 774, 782, 784, 787; Qasbaγan-a 1996, pp. 115–116, 464; Ґarudi 2001, pp. 225, 227; Zayaabaatar 2011, pp. 45, 55). Of course, this could be ascribed to the influence of orthographical conventions of the Uyghur alphabet established for the language in which there was no consonant *ǰ* and, accordingly, no special grapheme for its expression (see Kara 1996, p. 540; 2005, pp. 30, 88; Rachewiltz–Rybatzki 2010, p. 23, Fig. 7, Fig. 11). But it is remarkable that for a long time after the borrowing of the Uighur alphabet in the early 13th century, the Mongols have not even attempted to dispose of the underdifferentiation of the word-medial *č* and *ǰ* by eliminating the polyphony of the letter <č>. It is not until the early 17th century that graphical distinction between medial *č* and *ǰ* became more or less consistent, with the angular allograph standing for *č*, while the smooth one being retained for *ǰ*, but in some monuments the original underdifferentiation remains until well into the 18th century (Türgen et al. 1988, pp. 816–817; Kara 2005, pp. 86, 94).

Therefore, it is clear that characteristic of the Uighur-Mongol script was an inevitable homography of the members of minimal pairs such as (1b), which could be properly identified only depending on the context. An example of such a homography

[9] This is likely to be regarded as an argument for the original palatal articulation of (Pre-)Proto-Mongolic affricates, as was first suggested by Vladimircov (1929, p. 397) and later elaborated by Rassadin (1981; 1982, pp. 142–149) who ascribed this particular kind of affricate articulation to the ancient influence of Tungusic languages.

is given in (6a) where the only known minimal pair is shown with both members equally attested in Preclassical Written Mongol. As for the cases of the *č ~ ǰ* alternation exemplified in (2) and (3), the Uighur-Mongol orthography does not enable us to opt for one or another of the alternants, as shown in (6b).

(6a)

<q'r'čw>	=	*qaraču* 'commoner' (HC)	or	*qaraǰu* 'to look at-CVB.IPFV' (Alt)

(6b)

<''pčw>	(HC; Bur; Sub; Turf VII; Turf XVIII; Turf XX; Turf LIV; Chang; Jig; Qqot VIII)	=	?*abču*	?*abǰu*	'to take-CVB.IPFV'
<''qwlč'> <''q̄wlč'>	(Alt; Bur; Hin; Tyr; Top) (BT)	=	?*aɣulǰa-* (*aɣ̄uljа-*)	?*aɣulča-* (*aɣ̄ulča-*)	'to present oneself in audience'
<p'čyn>	(Dun I:24; Sub)	=	?*bečin*	?*beǰin*	'monkey, ape'
<'čyk'> <''čyk'>	(Abɣ I; HC, Bus I; Bur, Sub, Chang, Aruɣ, Hin, Qqot VI, Turf XVh, Tara (col.), Bud (col.), Bod, DGL, GGK) (Jig, Ar III, Ölǰ, Turf VII)	=	?*ečige* (*ạčige*)	?*eǰige* (*ạǰige*)	'father'
<n̲ysčw>	(Turf VI)	=	?*n̲isču*	?*n̲isǰu*	'to fly-CVB.IPFV'
<'wdčwqw>	(Turf XXII)	=	?*oḏčuɣu*	?*oḏǰuɣu*	'to set forth-NONFIRSTH.PFV'
<'wrčy>	(Bus I)	=	?*urǰi*	?*urči*	'former(ly)'
<yyrdynčw> <yyrtynčw>	(Bur; Sub; Arǰ I; Arǰ II; Arǰ III; Bod) (BT; Turf XII; Turf XIII; Turf XIVd; Tara)	=	?*yirtinčü* (*yirt̲inčü*)	?*yirtinǰü* (*yirt̲inǰü*)	'world'

3. Affricate Alternation in the Modern Mongolic Languages

Alternation of the reflexes of **č* and **ǰ* in nominal and verbal stems takes place in the Modern Mongolic languages as well where it demonstrates the same irregular and unpredictable distribution as in Middle Mongol. Importantly, it occurs in the Qinghai-Gansu languages comprising a great number of undoubtedly Proto-Mongolic features. Over a dozen clear instances of the affricate alternation are attested in Eastern Yugur (7a), some examples can be revealed in the Dongxiang, Kangjia, Mongghul, Mangghuer, Baoan languages grouped together under the name Shirongol by Nugteren (2011) (7b). Again as in Middle Mongol, alternation takes place not only in words of Common Mongolic origin, but also in ancient Turkic loans probably borrowed as early as in the Late Pre-Proto-Mongolic or Early Proto-Mongolic stage.

(7a)[10]

Written Mongol	**Eastern Yugur**[11] **č* → [ʧʰ] **ǰ* → [ʧ]	**Meaning**	
ačiyan	*ʰʧʰa:n ~ ʰʧa:n* (*ʰʧan*)	‘burden, load’	
burčaγ	*pʰɤrʦʰak ~ pʰɤrʦak*	‘pea, bean’	← Turkic
čabči-	*ʧapʧʰɤ ~ ʧapʧɤ*	‘to cut, chop’	
čarčaγai, *čarčaqai*	*ʧakʧʰakʰai ~ ʧakʧaxkʰai*	‘grasshopper’	
časun	*ʧasɤn ~ ʧʰasɤn*	‘snow’	
ebčigün	*pʰɤʧy:n ~ pʰuʧʰy:n*	‘chest’	
iče-, *iči-* < **hiče-*	*ʰʧʰe ~ hiʧe*	‘to be ashamed’	
küčün	*kʰuʧʰɤn ~ kʰuʧɤn*	‘strength, force’	← Turkic
qaγučin	*xʊ:ʧʰɤn ~ xʊ:ʧɤn*	‘old’	
quča	*kʰʊʧʰa ~ kʰʊʧa*	‘ram’	← Turkic
quča-	*kʰʊʧʰa ~ kʰʊʧa*	‘to bark’	
yanggirčaγ	*ŋkarʧʰak ~ ŋkɤrʧak*	‘packsaddle’	← Turkic

[10] Data on the Qinghai-Gansu languages were taken from the comparative supplement to the PhD thesis by Nugteren (2011, pp. 263–546) published as a monograph. The data were checked by us against primary sources whenever possible.

[11] Here and elsewhere Modern Mongolic forms are given in phonemic transcription using the IPA symbols.

(7b)

Written Mongol	**Dongxiang** **č* → [tʂ^{h}] **ǰ* → [tʂ]	**Meaning**	
časun	*tʂasuŋ ~ tʂ^{h}asuŋ*	‘snow’	
čüče	*sutʂ^{h}i ~ sutʂi*	‘chisel’	
ǰöge-	*tʂue ~ tʂ^{h}ue*	‘to carry, transport’	

Written Mongol	**Kangjia** **č* → [ʧ^{h}] **ǰ* → [ʧ]	**Meaning**	
čarča, čarčaγa	*ʧarʧa ~ ʧaɻʧ^{h}a*	‘grasshopper’	
čečeg, čičig	*ʧ^{h}iʧ^{h}iu ~ ʧ^{h}iʧiu*	‘flower; smallpox’	← Turkic
qurča	*xoʧ^{h}a ~ xoʧa*	‘sharp’	← Turkic

Written Mongol	**Dahejia Baoan** **č* → [tɕ^{h}] **ǰ* → [tɕ]	**Meaning**	
γaǰar	*qatɕir ~ qatɕ^{h}ir*	‘land, earth, soil’	

Written Mongol	**Mongghul** **č* → [tɕ^{h}] **ǰ* → [tɕ][12]	**Meaning**	
ǰabsar	*tɕ^{h}apsar ~ tɕasar*	‘gap, crack’	
qančui, qamčui	*xantɕ^{h}i ~ xamtɕi*	‘sleeve’	
qayiči	*xaitɕ^{h}i ~ xaitɕi*	‘scissors’	← Turkic

[12] The segments [ts^{h}] < **č*, [ts] and [tʂ] < **ǰ* in Mongghul (see Mostaert – de Smedt 1930, p. 150; Qasbaγatur et al. 1986, pp. 212, 226, 230; Chuluu 1994, pp. 3–4; Georg 2003, pp. 290–291), characteristic of Chinese and Tibetan loanwords while occurring in some Common Mongolic stems, are likely to be not separate phonemes, but rather irregular allophones of two basic affricate phonemes, /tɕ^{h}/ and /tɕ/ respectively.

Written Mongol	**Mangghuer** **č* → [tɕ^{h}] / __V [+front] → [tʂ^{h}] / elsewhere **ǰ* → [tɕ] / __V [+front] → [tʂ] / elsewhere[13]	**Meaning**	
čečeg, čičig	*tɕ^{h}itɕik ~ tɕ^{h}itɕ^{h}ek*	'flower'	← Turkic
tobči	*t^{h}oqtɕ^{h}i ~ t^{h}uqtɕi*	'button'	

Some of the alternating forms could appear under the influence of deaspiration, or the "law of two aspirated", as it is termed by Kara (1962, pp. 154, 158, 160–166), which, in addition to the affricates, also affected the aspirated stops (**t^{h}*, **k^{h}*) and the fricative **s*. Under this law, widespread in some Mongolic languages, if a C^{h}VC^{h} sequence occurred in word-initial position, the first or the second of the aspirated consonants underwent dissimilation and became unaspirated (see e.g. Svantesson et al. 2005, pp. 205–207; Svantesson–Karlsson 2012, pp. 461–462; cf. also Rybatzki 2003b, p. 372). The examples given in (7) demonstrate progressive deaspiration under the influence of the initial **k^{h}*, **ʧ^{h}* (EYu *k^{h}uʧʏn*, *xoːʧʏn*, *k^{h}oʧa*; Dgx *sutʂi*; Kgj *ʧ^{h}iʧiu*, *xoʧa*; Mgr *tɕ^{h}itɕik*), as well as regressive deaspiration triggered by **s* in the onset of the second syllable (EYu *ʧasʏn*; Dgx *tʂasuŋ*). Some other phonological developments related to deaspiration can also be observed (for further details, see Svantesson et al. 2005, pp. 207–208; Svantesson–Karlsson 2012, pp. 462–463), such as the shift of aspiration to the beginning of a word and its development into an unetymological, or spurious, *h-* (EYu *hʧaːn*), the so-called 'aspiration flip-flop' which, according to Svantesson et al. (2005, p. 207), "converts an unaspirated–aspirated consonant sequence to an aspirated–unaspirated sequence" (EYu *p^{h}ʏrtɕak*). However, the notion of deaspiration in its current form can hardly be used to account for the simultaneous occurrence of both alternating forms in a language, with one of them having no deaspiration at all, as well as for some cases where the phonological environments for deaspiration seem to be missing (cf. EYu *p^{h}ʏʧyːn ~ p^{h}uʧ^{h}yːn*, *ŋkarʧ^{h}ak ~ ŋkʏrʧak*; Dgx *tʂue ~ tʂ^{h}ue*; BaoD *qatɕir ~ qatɕ^{h}ir*).

In the central Mongolic languages, Khalkha, Buryat, and Kalmyk (as well as the other Oirat varieties), which belong to the so-called Common Mongolic branch, according to the latest classification by Janhunen (2012, pp. 3–5), **č* and **ǰ* underwent important changes as a result of two main phonological processes, fricativisation and depalatalisation (see Svantesson et al. 2005, pp. 200–201; cf. also Čenggeltei 1980, pp. 29, 34–35, 40–41). The overall situation is roughly summarised as shown in (8):

[13] In Mangghuer, phonemic distinctiveness of both segments in each pair of the reflexes of **č* and **ǰ* is questionable due to the fact that they occur in disjoint environments. Rather, according to the principle of complementary distribution, they should be seen as positional variants of two affricate phonemes, namely [tɕ^{h}], [tʂ^{h}] ← /tɕ^{h}/; [tɕ], [tʂ] ← /tɕ/. If so, Slater's view (2003, pp. 45–48) that there is a phonemic split of Proto-Mongolic affricates in Mangghuer similar to that observed in the central Mongolic languages is hardly justifiable in phonological terms.

(8)

Khalkha	**Buryat**	**Kalmyk**
č* → [ʧʰ] / __i* → [tsʰ] / __ V other than **i*, or __**i* > *u* **ǰ* → [ʧ] / __**i* → [ts] / __V other than **i*	**č* → [ʃ] / __**i* → [s] / __ V other than **i* **ǰ* → [ʒ] / __**i* → [z] / __V other than **i*	**č* → [ʧ] / __**i* → [ts] / __ V other than **i* **ǰ* → [ʤ] / __**i* → [z] / __V other than **i*

In each of the central languages, the segments resulted from the split of the primary affricates undoubtedly form separate phonemes; however, a certain, albeit rather small, class of lexical stems can be revealed where pairwise alternation of these modern segments occurs, as e.g. in (9):

(9)

Khalkha[14] (*after BAMRS*)	**Buryat** (*after BRS*)	**Kalmyk** (*after KWb*)
a. *ʧʰ ~ ʧ*: *aɢʧʰ ~ aɢʧ* ‘maple’ *ʧîli ~ ʧʰili* ‘to depart’ *xaʧʰər ~ xaʧər* ‘vulture’ *tɒntəʧ ~ tɒntəʧʰ* ‘average’	c. *ʃ ~ ʒ*: *geʒəgəne ~ geʃəgəne* a plant’s name *ʒɔlgarxai ~ ʃɔlgarxai* ‘scratch, score’ *oləʒər ~ oləʃər* ‘to increase, multiply’	e. *ʧ ~ ʤ*: *buldʒrxɛ: ~ bulʧrxɛ:* ‘gland, tonsil; throat swelling’ Drb *ʤid ~ ʧîd* ‘to fall into a stalemate (in checkers); check (in chess)’ *tadʒ ~ taʧ* ‘variegated, varicoloured’
b. *tsʰ ~ ts*: *ɔɢtsəm ~ ɔɢtsʰəm* ‘short; quick-tempered’ *tsaw ~ tsʰaw* ‘split, crack’ *tsɔʧʰər ~ tsʰɔʧʰər* ‘sudden, unexpected’	d. *s ~ z*: *bizəl ~ bisəl* ‘to squash, crush’ *xalzən ~ xalsən* ‘bald, bald-headed’	f. *ts ~ z*: not attested

It is noteworthy that alternation between the reflexes of **č* and **ǰ* in all three languages occurs most frequently in imitatives, or ideophones, as exemplified in (10):

(10)

Khalkha	**Buryat**	**Kalmyk**
a. *ʧʰ ~ ʧ*: *arʧʰɢar ~ arʧɢar* ‘shaggy, rough’	c. *ʃ ~ ʒ*: *bʊʒəgənə ~ bʊʃəgənə* ‘to storm, seethe’	e. *ʧ ~ ʤ*: *biʤŋn ~ biʧŋn* onom. ‘to swarm, teem (of ants, flies, etc.)’

[14] For the *ʧʰ ~ ʧ*, *tsʰ ~ ts* alternation in dialects of the Khalkha and Chakhar types see also Gantogtox (1978, p. 99; 1982, p. 121), Luvsanvandan – Bold (1985, pp. 74, 77). A few instances of the *ʃ* (< **č*) ~ *ʧ* (< **ǰ*) alternation can also be found in Khorchin belonging to the Eastern Mongolian dialect group (Bayančoγtu 2002, p. 74).

pirʧgər ~ pirʧʰgər ‘rough, bumpy’ *tarʧigən ~ tarʧʰigən* ‘to rattle, jingle’ *ʧiŋgən ~ ʧʰiŋgən* ‘to ring, tinkle’ *ʃərʧigən ~ ʃərʧʰigən* ‘to babble, murmur (of water)’	*ʒarbəgər ~ ʃarbəgər* ‘fidgety, restless’ *ʒurəgər ~ ʃurəgər* ‘long and thin’ *neʒəgəne ~ neʃəgəne* ‘to thunder’	*dardʒŋn ~ darʧŋn* ‘to rattle, jingle’ *dʒir ~ ʧir* onom. descriptive of chirping or crunching *gildʒi ~ gilʧi* ‘to hold one’s head bent (sideward), to bend one’s neck’ *tordʒŋ ~ torʧŋ* onom. a rattling or ringing sound
b. *tsʰ ~ ts*: *mɔgtsgər ~ mɔgtsʰgər* ‘short and stocky’ *tsigtsgər ~ tsʰigtsʰgər* ‘slender’ *tsʰu:tsgən ~ tsʰu:tsʰgən* ‘for a slender and fragile thing to move’	d. *s ~ z*: *barzəgər ~ barsəgər* ‘shaggy, rough’ *bugzəgər ~ bugsəgər* ‘stooping, bending’	f. *ts ~ z*: not attested

Imitatives are commonly regarded as a very archaic lexical group retaining some phonetic regularities characteristic of the most ancient stages of Altaic language history (see e.g. Ramstedt 1951; Cydendambaev 1958; 1963; Shagdarov 1962). While forming a specific subsystem in the lexicon of a language, they are of great importance for linguistic reconstructions, in particular, for the reconstruction of Proto-Mongolic phonology.

4. Conclusions

As is clear from the preceding, the phonemic status of the segments *č* and *ǰ* in Middle Mongol (and therefore, most likely, in Proto-Mongolic as well) is highly controversial: the existence of minimal pairs as in (1) speaks in favour of their phonemic distinctiveness, but such features as their free variation in lexical stems (2) and grammatical morphemes (3), as well as their alliteration between each other (4)–(5), which are further reinforced by the evidence of the Uighur-Mongol script (6), make us recognise them rather as allophones of the same phoneme. It is not surprising, therefore, that Nugteren (2011, p. 78) characterises the cases of alternation between aspirated and unaspirated stops and affricates in Middle Mongol as unexplained and strange. In our opinion, it is nevertheless possible to offer an explanation for the affricate particularities considered above.

In Proto-Mongolic, the distinction between **č* and **ǰ* may have been a phonemic one, as evidenced by a number of minimal pairs, as well as by the data of the Modern Mongolic languages where their reflexes are in most cases mutually contrastive. As for the alternations of the types (2), (3), (7), (9) and (10), which seem to be

not conditioned by any phonological environments, they must be regarded as historical, reflecting the Pre-Proto-Mongolic stage of historical development of Mongolic languages. At this stage, **č* and **ǰ* might have been not distinguished as separate phonemes, but rather as free-variant allophones of the same consonant phoneme, which was likely to have had the following features:

by *manner of articulation* – [affricate];
by *place of articulation* – [postalveolar/palatal]
by *voice onset time* – [voiceless].

The feature <aspiration>, also belonging to the VOT parameters, was presumably non-distinctive for this phoneme, but distinguished its allophones ***č* and ***ǰ*, which were freely selected in speech without changing meaning. The notation of this Pre-Proto-Mongolic affricate phoneme as reconstructed by us is a matter of some difficulty: in IPA terms, it can be written as **/ʧ$^{(h)}$/; in traditional comparative historical transcription, it is to be rendered either by one symbol, e.g. ***C*, or as a set, i.e. **{č / ǰ}. However, it should be kept in mind that the last two conventions are usually applied to denote an archiphoneme, which was certainly not the case here.

The validity of our reconstruction seems to be somewhat confirmed by the Khitan language data which have been intensively studied in recent years. The current state of the decipherment of the Khitan Small Script does not yet allow us to fully characterise the phonological system of Khitan, but nevertheless we have a rather large amount of evidence to be used for linguistic purposes. It is now suggested that Khitan and Proto-Mongolic were only distantly, or collaterally, related to each other, descending from a common Pre-Proto-Mongolic idiom termed by Janhunen (2011, p. 27; cf. also Janhunen 2003c, p. 391) as "Khitano-Mongolic". In this regard, it is curious to note a few examples of alternation between the Khitan affricates both in lexical stems having obvious Mongolic cognates, and in borrowings from Chinese (see Kane 2009, pp. 99 (§ 3.080), 104 (§ 3.114), 112 (§ 3.159), 115 (§ 3.177); Wu Yingzhe – Janhunen 2010, p. 74):

(11)

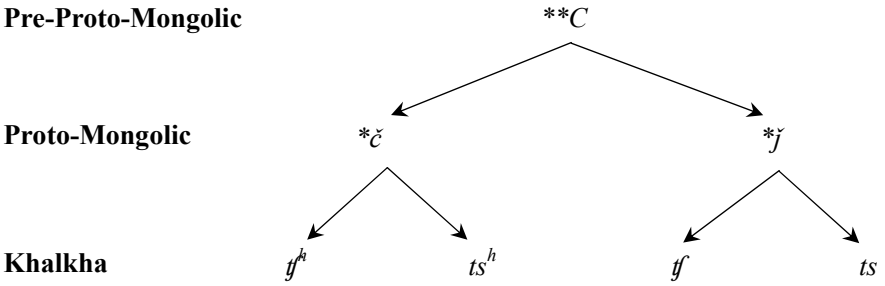
<ci.g.en>	~	<dzi.g.en>	'left'	cf. WMo. *ǰegün* 'id.'
<c.úr.er>	~	<dz.úr.er>	'second (*masc.*)'	cf. MMo. *ǰirin* 'two (*of females*)'
<g.uŋ c.iú>	~	<g.uŋ dz.iú>	'princess'	← Ch. 公主 *gōngzhǔ* 'id.'
<n.ai.ci>	~	<n.ai.dzi>	'friendly'	cf. WMo. *nayiǰi* 'friend'

Although the phonological status of Khitan segments represented by the graphemes <c> ~ <dz>, <ci> ~ <dzi> remains obscure, the very fact of their alternation is highly significant. Apparently, we are dealing here with one of the archaic features of early Pre-Proto-Mongolic origin, preserved in both branches of the Khitano-Mongolic protolanguage as a reflection of the primary allophonic variation of affricate consonants which was not linguistically distinctive.

It is already in Late Pre-Proto-Mongolic, as evidenced by the Uighur-Mongol script, that the allophones of the phoneme ****C*** began to contrast by aspiration word-initially. The ultimate phonemic differentiation of the former allophones in all possible environments appeared to occur in the transitional stage from Late Pre-Proto-Mongolic to Proto-Mongolic proper, but the remnants of the older phonological system are preserved in Middle Mongol as numerous examples of the affricate alternation in stems and suffixes, as well as non-standard alliteration in poetical fragments which is found mainly in early monuments of Middle Mongol. In the Modern Mongolic languages and dialects developed from Proto-Mongolic, these remnants are represented by not more than a few dozen reliable examples, with the central languages mostly demonstrating the cases of *č ~ ǰ* alternation in imitative stems which in themselves are of extremely archaic origin.

It is to be noted that in the central languages as e.g. Khalkha, affricate development may have taken the form of two successive phonemic splits, as illustrated in (12):

(12)



The primary split occurred in Proto-Mongolic by voice onset time, which resulted in a contrast between aspirated **č* and unaspirated **ǰ*. As for the secondary split, it took place in the Post-Proto-Mongolic stage during the formation of the central languages – Khalkha, Buryat, Oirat (including Kalmyk), where the reflexes of each of the Proto-Mongolic affricates became phonemically differentiated between each other by the presence/absence of palatalisation, as shown in (8). In other Mongolic languages (with the possible exception of Mangghuer), in which the subsystem of affricates consists of two segments, the secondary split did not occur, whereby in this respect they are closer to Proto-Mongolic while demonstrating a number of their own particularities in realisation of stops and affricates.

Abbreviations

Abγ I	= a fragment of the letter of Abaγa, Ilkhan of Persia (1265/1266) (Doerfer 1975, pp. 190–192, 237–239; Tumurtogoo 2006, p. 150)
ABL	= ablative
Alt	= the Mongolian text of the birch-bark bilingual manuscript fragment from the Golden Horde (14th century) (Poppe 1941; Tumurtogoo 2006, pp. 199–201)

AO IOM RAS = the Archives of the Orientalists, Institute of Oriental Manuscripts, Russian Academy of Sciences
Ar III = the letter of Arγun, Ilkhan of Persia, to Pope Nicholas IV (1290) (Mostaert–Cleaves 1952, pp. 445–467, Pl. 2; Dobu 1983, pp. 45–55; Tumurtogoo 2006, pp. 154–155)
Arǰ I = versed fragments of the hymns to 35 Buddhas from Arjai Caves, Inner Mongolia (late 15th–early 16th centuries) (Qaserdeni et al. 1997, pp. 1–110; Tumurtogoo 2006, pp. 39–42)
Arǰ II = versed fragments of the 21 hymns of Tārā from Arjai Caves, Inner Mongolia (late 15th–early 16th centuries) (Qaserdeni et al. 1997, pp. 111–230; Tumurtogoo 2006, pp. 42–45)
Arǰ III = versed fragments of the hymns to 16 arkhats from Arjai Caves, Inner Mongolia (late 15th–early 16th centuries) (Qaserdeni et al. 1997, pp. 231–313; Tumurtogoo 2006, pp. 46–48)
Aruγ = the Sino-Mongolian inscription of Aruγ, prince of Yunnan (1340) (Kara 1964; Cleaves 1964–1965; Dobu 1983, pp. 307–318; Tumurtogoo 2006, pp. 23–24)
BAMRS = Pjurbeev (2001–2002)
BaoD = Dahejia Baoan
Bod = fragments of the Mongolian version of *Bodhicaryāvatāra* from Olon Süme (16th–early 17th centuries) (Heissig 1976b, pp. 13–249; Tumurtogoo 2006, pp. 211–225)
BRS = Čeremisov (1973)
BT = a fragment of the commentary to the Mongolian version of *Bodhicaryāvatāra* by Chos-kyi 'od-zer from Turfan (1312) (Cleaves 1954; Dobu 1983, pp. 158–211; Cerensodnom–Taube 1993, pp. 75–95; Tumurtogoo 2006, pp. 50–60)
Bud (col.) = the Mongolian colophon to the tetralingual xylographic collection of Buddhist texts (1431) (Heissig 1976a, pp. 17–19, 97–98; Tumurtogoo 2006, p. 210)
Bur = the Mongolian version of the "Twelve Deeds of Buddha" (1320s) (Poppe 1967; Tumurtogoo 2006, pp. 107–149)
Bus I = fragments from a letter of Abū Sa'īd, Ilkhan of Persia (1320) (Cleaves 1953, pp. 27–33, 55–107, Pls I–II; Tumurtogoo 2006, pp. 185–188)
Ch. = Chinese
Chang = the Sino-Mongolian inscription in memory of Zhang Yingrui (1335) (Cleaves 1950a; Dobu 1983, pp. 212–268; Tumurtogoo 2006, pp. 15–20)
CVB.IPFV = imperfective converb
DGL = the Sino-Mongolian letters of the *Dada guan laiwen* 韃靼館來文 "Documents arrived at the Tatar Bureau" (between 1478 and 1517) (AO IOM RAS, B. I. Pankratov's collection, No. 49; Ligeti 1965, pp. 66–85)
Dgx = Dongxiang
DGZ = the Sino-Mongolian glossary *Dada guan zazi* 韃靼館雜字 (the latter half of the 15th century) (AO IOM RAS, B. I. Pankratov's collection, No. 49)
Dun I:24 = a short wall inscription from Dunhuang (between 1341 and 1368) (Tumurtogoo 2006, p. 37)
DY = the Sino-Mongolian glossary *Dada yu* 韃靼語/ *Beilu yiyu* 北虜譯語 (between 1567 and 1603) (Pozdneev 1908, pp. 8–39; Mao Yuanyi 2000, vol. 26, ff. 15a–29a). The text reconstruction is made by the present author
EYu = Eastern Yugur
GEN = genitive

GGK = the Sino-Mongolian letters of the *Gaochang guan ke* 高昌館課 "Lessons for the Uyghur Bureau" (late 15th–early 16th centuries) (Dobu 1983, pp. 501–695; Tumurtogoo 2006, pp. 266–279)
HC = the Mongolian version of the *Xiao jing* 孝經 (late 13th–early 14th centuries) (Rachewiltz 1982; Dobu 1983, pp. 78–157; Tumurtogoo 2006, pp. 60–77)
Hin = the Sino-Mongolian inscription in memory of prince Hindu (1362) (Cleaves 1949; Dobu 1983, pp. 345–413; Tulγaγuri 1992; Tumurtogoo 2006, pp. 27–33)
HY = the Sino-Mongolian glossary *Huayi yiyu* 華夷譯語 (1389) (Mostaert 1977; Mostaert – Rachewiltz 1995; Kuribayashi 2003)
IPA = International Phonetic Alphabet
Jig = the Sino-Mongolian inscription in memory of J̌igüntei (1338) (Cleaves 1951; Dobu 1983, pp. 269–306; Tumurtogoo 2006, pp. 20–23)
Kgj = Kangjia
KWb = Ramstedt (1935)
Mgr = Mangghuer
MMo. = Middle Mongol
NDS = noun-deriving suffix
NONFIRSTH = non-firsthand evidentiality
NP = noun phrase
Ölǰ = the letter of Ölǰeitü, Ilkhan of Persia, to Philip IV the Fair, King of France (1305) (Mostaert – Cleaves 1962; Dobu 1983, pp. 63–77; Tumurtogoo 2006, pp. 156–157)
PFV = perfective
Ph = Mongolian monuments in 'Phags-pa script (13th–14th centuries) (J̌ančiv 2002; Hugejiletu – Sarula 2004; Tumurtogoo 2010)
Ph XL = the Juyongguan inscription of the western wall (1345) (J̌ančiv 2002, pp. 118–128; Hugejiletu – Sarula 2004, pp. 435–452; Tumurtogoo 2010, pp. 106–109)
Qqot VI = a manuscript fragment of a letter from Khara Khoto (13th–14th centuries) (Kara 2003, pp. 22–23 (G 108), Fig. 14; Tumurtogoo 2006, p. 183)
Qqot VIII (= Turf XXIII) = the edict of Yisüntemür from Khara Khoto (1339) (Kara 2003, pp. 28–30 (G 120r), Fig. 16; 2005, pp. 207–209, note 374; Tumurtogoo 2006, pp. 167–168, 184–185)
REC = reciprocal
SHM = the *Secret History of the Mongols* (mid-13th century) (Kuribayashi – Choijinjab 2001; Kuribayashi 2009)
SOC = sociative
Sub = the Mongolian translation of *Subhāṣitaratnanidhi* (late 13th–early 14th centuries) (Bosson 1969; Tumurtogoo 2006, pp. 227–263; Kara 2009)
Tara = the Mongolian text of the "21 hymns of Tārā" (1431) (Heissig 1976a, pp. 25–70, 100–112; Tumurtogoo 2006, pp. 202–207)
Tara (col.) = the Mongolian colophon of the "21 hymns of Tārā" (1431) (Heissig 1976a, pp. 15–17; Tumurtogoo 2006, p. 208)
Top = the Sino-Mongolian edict of the Ming emperor Zhu Qiyu 朱祁鈺 to the prince of Lār (1453) (Cleaves 1950b; Dobu 1983, pp. 467–476; Tumurtogoo 2006, p. 158)
Turf Ib = a fragment of the Mahākāla-Hymn from Turfan (the first half of the 14th century) (Cerensodnom – Taube 1993, pp. 117–119, Taf. X–XII; Tumurtogoo 2006, pp. 79–81)

Turf VI = a fragment of a Buddhist poem about three bad reincarnations from Turfan (the first half of the 14th century) (Cerensodnom – Taube 1993, pp. 132 – 134, Taf. XV – XVI; Tumurtogoo 2006, pp. 85 – 86)

Turf VII = a versed fragment of a Buddhist teaching from Turfan (the first half of the 14th century) (Cerensodnom – Taube 1993, pp. 122 – 131; Tumurtogoo 2006, pp. 158 – 160)

Turf XII = a fragment of a Buddhist teaching on causes and consequences of sins from Turfan (the first half of the 14th century) (Murayama 1959, pp. 282 – 288; Tumurtogoo 2006, pp. 160 – 161)

Turf XIII = fragments of writing exercises on Buddhist topics from Turfan (the first half of the 14th century) (Murayama 1959, pp. 279 – 282; Tumurtogoo 2006, pp. 161 – 162)

Turf XIVd = a Buddhist fragment from Turfan (the first half of the 14th century) (Cerensodnom – Taube 1993, p. 145, Taf. XXI; Tumurtogoo 2006, p. 90)

Turf XVh = the diagram, part of a xylographic calendar fragment from Turfan (the first half of the 14th century) (Cerensodnom –Taube 1993, p. 157, Taf. XXVI; Tumurtogoo 2006, p. 99)

Turf XVIII = the edict of Bigtemür (Böketemür? Berketemür?) from Turfan (the first half of the 14th century) (Cerensodnom – Taube 1993, pp. 179 – 180, Taf. XXXV; Tumurtogoo 2006, pp. 163 – 164)

Turf XX = the edict of Kedme-baγatur from Turfan (1369) (Cerensodnom – Taube 1993, pp. 168 – 170, Taf. XXIX; Tumurtogoo 2006, pp. 165 – 166)

Turf XXII = the edict of Tuγluγtemür from Turfan (1352) (Cerensodnom – Taube 1993, pp. 173 – 175, Taf. XXXI; Tumurtogoo 2006, p. 167)

Turf LIV = a fragment of a cattle inventory from Turfan (the first half of the 14th century) (Cerensodnom – Taube 1993, p. 189, Taf. XLIV; Tumurtogoo 2006, p. 178)

Tyr = the Mongolian part of the Tyr trilingual inscription (1413) (Golovachev et al. 2011)

VDS = verb-deriving suffix

VOL = voluntative

WMo. = Written Mongol

YB = the Sino-Mongolian glossary *Yibu* 譯部 from the *Lulong sailüe* 盧龍塞略 (1610) (Ishida Mikinosuke 1973, pp. 113 – 145; Manduqu 1995, pp. 379 – 598)

YY = the Sino-Mongolian glossary *Yiyu* 譯語 from the *Dengtan bijiu* 登壇必究 (1598) (Manduqu 1995, pp. 277 – 377; Apatóczky 2009)

ZY = the Sino-Mongolian glossary *Zhiyuan yiyu* 至元譯語 (alias *Menggu yiyu* 蒙古譯語) from the *Shilin guangji* 事 林廣記 (1264 or 1330) (Ishida Mikinosuke 1973, pp. 87 – 111; Ligeti 1990; Kara 1990; Manduqu 1995, pp. 35 – 149)

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