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Mongolic phonology and the Qinghai-Gansu languages

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2. COMMON MONGOLIC PHONOLOGY

2.1. Common Mongolic and Proto Mongolic

Only two named stages of reconstructed Mongolic are distinguished here: Common Mongolic and Proto Mongolic. I am aware of the fact that these terms have been used differently elsewhere, but they seemed preferable to any newly coined terms. Here each of the two stages is based on its own set of clearly defined materials.

Common Mongolic (CM) is the reconstructed language from which all known medieval and modern Mongolic languages are supposed to have developed. It is obtained by comparing the modern languages and the Middle Mongol sources in various scripts, with the emphasis on the modern QG languages.

Proto Mongolic (PM), situated in an earlier but undefined period, relies on the comparison of internal Mongolic evidence (including features of Written Mongol that are not confirmed by the spoken languages) and related forms in non-Mongolic languages. More speculative reconstructions, generally involving developments that must have taken place in the prehistoric period, are labeled Proto Mongolic. However, it should be noted that for numerous words the Proto Mongolic and Common Mongolic forms are identical.

In some phonological matters it is impossible to bring all available evidence under the same umbrella. The most salient problems will be discussed below, including the intervocalic *-h-* of Middle Mongol, postconsonantal *-p-* of Dagur, and retention of *s-* preceding **ï/*i* in Moghol. These are incidental deviations from the majority that can seen be seen as locally preserved PM relics into the CM period. Such features are generally not reflected in the CM reconstructions.

It remains to be decided whether Dagur should be seen as a descendant of CM, or of a sister language that branched off before the CM period. In order to arrive at such a decision, it would first be necessary to systematically disentangle the 'real' Dagur vocabulary from the numerous Mongolic elements adopted from central Mongolic and from various Tungusic languages.[70]

The reconstructed forms used here are generally those of CM. The comparative supplement is based on these reconstructions. Intermediate phases may be given in the discussion of individual etymologies, to elucidate their phonetic development. Such intermediate stages will generally remain unnamed. The Proto Shirongol occasionally referred to is a shorthand label for (mostly irregular) developments shared by both Shirongol branches. The only sound law distinguishing Proto Shirongol is the contraction of the CM vowel sequences.

Due to its limited time depth of perhaps a thousand years, Common Mongolic tends to be fairly close to the modern Mongolic languages. Yet even the reconstruction of CM is not without ambiguities. Although the modern languages agree on many phonological issues and on most individual reconstruction forms, they contradict each other in others. In addition, in some points, the Middle Mongol

[70] Obviously such a decision would also have to be based on morphological and syntactical features not considered here.

and Written Mongol data conflict with the phonology reconstructed on the basis of the modern languages.

Here a notation will be used that can accommodate most contradictory data in a transparent and predictable manner, without creating more reconstructed language stages. Some 'concessions' were made to Middle Mongol and Written Mongol, in order to facilitate their comparison to the reconstruction forms. The concessions mostly concern the notation of the long vowels as **aa*, etc. rather than **ā*, etc. Where Written Mongol notations contradict the reconstruction based on the modern languages, the latter is given preference. Not all instances where Written Mongol spelling is in conflict with the CM reconstruction as based on the modern languages, are regarded here as representing an older language stage. As in most long-lived literary languages, not everything that appears archaic in Written Mongol is necessarily of great antiquity. Arguments and choices behind the reconstruction of this set of phonemes will be discussed in the following pages.

2.2. Overview of Common Mongolic phonemes

In the Common Mongolic forms used in this book the following phonemes will be discerned:

Eight simple vowels	**a, *e, *ï, *i, *o, *ö, *u, *ü*
Six double vowels	**aa, *ee, *ïï, *ii, *uu, *üü*
Fourteen complex vowels	**aï, *ei, *oï, *öi, *uï, *üi*;
	**au, *eü*;
	**ïa, *ie, *ïu, *iü*;
	oa* (ua*), **öe* (**üe*)
Sixteen consonants	**b, *d, *t, *ǰ, *č, *g, *k*
	**m, *n, *ŋ, *s, *š, *l, *r, *y, *h*

The double vowels and complex vowels listed here were not originally phonemes, as they were not indivisible, but they are nevertheless listed here as 'phonological units'. In all modern languages, they have become long vowels and diphthongs. The CM complex vowels were not simply sequences of independent vowels, as shown by the fact that not all conceivable sequences are in fact allowed, e.g. there are no complex vowels **ïo* and **iö*, although the sequences **ïCo* and **iCö* do exist.

Originally most of these vowel sequences must have been disyllabic, as is not only suggested by Written Mongol spellings and Middle Mongol notations, but confirmed by cognates in Turkic and Tungusic where these exist. Usually a consonant may have existed between the two elements of double vowels, but again we mostly depend on non-Mongolic evidence to establish which consonant it was. The same applies to the complex vowels. However, the complex vowels in a few words clearly do not go back to VCV sequences. This includes words where foreign *v*/*w* or *y* was reinterpreted as a diphthong element, e.g. CM **keüreg* 'brittle' (Turkic **kevrek*), **taulaï* 'hare' (Turkic **taviš.gan*) **dalaï* 'sea' (Turkic **taloy* ← Ch), and Mongolic roots in which **u*/*ü* alternates with **b*, e.g. **taulan* 'five-year-old animal' as opposed to **tabun* 'five', **ǰaura* 'middle' and **ǰaučï* 'mediator' if related to **ǰab* 'interval'. The notation used here is intended to leave all etymological options open.

The modern Mongolic languages, including the QG languages, contribute little to the history of these sequences. Before CM disintegrated into the modern groups, the monophthongisation of the double vowels and **oa*/**öe* had already taken place.

The correlation between the CM vowel reconstructions used here (meant to accommodate Middle Mongol and Moghol data) and the actual stage the QG developments derive from can be schematised as follows:

CM	Reconstruction based on QG languages	
contraction:		
**hulaan*	**hula:n*	red
**čiïrag*	**či:rag*	tight
**uu-*	**u:-*	to drink
contraction and monophthongisation:		
**toarï-*	**to:rï-*	to circle
**böesün*	**bö:sün*	louse
**ǰïlua* > **ǰïloa*	**ǰïlo:*	reins
**čilüe* > **čilöe*	**čilö:*	spare time
**hutu.a-*	**huta:-*	to fumigate
**bürkü.e-*	**bürke:-*	to cover
rounding harmony:		
**oran*	**oron*	place
**öre*	**örö*	stomach

Three-vowel sequences as seen in Middle Mongol *maui* ‘bad’, *širuai* ‘earth’ will not be discussed, as they were lost in the QG languages (see **mau* and **sïroï* in the supplement).

2.3. Word structure

Monosyllabic stems are relatively rare, apart from pronouns and particles. Many Common Mongolic stems that are disyllabic or longer cannot be reduced to monosyllabic roots.

The number of syllable structures originally allowed by Mongolic was quite limited. The minimal structure is V, the maximal structure CVVC. In longer stems vowels and consonants tend to alternate (VC, CV, etc). Sequences of two vowels are quite common. Such sequences can be viewed as phonological units that take up a single vowel slot. How many syllables these vowel sequences originally constituted is in many instances unknown.

Consonant clusters do not occur within a syllable, apart from a number of foreign words, notably from Turkic and Iranian, such as **bars* 'tiger' and **ters* 'reverse'. Consonant sequences are allowed in medial position, i.e. when the constituents can be attributed to different syllables.

V	**a-*	to be	VV	**au*	wide
CV	**ba*	we (excl.)	CVV	**bau-*	to descend
VC	**ab-*	to take	VVC	**eüs-*	to arise
CVC	**ken*	who	CVVC	**taïl-*	to undo

The abovementioned syllable types can be combined into numerous sequences. Not all extant sequences will be shown here. Word stems may be quite long, e.g. **temeeljïgene* 'dragonfly'.[71]

V-CV	**ere*	man	VV-CV	**aula*	mountain
VC-CV	**alda-*	to lose	VVC-CV	**auškï*	lungs
V-CVC	**alag*	variegated	VV-CVC	**eülen*	cloud
CV-CV	**bugu*	deer	CVV-CV	**huuta*	bag
CVC-CV	**nïlka*	delicate	CVVC-CV	**noïrsa-*	to sleep
CV-CVC	**manan*	fog	CVV-CVC	**baasun*	poo
CVC-CVC	**sölsün*	bile	CVVC-CVC	**čaalsun*	paper

The syllable-final consonant clusters found in central Mongolic and Dagur are due to the loss of unaccented vowels, as the accent lies on the first syllable. Likewise, the initial clusters of the QG languages are due to the accented final syllable, although Tibetan loanwords may have contributed to a new tolerance for such clusters.

2.4. Undecided matters in Common Mongolic

The notations of the Common Mongolic forms are naturally an abstraction. Not all aspects of the notation used here are based on detailed knowledge. In three matters specifically the QG languages provide us with additional information, without leading to a definitive solution: the nature of Common Mongolic vowel harmony, the nature of the opposition between weak and strong consonants, and placement of the accent (which was probably non-distinctive).

2.4.1. Nature of Mongolic vowel harmony

The term 'vowel harmony' in Mongolic covers two phenomena, which are conventionally labeled 'palatal harmony' and 'labial harmony'.

Palatal harmony entails that there are two groups of vowels whose members cannot be combined in word stems; suffixes containing a vowel need to have at least

[71] Superficially based on **temeen* 'camel', but possibly rather connected to **tebene* 'pack needle'. The suffixes are formantia with unknown function.

two shapes to serve stems of each vowel class. This must be assumed to be an original feature of Mongolic phonology.

Here it will be assumed that CM had eight vowel qualities, divided into two vowel classes, the first containing **a*, **ï*, **o*, **u*, and the second **e*, **i*, **ö*, **ü*. These classes will be given the traditional labels 'back' and 'front', respectively. Alternative analyses distinguish seven vowels, consisting of two vowel classes (back) **a*, **o*, **u* and (front) **e*, **ö*, **ü*, and a neutral vowel **i* (without counterpart **ï*) that can combine with both vowel classes. See below for the evidence for **ï*.

As the pronunciation of the CM vowels can only be approximated, the original relevant distinction between the two vowel classes is also unknown. The modern Mongolic languages that retain vowel harmony have different systems. Kalmuck really has a Turkic-like opposition between front and back vowels, whereas in Khalkha the opposition is based on tong root position, whereby the pharyngeal vowel class corresponds to the traditional back vowels, and the non-pharyngeal vowels to the traditional front vowels (see Svantesson et al. 2005:7-9).

If palatality was irrelevant, the vowel represented here as **ï* may have been a front vowel, while our **e*, **ö*, **ü* may have been central vowels **ə*, **ɵ*, **ʉ*.

The QG languages do not bring this matter closer to a solution. The fact that Eastern Yugur, like Kalmuck, features a palatal-type vowel harmony may be due to the fact that they are the most Turkicised Mongolic languages. Within Shirongol, Kangjia has preserved four rounded vowels in existing stems. That CM **ö* and **ü* are represented by *ɵ*, *ʉ* in Kangjia, does not necessarily favour a tongue root position system over a palatal one, as the defronting may be secondary. The remaining Shirongol languages have lost productive vowel harmony, and thus have little to contribute to our knowledge of CM vowel harmony. CM **i*, **ö*, and **ü* merged with their back counterparts in existing stems. However, the fact that **e* (the harmonic counterpart of **a*) is represented by the front vowel [*e*] in Shirongol suggests that at least in the stage preceding its abolition, vowel harmony was based on the front-back opposition.

The variety of extant systems does confirm that it is possible for vowel harmony to change the relevant oppositions without disappearing altogether, helped by the fact that the opposing vowel sets can largely main intact, whether vowel harmony is based on palatal harmony, tongue root position, or even an opposition between open and closed vowels.

Labial or rounding harmony involves the rounding of non-first syllables after a rounded non-high vowel of the first syllable (in Mongolic labial harmony is restricted to the non-high vowels). This type of harmony is also documented from Middle Mongol onwards, but was not systematically applied, and must be considered a secondary development. It was present in the ancestor of the central languages, but Oirat-Kalmuck abandoned it again in the long vowels. Dagur did not apply it to the short vowels, e.g. *walən* (rather than **ɔlun*) < **olan* 'many'. Labial harmony in Eastern Yugur resembles that of central Mongolic. Rounding was also applied in Proto Shirongol; exceptions seem to be due to secondary unrounding (see 1.5.5.4.)

2.4.2. Nature of the consonant strength opposition

The Common Mongolic consonant strength opposition is generally assumed to be based on aspiration rather than voice. This is the case in Khalkha and Buriat, which are not likely to have adopted such features from Chinese. The fact that the QG languages have an opposition based on aspiration does not carry the same weight, as the phonology of most Shirongol languages is known to be strongly influenced by that of Chinese. Aspiration as the distinctive feature may also be considered an areal feature. Moghol and Kalmuck, two other languages outside of the Chinese sphere of influence, have an opposition based on voice (which could of course be attributed to Persian and Turkic in the case of Moghol, and to Turkic, and perhaps Russian, in the case of Kalmuck. At any rate, the fact that both the voice and the aspiration opposition are documented demonstrates that the relevant distinctive feature can be changed without upsetting the system as such. The reconstructions here use the traditional notation **d* versus **t*, etc. (rather than **t* versus **t^h*, etc.) for pragmatic reasons.

The examples below indicate that the consonant strength opposition in CM does not follow from the phonetic environment:

**taa-*	to guess	**daa-*	to be able to carry
**taarï-*	to cut	**daarï*	saddle gall
**tala*	plain	**dalu*	shoulder
**tarï-*	to cultivate	**daru-*	to press
**tau-*	to drive cattle	**daun*	sound, voice
**tere*	that	**dere*	pillow
**tolï*	mirror	**dolïa-*	to lick
**töre-*	to be born	**döre*	nose ring
**türei*	bootleg	**düre-*	to sell
**kötel-*	to lead along	**ködel-*	to move
**kaulï*	law	**gaulï*	brass
**kalaun*	hot	**galaun*	goose
**kara*	black	**gar*	hand
**karï-*	to come back	**gar-*	to come out
**kasïa*	enclosure	**gasïun*	bitter
**kada*	rock	**gada-*	outside
**kačar*	cheek	**gaǰar*	land
**kem*	measure	**gem*	defect
**kola*	far	**gol*	river
**kudal*	lie	**gudul*	boot
**kura*	rain	**gura*	roe deer
**kurï-*	to gather	**gurïl*	flour
**kür-*	to reach	**gürü*	stone
**kürien*	enclosure	**güreen*	jugular vein
**küün*	person	**gün*	deep

**čïda-*	to be able	**ǰïda*	spear
**čokï-*	to peck	**ǰokï-*	to suit
**čöen*	few	**ǰöen*	cold

2.4.3. Accent placement

In the Shirongol languages the accent normally falls on the last syllable. This also applies to Eastern Yugur, although predictable deviations occur under some phonetic circumstances (see 3.14.5.). Moghol has final accent as well. The QG languages show vowel reductions in unaccented syllables, and the complete loss of such syllables. This is seen least often in Dongxiang.[72]

Given that Dagur and central Mongolic normally place the accent on the first syllable, one may conjecture that this represents the original situation, and that the QG languages and Moghol shifted the accent under Turkic and Iranian influence. However, the Middle Mongol sources do not provide support for such an assumption. Notably the reduction of unaccented syllables is not in evidence. Vowel assimilations had already started by the Middle Mongol period, but they may be rightward (labial harmony) or leftward (palatal breaking).

2.5. Issues related to the reconstruction of the vowels

2.5.1. Vowel Types

As seen above, three types of vowel can be discerned in the modern Mongolic languages. The terms simple, double, and complex vowels are used here to denote the forerunners of modern short vowels, long vowels, and diphthongs.

Double vowels and complex vowels are combinations of vowels from the set of simple vowels. The terms double and complex are used here (instead of the straight-forward terms 'long vowels' and 'diphthongs'), because it cannot be determined on the basis of Mongolic data whether the double and complex vowels originally constituted one or two syllables. Written Mongol orthography and the spelling of words in Sino-Mongolian suggest the disyllabic nature of these vowel sequences. Non-Mongolic cognates confirm that at least in a number of words these vowel sequences result from the elision of the consonant from a *VCV* sequence. For instance CM **ǰee* 'nephew' could be reconstructed **ǰe:* on the basis of the modern Mongolic languages, but the Sino-Mongolian notation *ǰe'e* and the Written Mongol spelling *ǰige* indicate a disyllabic form.[73]

In many cases double vowels not only span two syllables but also two morphemes, e.g. **bagtaa-* 'cause to sink' is **bagta-* + causative *-A*.

A similar situation holds for the complex vowels. Most of these result in diphthongs in modern languages, some are contracted into long vowels. Like the double vowels, they may go back to *VCV* sequences as can be seen from non-Mongolic cognates, cf. CM **daïn* 'war' as opposed to CT **yagï* 'id'.

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[72] Moghol tends to preserve the vowels of all original syllables, albeit with a reduced number of vowel qualities.

[73] Cf. also the Turkic cognate **yegen*.

Complex vowels can also be bimorphemic, as in **kala-un* 'hot', **tarï-an* 'crop', from the verbs **kala-* 'to be hot' and **tarï-* 'to cultivate'.

The notations used here, **aa*, etc, correspond to Poppe's *a'a*, Janhunen's *axa* and Svantesson's *aha*.

Oppositions single vowel - double vowel include the following:

**ba*	we	**baa-*	to defecate
**karï-*	to return	**kaarï-*	to singe
**ta*	you (plural)	**taa-*	to guess
**tala-*	to loot	**taala-*	to love
**tarï-*	to plant, sow	**taarï-*	to slice
**del*	mane	**deel*	garment
**dere*	pillow	**deere*	upper side
**döre*	nose ring	**döree*	stirrup
**sübe*	eye of a needle	**sübee*	flank
**sïra*	yellow	**sïïra*	shin, leg
**sïra-*	to roast		
**ula*	sole	**ulaa*	relay horse
**düre-*	to sell	**düüre-*	to fill

Although uncontracted sequences **oa* and **öe* occur (unsystematically) in Sino-Mongolian, their contraction had completed before the QG languages branched off. The results of the contractions can be considered the long counterparts of simple **o* and **ö*. Examples:

**tosun*	fat	**toosun*	dust (**toasun*)
**öre*	stomach	**ööre*	other (**öere*)

2.5.2. The harmonic counterpart of CM **i*

Here, an unrounded high vowel is attributed to each vowel class, sc. **i* and **ï*, although these two are written identically in the historical sources and have merged in most modern languages. There are several arguments in favour of the existence of a back-vocalic counterpart for **i*.

In the first place, there is the argument of a symmetrical system. A neutral vowel **i* in the first syllable which can be followed by either **a* or **e*, would be in conflict with the principle that the vowel class of a word is determined by its first vowel. If a separate vowel **ï* is not distinguished, one is obliged to distinguish consonant phonemes **q* and **ġ* in addition to **k* and **g*, which is otherwise unnecessary. One would have to reconstruct the sequences **qa, *ke, *qi, *ki, *qo, *kö, *qu, *kü* instead of simply **ka, *ke, *kï, *ki, *ko, *kö, *ku, *kü*.

The existence of **ï* independent from **i* is not merely assumed to satisfy the desire for a symmetrical system, but is in fact supported by direct or circum-

stantial evidence from the spoken languages. In individual words these two vowels can often be distinguished by means of the following arguments.

1) Other vowels of the stem. In words of two or more syllables in which the other vowels are back vowels, the high unrounded vowel in the first syllable goes will be assumed to be **ï* rather than **i*. This follows from the assumptions that all vowels in a Common Mongolic word belong to the same vowel class, and that the first vowel of the stem determines the vowel class of all following vowels of stem and suffixes. Examples include **ïmaan* 'goat', **kïlgasun* 'coarse hair', **kïrga-* 'to shear', **sïra* 'yellow', **ǰïda* 'spear', **ïlga-* 'to choose' (as opposed to front-vocalic **ide-* 'to eat', **ire-* 'to come', **itege-* 'to believe', **siree* 'table'). Likewise I will assume that any high unrounded vowel following an **a*, **o*, or **u* of an earlier syllable is **ï* rather than **i*, e.g. **amïn* 'life', **korïn* 'twenty', **urï-* 'to call'.

2) The vowels in suffixes. In the case of **bi* (Written Mongol *bi*) 'I' we may assume that the original form was **bï* because of the oblique stem **nïma-*, as well as the plural equivalents **bï-da* 'we (inclusive)' and **ba* 'we (exclusive)'. Similarly, **či* (Written Mongol *či*) 'you (sg)', stems from **čï* because of the oblique stem **čïma-*, as well as the plural equivalent **ta* 'you (pl)'. The other cases of the paradigms then can also be assumed to be back-vocalic originally, including the genitives **mïnu/*mïnï* 'my' and **čïnu/*čïnï* 'your'.

3) Retention of uvular consonants in Middle Mongol, preclassical Written Mongol spellings, Moghol, Eastern Yugur and Baoanic, as in the case of Written Mongol *čiki-* 'to stuff' < **čïkï-*, Written Mongol *čikin* 'ear' < **čïkïn*, which words feature *-q-* in the abovementioned sources and languages. Velar pronunciations in these languages are usually an indication for original **i* as in Written Mongol *ki-* 'to do' < **ki-*, *bičig* 'writing' < **bičig*.[74] In other cases the uvular consonant in a suffixed form reveals the **ï*. CM **nïs-* 'to fly' can be reconstructed with **ï* because of the Middle Mongol causative derivation *nis-qa-* in the Muqaddimat al-Adab.[75] CM **is-* 'to ferment' was front-vocalic in view of its Eastern Yugur derivate *səkəmel* 'sour' (**is-ke-mel*). The reconstruction of the verb **ǰïlïï-* 'to go away' is supported by the EYu causative *ǰili:lğa-*; **nii-* 'to blow the nose' may be reconstructed **nïï-* if we assume it is related to **nïsun* 'snot'.

4) Non-Mongolic evidence. Mongolic words that have Turkic cognates containing the back vowel **ï* can be assumed to have been back-vocalic, e.g. **ǰïl* < **ǰïl* 'year' because of CT **yïl* 'id', **ïsu* 'soot' because of CT **ï:s*, **sïrï-* 'to stitch' because of CT **sïrï-*.

In some cases an **ï* is supported by several of the abovementioned arguments. In the case of **čïïrag* 'strong' (which has become front-vocalic *čiyreg* in Khalkha) the *-a-*, and the uvular final consonant caused by it are preserved in Eastern Yugur and Mongghul. Cf. also **nïlka* 'tender'.

There are also words which do not contain any indication for the original vowel class, e.g. **ibil-* 'to give milk', **ilbi-* 'to rub', **silbi* 'shin', **sili* 'nape', **simi-* 'to suck', **ǰïi-* 'to extend' only contain high unrounded vowels. They have

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[74] Languages may disagree, e.g. **ki-* 'to do' has an early spelling with <*q*>, but all modern languages that could have preserved uvular *q-* in this word, in fact have a velar initial.

[75] Poppe nevertheless reads *nis-be* 'flew' as front-vocalic, although the Arabic allows for a reading *nisba*.

been provisionally reconstructed with **i*, but some of them may have contained back **ï* originally.

2.5.3. CM **o* and **ö* in non-first syllables

The evidence for the independent occurrence of the vowels **o* and **ö* in non-first syllables is limited. From the Middle Mongol documents onward there are numerous occurrences of labialisation of **a* and **e* in non-first syllables after **o* and **ö* of the first syllable (rounding harmony). In most modern languages this labialisation has taken place throughout the vocabulary, and the sequences *o-a* and *ö-e* have now become inadmissible in these languages. In spite of the fact that the sequences **oCo* and **öCö* are attested as early as Middle Mongol, they cannot be distinguished etymologically from **oCa* and **öCe* respectively.

There is no internal Mongolic evidence for the existence of CM sequences **aCo*, **eCö*, **uCo*, **üCö*. The rare foreign evidence for such sequences, such as Turkic **altun* < **alton* 'gold', **taluy* < **taloy* 'sea' is only indirectly supported by Mongolic **altan* and **dalaï* (with *a* rather than *o* or *u)*.

A small number of words with non-first syllable **o* and **ö* cannot be explained as secondary developments. In these words the vowel of the first syllable is **ï* or **i* depending on the vowel class. Only following **i*/**ï* can the difference between **ö* and **ü* and between **o* and **u* be determined in the central languages. This is because of the so-called palatal breaking, involving the assimilation of the **i* or **ï* of the first syllable by the vowel of the second syllable, e.g. Kh *nüd(en)* from (**nüdün* <) **nidün* 'eye', but Kh *čötgör* from **čidkör* 'demon'.

The modern forms of the following disyllabic and trisyllabic words suggest the presence of **o* or **ö* in the second syllable:

**čïno*	wolf
**ïro*	omen
**nïdonï*	last year
**sïro*	spit
**sïnkor*	falcon
**čidkör*	demon
**čidör*	hobble
**silön*	soup
**čimögen*	marrow
**siböge*	awl
**sirbösün*	tendon

The reconstructions **čïno* 'wolf' and **ïro* 'omen' are based on the modern and Middle Mongol forms, but are hard to reconcile with the Written Mongol spellings *činu-a* (to be read *činoa* or *činwa*?) and *iru-a* (*?iroa*, *?irwa*). Poppe interprets these spellings in *-ua* as a sequence *-βa*, but this solution introduces sequences *-nw-* and *-rw-* which are otherwise unknown. The **o* cannot be a development of the complex vowel **ua*, since this would have resulted in a long vowel in several modern

languages. Perhaps these spellings are merely graphic devices to indicate that the vowel grapheme should be read *o* rather than *u*.

There is no single explanation for the few trisyllables with **iCö*. Unlike in the disyllabic stems, it is conceivable that **ö* is a secondary development in **čimögen*, **siböge* and **sirbösün*. Poppe (1955:44) did not consider **čimögen* 'marrow' and **siböge* 'awl' as problematic cases. These are seen as parallel developments of words like **čilöe* (> **čilö:*) 'free time' and **kiröe* (> **kirö:*) 'saw' which have probably ultimately developed from **čilüe* and **kirüe*. That is, the original **ü* sound was lowered under the influence of the following **e*. Alternatively **ö* has developed from earlier **e*, that is, **čimögen* 'marrow' and **siböge* 'awl' developed from earlier **čimegen* and **sibege* due to the labial consonant. The unrounded form **čimegen* is reflected by Middle Mongol (Muqaddimat) *čimegen*, and a variant **čemegen* seems to survive in Buriat *semgen*. The 'labialisation' explanation would also apply to CM **sirbösün* 'tendon' (where the third syllable vowel is not **e*) which may have developed from **sirbesün*.

Trisyllabic stems with **o* after **ï* are rare. In some cases **o* may actually be long **o*: which has developed from an earlier complex **ua*. CM **sïrgoljïn* 'ant' from which Kalm *šoryljn* derives, appears to be shortened from (**sïrgo:ljïn* <) **sïrgualjïn*. The long *o:* is reflected by Khalkha, Buriat, and Eastern Yugur. Cf. **sïroï* < CM **sïruaï* 'earth'. CM **nïdonï* 'last year' also has a long vowel, at least in Dagur and Mongghul, which suggests that it may have developed from an earlier **nïduanï*.[76] A word in which *o:* certainly developed from an original complex vowel **ua* is Ordos *ilo:* 'fly' from **hïlua*; Dag *xila:*, as well as the forms in the three central standard languages developed from an assimilated form **hïlaa* < **hïlua*. This is how the sequence **ua* develops when the vowel of the preceding syllable is **a* or **u*.[77] Likewise the sequence **üe* in front words is assimilated to **ee* after a first syllable with **e* or **ü*.

In 'Proto Shirongol' **kïtoga* < **kïtuga* 'knife' the **o* is the result of lowering of **u* due to the following **a*.

2.5.4. Vowel distribution

The positions where vowels are admitted are mainly determined by restrictions on syllable structure (see 2.3.). Which vowels are admitted in these positions is restricted by vowel harmony in that all vowels within one word have to belong to the same vowel class.

The back vowels **a*, **ï*, **u*, and the front vowels **e*, **i*, and **ü* can occur in first and non-first syllables. As seen above, the vowels **o* and **ö* were largely restricted to the first syllable. The smaller subsystem of non-first syllables may be an indication for initial accent, at least in the period when this distribution of the vowels was established.

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[76] If this is correct, this word can hardly be a compound containing **hon* 'year'.

[77] With the exception of Khamnigan, where **ua* has resulted in *o:*.

Examples for admissible CM vowel sequences:

**aCa*	**aman*	mouth
**aCï*	**amïn*	life
**aCu*	**amu*	rice
**eCe*	**ere*	man
**eCi*	**eri-*	to look for
**eCü*	**ebüdüg*	knee
**ïCa*	**ïlga-*	to choose
**ïCï*	**čïkï-*	to stuff into
**ïCo*	**sïro*	spit (see discussion next paragraph)
**ïCu*	**nïsun*	snot
**iCe*	**ire-*	to come
**iCi*	**ilbi-*	to rub
**iCö*	**čidkör*	demon (see discussion next paragraph)
**iCü*	**nidün*	eye
**oCa*	**ora-*	to enter
**oCï*	**morïn*	horse
**oCu*	**modun*	wood
**öCe*	**öre*	pit of the stomach
**öCi*	**öri*	debt
**öCü*	**sölsün*	gall bladder
**uCa*	**uda-*	to be late
**uCï*	**urï-*	to call
**uCu*	**urus-*	to flow
**üCe*	**büse*	belt
**üCi*	**büri*	every
**üCü*	**ülü*	not

There is no evidence for the existence of sequences **aCo*, **eCö*, **uCo*, and **üCö*.[78] The sequences **oCo* and **öCö* probably only occur as secondary developments of **oCa* and **öCe* due to vowel harmony.

Longer words follow the same rules. Since there are suffixes with **a*/**e*, **ï*/**i*, and **u*/**ü* which can be attached to disyllabic stems it is quite easy to obtain trisyllables. Many of the following examples are not monomorphemic. Apart from **o*/**ö* beyond the first syllable, most of the sequences for which no example is given can occur in derived or inflected forms.

[78] Middle Mongol (HY) **edöe* 'now' involves the complex vowel **öe*.

a-a-a	**asara-* ‘raise’, **halagan* ‘palm of the hand’
a-a-ï	**adalï* ‘same’, **kaltarï-* ‘slip’
a-a-u	**gadasun* ‘peg’, **nagaču* ‘uncle’
a-ï-a	**ajǐrga* ‘stallion’, **hanïska* ‘eyelid’
a-ï-u	**kabïsun* ‘rib’, **kalïsun* ‘thin skin’
a-u-a	**haluka* ‘mallet’, **kalbuga* ‘spoon’
a-u-u	**amusun* ‘porridge’
e-e-e	**setere-* ‘break’, **tebene* ‘large needle’
e-e-i	**egeči* ‘sister’, **teberi-* ‘embrace’
e-e-ü	**esergü* ‘opposite’, **gedesün* ‘entrails’
e-i-e	**berigen* ‘sister-in-law’, **ečige* ‘father’
e-i-ü	**belbisün* ‘widow’, **debiskü* ‘mattress’
e-ü-e	**emüne* ‘front’, **erüke* ‘skylight’
e-ü-ü	**ebüdüg* ‘knee’, **emüdün* ‘trousers’
ï-a-a	**sïnaga* ‘scoop’
ï-a-ï	**sïralǰïn* ‘wormwood’
ï-a-u	**ǰïgasun* ‘fish’, **kïlgasun* ‘coarse hair’
ï-o-ï	**nïdonï* (?) ‘last year’
ï-u-a	**kïtuga* (~ **kïtugaï*) ‘knife’, **nïdurga* ‘fist’
ï-u-u	**nïgursun* ‘spinal marrow’, **nïlbusun* ‘tears’
i-e-e	**simtere-* ‘melt’
i-e-i	**siberi* ‘foot sweat’
i-i-e	**bisire-* ‘believe’
i-ö-e	**čimögen* (?) ‘marrow’, **siböge* (?) ‘awl’
i-ü-e	**sidüleŋ* ‘two-year-old (sheep)’
i-ü-ü	**ničügün* ‘naked’, **silüsün* ‘saliva’
o-a-a	**dotana* ‘inside’, **oŋgača* ‘trough’
o-a-ï	**boganï* ‘low’
o-a-u	**olasun* ‘hemp’
o-ï-u	**sormïsun* or **sormusun* ‘eyelash’
ö-e-e	**bödene* ‘quail’, **öŋgere-* ‘to pass by’
ö-e-i	**dörbelǰin* ‘squarish’, **höŋkeri-* ‘to roll’
ö-e-ü	**kölesün* ‘sweat’
ö-i-e	**könǰile* ‘blanket’
ö-i-ü	**körisün* ‘crust’
ö-ü-e	**öčügedür* ‘yesterday’
u-a-a	**huraka* ‘lasso’, **ukana* (~ **ukuna*) ‘billy-goat’
u-a-ï	**gurbalǰïn* ‘triangular’
u-a-u	**hutasun* ‘thread’, **kudaldu-* ‘to trade’
u-ï-a	**kubïra-* ‘to change’, **kurïgan* (~ **kuragan*) ‘lamb’
u-ï-u	**urïdu* ‘before’

u-u-a	**kugura-* ‘to break’, **sundula-* ‘to ride with passenger’
u-u-ï	**čuburï-* ‘to leak’
u-u-u	**gudusun* ‘boots’, **kulusun* ‘reed’
ü-e-e	**hünegen* ‘fox’, **ǰüreken* ‘heart’
ü-e-i	**hümeri-* ‘to contract’, **üdesi* ‘evening’
ü-e-ü	**hünesün* ‘ashes’; **sünesün* ‘soul’
ü-i-e	**üliger* ‘tale’
ü-ü-i	**büdüri-* ‘to stumble’
ü-ü-ü	**ünügün* ‘kid goat’, **hütügün* ‘vulva’

The complex vowels can occur word-initially, medially (predominantly in the first vowel slot) and finally. However, complex vowels starting with **ï* and **i* do not occur initially (which follows from the analysis of **y*). Examples:

**aï*	**aïl*	**kaïčï*	**dalaï*	village; scissors; sea
**ei*	**ein*	**heil-*	**nekei*	like this; leave; fur
**au*	**aula*	**bau-*	**ǰalau*	mountain; descend; young
**eü*	**eüs-*	**neü-*	**bileü*	arise; migrate; whetstone
**ïa*	---	**nïa-*	**arïa*	glue; molar
**ie*	---	**siesün*	**kerie*	pee; crow
**ïu*	---	**nïu-*	**karïu*	hide; answer
**iü*	---	**siü-*	**seriün*	strain; cool
**oï*	**oïra*	**hoï*	**sïroï*	near; forest; earth
**uï*	**uïla-*	**huïtan*	**muruï*	cry; narrow; crooked
**üi*	**üile*	**büile*	**tedüi*	work; gums; that much

The rare complex vowel **öi* can be found medially, as in **köiten* ‘cold’. The QG languages do not provide additional information.

The complex vowels **ua* and **üe* seem to appear only in non-first slots, while **oa* and **öe* are mostly found in first slots, and in non-first slots after **ï* and **i* of the first syllable (see 2.5.3.). In non-derived stems the two sets are complementary and never in opposition, and it would be justified to use a single notation for both. Complex vowels **io* and **iö* are conspicuously absent from the system, although *ïCo* and *iCö* sequences are possible.

2.5.5. Alternations in simple vowels

There are numerous cases of alternation between vowels. The words concerned do not necessarily vary within individual languages, but rather the different languages suggest different reconstruction forms. The distribution of the variants is such that it is not always possible to decide which of the forms is the original one.

In case of alternation **a* ~ **o* and **e* ~ **ö* in the first syllable, the rounded alternant is normally the secondary one, cf. **tamu-* ~ **tomu-* ‘to twist’ (see 2.3.4.),

**ergü-* > **örgü-/*ürgü-* ‘to lift’ (see 3.3.4.). Middle Mongol developments in non-first syllables, such as **ǰobalaŋ* > **ǰobolaŋ* ‘suffering’ and **bödene* > **bödöne* ‘quail’, are the result of the emergence of rounding harmony, which is not reflected in the CM reconstructions here.

As to the alternations that are independent of vowel harmony, two general observations can be made. Firstly, alternations between rounded and unrounded vowels, both in the first and second vowel slots are caused by the consonant environment, usually a labial consonant preceding the affected vowel. Secondly, many alternations occur in the middle vowel of trisyllables, which is unaccented in all modern languages, and may have been easily influenced by the vowels of the preceding or following syllable.

Alternations **ï ~ *u* and **i ~ *ü* in the first syllable: **bïsï ~ *busï* ‘not, other’, **bisire- ~ *büsire-* ‘to believe’, **bïrau ~ *burau* ‘calf’. The alternation **hiǰaur ~ *huǰaur* ‘root’ could also be due to the consonant environment, given the fact that the forms with **h-* may go back to PM **piǰaur* or **puǰaur*.

Alternations **ï ~ *u* and **i ~ *ü* in non-first syllables: **debis- ~ *debüs-* ‘to spread’, **kabïd- ~ *kabud-* ‘to swell’, **kabïrga ~ *kaburga* ‘rib’.

Alternations **a ~ *u* and **e ~ *ü* in the second vowel slot of trisyllables. In some words which display such variations, e.g. **čïbagan ~ *čïbugan* ‘jujube’, the middle vowel is preceded by a labial consonant, which suggests that one variant has developed from the other by means of assimilation or dissimilation.

In other words with **a ~ *u* variations there is no labial consonant in the immediate vicinity. Examples: **bulagan ~ *bulugan* ‘sable’, **ukana ~ *ukuna* ‘billy-goat’, **sundala- ~ *sundula-* ‘to ride with a passenger’. In these cases the middle vowel seems to adapt to the preceding (rounded) and following (unrounded) vowel alternately. Some modern languages, notably Ordos, feature many variations of this kind. This means that the Ordos form of such items is not decisive in determining which of the variants documented in other languages represents the original pronunciation.

Alternations **a ~ *ï* and **e ~ *i* in the second vowel slot of trisyllables: **arasun ~ *arïsun* ‘skin’, **halagan ~ *halïgan* ‘palm of the hand’, **kuragan ~ *kurïgan* ‘lamb’, **ǰulǰagan ~ *ǰulǰïgan* ‘young of an animal’, **gölige ~ *gölege* (> **gölöge*) or **gölige ~ *gölüge* ‘pup’, **küregen ~ *kürigen* ‘brother-in-law’.

Generally, there seems to be no means to determine which variant is older. Moreover, since many ‘middle’ vowels of trisyllables have been lost in all or nearly all modern languages, it is difficult to establish from which variant each modern form has developed. In pairs of variants such as **halagan ~ *halïgan* ‘palm of the hand’ it is most likely that the former is a secondary assimilated form of the latter, as the appearance of the **ï* could not be explained.

Where a Turkic cognate exists, it may support one of the Mongolic variants as the original one. In the case of CM **kuragan ~ *kurïgan* ‘lamb’, its Turkic counterpart **kuzï* suggests that **kurïgan* is older. In the case of CM **gölige ~ *gölege* ‘pup’, the assumed Turkic cognate **kö:šek* ‘camel foal’, if indeed related, would suggest that **gölege* is original.

Some alternations **ï ~ *u* and **ï ~ *a* probably stem from the PM period. In some words an original vowel alternation has led to different consonants in the modern forms: cf. CM **andasun ~ *anǰïsun* (PM **andïsun*) ‘plough’.

2.5.6. Assimilation of complex vowels

The assimilation of the first element of the complex vowels starting with **ï/*i* and **u/*ü* had already started in Middle Mongol (cf. 3.13.5.). The distribution of modern variant forms confirms that some variation must have existed already at an early stage. One common type of variation involves an alternation between complex and double vowel, as in:

**arïa > *araa*	tusk, molar
**dolïa- > *dolaa-*	to lick
**horïa- > *horaa-*	to wind
**kanïa- > *kanaa-*	to cough
**karïa- > *karaa-*	to scold
**ǰarïa > *ǰaraa*	hedgehog

In such cases it must be assumed that the variant with the complex vowel is the older. These variants cannot be summarised in a simple sound law. Some words display assimilated complex vowels in many languages, others in fewer. Complex vowels starting with **i*/**ï* are preserved relatively often in Buriat and Dagur, and hardly ever in Khalkha, Kalmuck, Baoan, and Eastern Yugur. However there are exceptions to this pattern. For instance the long vowels in the following Dagur words all result from complex vowels whose **ï/*i* element was assimilated, so that the preceding consonant was not palatalised: *dəluː* < **deliün* 'spleen', *səː-* < **sie-* 'to urinate', *xinəːd* < **hinie.dün* 'joke', *nɔː-* < **nïu-* 'to hide', *gasuːn* < **gasïun* 'bitter', *gəsuː* < **gesiün* 'branch', *kɔsɔː* < **kosïun* 'beak', *suː-* < **siü-* 'to scoop up'.

A regional assimilation typical of the QG languages is **taqaː* < **takaa* 'chicken', in which **k* resulted in uvular *q*. In Kalmuck we find the form *takaː* with velar *k*, due to the fact that the **ï* element of the complex vowel had become palatal *i* before the contraction into **aa* occurred.

For other cases where some languages reflect diphthongs, and others assimilated vowels, see **ebčeün ~ *ebčiün* 'chest', **hebsie-* 'to sneeze', **kïurasun ~ *kuurasun* 'nit'. An early example, with divergent consonant development already documented in the Middle Mongol period, is **bïlduur ~ *bïlǰïur* 'small bird'.

For metathesis of diphthong elements see 3.13.6. and for its effect on the development of *s see 4.6.1.

2.6. Issues related to the reconstruction of the consonants

2.6.1. Positional distribution of the Common Mongolic consonants

The following examples illustrate the positional distribution of the consonant phonemes (for translations see the comparative supplement).

phoneme	initial	intervocalic	postcons.	final	precons.
**b*	**baa-*	**kabar*	**humba-*	**ǰöb*	**ebde-*
**d*	**debte-*	**kuda*	**kölde-*	**subud*	**kudku-*
**ǰ*	**ǰeün*	**gaǰar*	**negǰi-*	-	-
**g*	**gal*	**nagaču*	**ǰalgï-*	**ög-*	**bagta-*
**t*	**tabïn*	**sïta-*	**malta-*	-	-
**č*	**čïna-*	**kačar*	**kamčuï*	-	-
**k*	**kalaun*	**čïkïn*	**sedkil*	-	-
**m*	**maŋlaï*	**sumun*	**ölmei*	**sam*	**kïmda*
**n*	**naran*	**hünesün*	**sarnï-*[79]	**ken*	**sonǰï-*
**ŋ*	-	-	-	**düüreŋ*	**taŋlaï*
**s*	**sara*	**časun*	**sölsün*	**bos-*	**öskel-*
**š*	-	**kašaŋ*	-	**koš*	**auškï*
**l*	-	**kelen*	**nemle-*	**köl*	**talbï-*
**r*	-	**kura*	-	**sur*	**marta-*
**y*	**yosun*	**bayas-*	-	-	-
**h*	**harban*	-	-	-	-

Some gaps in the system follow from choices made in the analysis of the phoneme system. The consonant strength opposition is neutralised in final positions. I will follow the convention to reconstruct the weak consonant in these positions.[80]

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[79] **sarnï-* 'to scatter' is found in central Mongolic. No old stems with postconsonantal *-n-* seem to survive in the QG languages.

[80] In Middle Mongol sources syllable-final *-t*, *-q*, *-k* can be seen, and in central Mongolic and Eastern Yugur preconsonantal plosives can be aspirated.

y-like elements do occur elsewhere, but these are interpreted as diphthong elements **ï* or **i*, see 2.6.5. below.

There are some traces of preconsonantal **č* (or **j?*) in Middle Mongol; in such cases the second cluster element is always **k*. *š*- occurs in other positions as an allophone of **s* preceding **ï*/**i*. In loanwords it can also be observed in other vowel environments, e.g. **šabï* 'disciple', **šatu* 'stairs' (not listed here). Initial *l*- is also found in old loanwords such as **lausa* 'mule' and **loŋka* 'bottle'.

There are some traces of intervocalic **h* in Middle Mongol, see 2.6.6. below.

For the attested consonant sequences (clusters) see 2.6.7. below.

2.6.2. Status of the uvular plosives *q* and *ġ*

The uvular pronunciations of the phonemes /*k*/ and /*g*/ originally occurred with the back vowels **a*, **o*, **u*, as well as with **ï*, whose pronunciation has varied, but appears to have been a back vowel in some periods and languages. The velar pronunciations *k* and *g* occurred with the front vowels **e*, **i*, **ö*, and **ü*. This distribution shifted in later language stages, where **ï* usually merged with original **i*. In many words, however, **ï* had been assimilated to **a* or **u* of the following syllable ('prebreaking') at an early stage, before its pronunciation could merge with **i*. As a consequence, the uvular pronunciation of */*/k/* and */*/g/* was maintained in these assimilated stems. E.g. Kh *xums* < **kïmusun* 'nail'.

Despite the fact that the two articulations were predictable and phonologically irrelevant, the uvular and velar allophones can be easily distinguished in the old sources, and the distinction has in some way been preserved in most modern languages. In some languages the two allophones of */*/k/* have undergone separate developments. In Eastern Yugur and Shirongol (Dongxiang excluded) only the uvular allophone has developed a fricative pronunciation, whereas the velar allophone remained a plosive. This situation is also found in Kalmuck, whereas in standard Khalkha and Buriat the allophones of **k* have merged into a fricative *x* in all vowel environments.[81] In Eastern Yugur and Shirongol *k* and *q* are best considered phonemes (of different weight according to dialect), although minimal pairs are not numerous. Vowel mergers have made it impossible to synchronically predict the choice for *k* or *q* from the adjacent vowels. Cf. EYu *čəqə*- < **čïkï*- 'to stuff into', but *škən* < **hekin* 'head'; MgrM *ko*- < **köe*- 'to swell', but *qo*- < **koa*- 'to dry'.[82]

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[81] In Ordos the velar allophone also mostly retained a plosive pronunciation, while the uvular allophone became a fricative. However, initial *q*- underwent dissimilatory weakening to *ġ*-, and as a consequence escaped fricativisation, when the second syllable started with a strong consonant. In Chakhar both allophones of strong **k* have become fricatives, also with the exception of initials that were weakened preceding a strong consonant starting the second syllable.

[82] In Kalmuck */x/* (from uvular *q*) and */k/* (from velar *k*) also owe their phoneme status to vowel shifts (contractions and palatalisations). Cf. Kalm *kaar*- < **k^{y}aar*- < **kïara*- 'to be annihilated', *xäär*- < **kaar^{y}*- < **kaarï*- 'to cauterize'. The *k*- of the former is due to the first element of the original diphthong. The second word retains the back *x*- (< *q*) in spite of the vowel fronting.

Phonemic status of *k* and *q*, and of their weak counterparts *g and ġ*, was further strengthened by an influx of words from Chinese and/or Tibetan, because velar consonants can be accompanied by back vowels in these languages.

2.6.3. Status of **ŋ*

The phoneme */ŋ/* only occurred preceding another consonant or a pause. Occurrences of *ŋ* preceding a guttural could be explained as an allophonic pronunciation of */n/*, but *ŋ* also occurs before other consonants and in final position.[83] In spite of its limited occurrence, it is impossible to dismiss it as an allophone.

2.6.4. Status of **š*

In most modern languages *š* is a phoneme, e.g. Dag *šar* 'yellow' ≠ *sar* 'month' (from **sïra* and **sara*, respectively). Historically it has various origins. It stems from allophonic realisations of */s/* and */č/* in native words, and was strengthened by numerous loanwords from Turkic and Chinese containing *š* and similar sounds.

In earlier Mongolic, most occurrences of *š-* are allophonic realisations of */s/* before **i* or **ï*. After vowel assimilations (especially the so-called 'palatal breaking' in the first syllable) made the original **i* or **ï* disappear, the *š-* was left intact, so that it can now be found before all vowels. The fact that Moghol seems to preserve the pronunciation *s* before *i* in original front-vocalic words[84], suggests that this development was not completed by the Common Mongolic period (see 4.6.1.). Therefore the reconstruction forms are written with **si/*sï* here.

There are some cases of *š-* which cannot be proven to have arisen like this. Some of these may be of foreign origin, others may have had older forms with **i/*ï* which merely have not been recorded so far. This applies to words like **šaldaŋ* 'bare', **šulu-* 'to pick meat from a bone', which could go back to earlier forms **sïldaŋ* and **sïlu-*.

Preceding *-k-* some instances of *-s-* and *-š-* in the modern languages apparently go back to **č* (cf. Poppe 1955:113). This is clear from incidental survivals of preconsonantal *-č-* in Middle Mongol, for which see **hečke-* (**hedke-*) 'to cut', **gečki-* (**geški-*) 'to step on'.

Most cases of final *š* are found in ancient loanwords from Turkic with syllable-final**š* or **č*. Examples include (from *-š*) **kaš* 'jade', **koš* 'double', **ǰemiš* 'fruit', **tuš* 'opposite', and (from *-č*) **öš* 'revenge', **köküšken* 'pigeon', **köške* 'baggage (honorific)'.[85] In modern languages the final *š* has often merged with *-s*.
Medial *š* can also be found in words of Turkic origin, e.g. **kašaŋ* 'lazy' and **tušaa* 'game trap'.[86]

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[83] Interestingly, Turkic medial and final *ŋ* is typically represented by intervocalic *-ŋg-* in old loanwords in Mongolic. Cf. **meŋge* 'birthmark' and **müŋgan* 'thousand'.

[84] The Middle Mongol sources in Arabic script are ambiguous, as many words are recorded there both with *s* and *š* spellings.

[85] Cf. also **esige* 'kid (young goat)', related to Turkic **ečkü*. In this case Mongolic has dissolved the consonant cluster.

[86] Turkic **kösige* 'curtain' can be analysed as **kösige* in Mongolic.

2.6.5. Status of **y*

The phoneme */y/* occured in syllable-initial positions, predominantly in intervocalic position, and less frequently in word-initial position. It does not occur in clusters with another consonant or word-finally.

The relatively rare initial **y-* could alternatively be analysed as the first element of a complex vowel (diphthong). As such vowel sequences do exist in Mongolic, reconstructions **ïasun* 'bone', **iersün* 'nine', instead of conventional **yasun*, **yersün* appear defensible. However, applying the same treatment to **yosun* 'custom' would require a sequence **ïo* which is not otherwise known. Furthermore, the existence of intervocalic *-y-* makes it impossible to eliminate the phoneme **y* from the inventory altogether. It is undesirable to replace conventional **bayan* 'rich' and **beye* 'body' by reconstructions **baïan* and **beie*, as this new analysis would also require the introduction of an otherwise unknown type of vowel sequence.

Note that the last element of the sequences like *-aï* and *-ei*, cannot be analysed as the consonant *y*, since words ending in such complex vowels take suffix variants with connective consonants, like other words ending in a vowel.

2.6.6. CM **h* and PM **p*

The initial **h-* reconstructed for Common Mongolic is well documented in Middle Mongol and preserved in Dagur, Eastern Yugur, and the Shirongol subgroup (see 4.13.). The QG languages do not provide evidence for CM **h-* in other positions. Middle Mongol seem to preserve some erratic instances of intervocalic *-h-* < *-p-*, some of which were borrowed by other languages.

Initial **h-* is assumed to have developed from PM **p-*.[87] This origin is supported by Tungusic cognates, and by the fact that this is a common development throughout the world. That intervocalic *-h-* also developed from earlier **-p-* is supported by Turkic. The fact that initial *f-* can be found before rounded vowels in Mongghul, Baoan, Kangjia, and Dongxiang is not a supportive argument for earlier **-p-*, because *f-* can be a recent conditioned development from **h-* rather than conditioned relics from earlier **p-*. This seems to be supported by the fact that secondary *h-* triggered by a following strong consonant can also result in *f-* with labial vowels, as in Dgx *fugu-* < **ükü-* 'to die', *funtura-* < **untura-* 'to sleep'.

The development of **p* at the beginning of syllables can be summarised as follows:

stage	initial	intervocalic	postconsonantal
PM	**p-*	**-p-*	**-p-*
CM	**h-*	**-h-* > *Ø*	**-p-* > **-b-*
MMo	**h-*	*Ø* (occasionally **-h-*)	**-b-*

[87] Rozycki's (1994) suggestion that *h-* may represent both earlier **p-* and an independent primary **h-* will not be discussed here. Initial *h-* occurs frequently enough for this dual origin to be possible, but the QG languages do not provide additional evidence.

Incidental relics of postconsonantal *-p-* are found in Dagur (for which see below).[88] Judging from Turkic cognates, final and preconsonantal *p* merged with *b* when it retained its syllable-final position, and was lost when it became intervocalic due to an additional vowel after *p*.[89] The following Middle Mongol forms with relic *-h-* have Turkic cognates with *-p-*:[90]

CM	MMo	PM	CT	
**köe*	Muq *köhe*	**köhe* < **köpe*	**küpe*	small ring
**köe-*	IM *köhe-*	**köhe-* < **köpe-*	**köp-*	to swell, to foam
**kuur*	RH *quhur-*	**kuhur* < **kupur*	**kopuz*	stringed instrument
**ǰaar(ï)*	HY *ǰihar*	**ǰïhar(ï)* < **ǰïpar(ï)*	**yïpar*	musk (deer)[91]
**ǰiiin* (??)	HY *ǰihi'in*	**ǰihiin* < **ǰipiin*	**yipgin*	purple[92]
**oa*	ZY *uha*	**oha* < **opa*	**opa*	powder

This same development seems to have taken place in the following sets of words, for which the evidence is less complete than for the examples mentioned above. In the following set the *-h-* is also documented, but in the absence of a Turkic cognate an earlier *-p-* cannot be confirmed. In case of **keeli* 'belly' there are forms with a labial in some modern Mongolic languages, with a parallel in Manchu *kefeli* 'belly'.

CM	MMo	PM	
**deere*	Muq *dehere*	**dehere ?< *depere*	above, on
**huuta*	HY *huhuta* (?*huquta*)	**huhuta ?< *huputa ?< *puputa*	bag[93]
**keeli*	LV *keheli*	**keheli ?< *kepeli*	bribe
**keeli*	RH *keheli*	**keheli ?< *kepeli*	belly
**keer(e)*	LV *keheriki, keheri:n*	**keher(e) ?< *keper(e)*	steppe
**keer*	Muq *keher* (?*kehir*)	**keher ?< *keper*	brown[94]

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88 I am not aware of supporting evidence from Middle Mongol.

89 The background of these different treatments is unknown. In some words Mongolic may preserve vowels that also existed in early Turkic but were already lost in the eraliest documented Old Turkic. However, some vowels may have been inserted by Mongolic in order to dissolve inadmissible clusters like *-pl-* and *-pr-*.

90 While the *-h-* in the quoted Middle Mongol sources is of historical importance, *-h-* is occasionally used in the Afghan Zirni manuscript as a graphic device, possibly in order to distinguish *e* from *i*. Examples: <$k^ihž^ah$> for *keže:* 'when', <g^ihr> for *ger* 'house', <g^ahl^i> for *geli-* 'to drive', <n^ihr^ah> for *nere-* 'to put a pot on the trivet', <s^ihir> for *se:r* 'back'.

91 Alternatively the HY form may be a mistranscription from Written Mongol spelling *jiɣar*. Cf. *huhuta* below.

92 The CM reconstruction is inferred from the Middle Mongol form, as the word has become rare in the modern languages. It is unclear how such a vowel sequence should have developed. Perhaps the form in the central languages should have been **ǰi:n* < **ǰiin*. Ord *ǰigin* with *-g-* seems to be a reading pronunciation.

93 The HY form *huhuta* may be a mistranscription from the Written Mongol spelling *uɣuta*. Cf. *ǰihar* above.

94 Cf. Persian *kahar* and (Middle) Korean *kəhar*.

The fact that this MMo *-h-* never corresponds to WM *-g/ɣ-* shows that it is not inspired by WM spelling. In the following words no Mongolic stage with *-h-* is documented. Note that in some of the Turkic cognates, the *-p-* was not intervocalic.[95]

CM	PM	CT	
**siür-*	**sihür-* < **sipür-*	**sipür-*	to sweep
**taa-*	**taha-* < **tapa-*	**tap-*	to guess; CT to find
**taï-*	**tahï-* < **tapï-*	**tap-*	to worship
**toïg*	**tohïg* < **topïg*	**topïk*	kneecap; ankle
**ǰaïdaŋ*	**ǰahïdaŋ* < **ǰapïdaŋ*	**yapï:tak (?)*	without saddle
**köerge*	**köherge* < **köperge*	**köprüg*	bridge
**toarag*	**toharag* < **toparag*	**toprak*	dust; CT earth
**taala-*	**tahala-* < **tapala-*	**tapla-*	to like[96]

Other words that also lost **-h-* < **-p-* include **daagan* 'foal', **daakï* 'matted wool', **kaïčï* 'scissors', **kaïrčag* ~ **kaurčag* 'chest, box'.

The cognate pairs in which Turkic *p* corresponds with *Ø* in modern Mongolic, and occasionally with *h* in Middle Mongol can be considered to belong to the oldest contact layer. Some foreign words with *-p-* have entered Mongolic twice, leading to doublets with different phonetic solutions. Examples include Turkic (from Iranian?) **kepit* 'shop', which is represented in Mongolic by **keid* and **kebid*. Turkic **toprak* 'dust, earth' is represented by **toarag* mentioned above as well as by **tobarag*. The forms with *-b-* can be viewed as more recent adoptions.

Alternations between **-h-* or *Ø* on the one hand and **-b-* on the other can also be found in native stems. **haakaï* 'spider',**hi(h)ee-* 'to protect', and **höelǰin* 'hoopoe' are the best documented cases. **höelǰin* ~ **böelǰin* ~ **höbelǰin* ~ **böbelǰin* 'hoopoe' owes some of its many variant forms to its obviously onomatopoeic nature, and some to the interaction between spoken and written forms. Nevertheless most forms could ultimately go back to a Proto Mongolic form **pöpelǰin*. The other two words are not of onomatopoeic origin. CM **haakaï* ~ **habakaï* 'spider' seems to reflect an earlier (PM) alternation **papakaï* ~ **pabakaï*. Likewise CM **hi(h)ee-* ~ **hibee-* 'to protect' seems to have developed from PM **pipee-* ~ **pibee-*. In these words the variant with two *p*'s may be the original, in which case the forms with one *p* and one *b* may be the result of dissimilation; the existence of occasional (unexplained) fluctuations between **p* and **b* is no stranger than those between the other strong and weak counterparts: **t* ~ **d*, **k* ~ **g* and **č* ~ **ǰ*. Dissimilation also does not account for other *b* ~ *Ø* alternations, such as **deel* ~ **debel* 'garment'. For the elided intervocalic consonants see further Janhunen 1999, 2003b.

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[95] In some cases Mongolic may preserve ancient vowels that were lost in Turkic.

[96] Written Mongol *tab* 'comfort' and *tabla-* 'to be content' may represent more recent loans from CT **tap* and **tapla-*.

Dagur seems to preserve some cases of postconsonantal PM *-*p*-, whereas this has merged with *-*b*- elsewhere. In the unique case of **čolban* < **čolpan* 'Venus', the Dagur -*p*- corresponds to postconsonantal -*p*- of Turkic.

CM	PM	Dagur	CT	
**arbaï*	**arpaï*	-	**arpa*	barley
**čolban~ *čolman*	**čolpan*	*čɔlpun*	**čolpan*	Venus
**čarba-*	**čarpa-*	*čarp-*	-	to wag the tail[97]
**čölbe- ~ *čölme-*	**čölpe-*	*čump-*	-	to pick
**elbeg*	**elpeg*	*əlpur*	-	abundant
**humba-*	**humpa-*	*xumpa:-*	-	to swim
	*?< *pumpa-*			
**hurba-*	**hurpa-*	*xwarp.a:*	-	to turn
	*?< *purpa-*			

The above could be an argument to place Dagur outside of Common Mongolic, or to include postconsonantal -*p*- in the CM reconstructions. but as in the case of initial **h*- confirmed by a single language only, the evidence is not conclusive. The case for postconsonantal *p* will be discussed under the indvidual entries in the comparative supplement.

Not all Dagur words in which -*p*- would be expected on the basis of a Turkic cognate do indeed contain it, cf. Dag *delbur* < **delbiür* 'fan', in spite of CT **yelpi*- 'to fan', and Dag *kurb*^{w} < **körbe* 'lamb', in spite of CT **körpe* 'newborn lamb'. However, given the central Mongolic influence on Dagur, the appearance in a Dagur word of postconsonantal -*b*- rather than expected -*p*-, is not strong evidence that -*p*- was never there.

The QG languages do not provide additional evidence. Medial -*p*- in Monguoric is apparently due to a strong consonant following it, as in MgrM *niŋpuʒï* < **nïlbusun* 'tears' (which is contradicted by the Dagur form *ñɔmbus*). The irregular Eastern Yugur form *lepə*- 'to fan' is more likely to be a recent borrowing from Turkic **yelpi*- than an aberrant form of Mongolic **delbi*-.

2.6.7. Relics of the sequences **dï/*di* and **tï/*ti*

When preceding **ï/*i* (and complex vowels starting with that element) PM **d* and **t* merged with **ǰ* and **č*, so that in CM **d* and **t* only occur preceding the remaining six vowels.

Dagur occasionally has *d*^{y} and *t*^{y} instead of expected *ǰ* and *č*. Examples include *at*^{y}- 'to load', *at*^{y}*e:* 'load', *ad*^{y}*rəɣ ~ aǰrəɣ* 'stallion', *dilɔ: ~ ǰilɔ:* 'reins'. On the basis of the other languages these words can be reconstructed for CM as **ačï*-, **ačïan*, **aǰïrga*, **ǰïloa*. The majority of words with CM **ǰ* and **č* also have *ǰ* and *č* in Dagur (for examples see the comparative supplement). The Dagur forms with *d*^{y}

[97] The Dagur word may be related to CM **čarba*- 'to move the limbs about', or alternatively to **sïrba*- 'to wag the tail'. The former seems more likely, given that Dagur also has an extended form *šarba:ljï*- E231, suggesting **sïrbaljï*-, clearly derived from **sïrba*-.

and *tʸ* may be reborrowed from, or influenced by, northern Tungusic, where this earlier pronunciation was generally preserved.[98] At this stage the Dagur forms are too rare to constitute an argument for a separate status of Dagur within Mongolic. The CM forms of the Dagur words with *dʸ* and *tʸ* have not been adapted to reflect this deviation.

In some words, (complex vowels starting with) **ï/*i* were regionally assimilated, leading to variant forms in the modern languages. In case of **bïldïur* (> **bïljïur*) ~ **bïlduur* 'songbird', the former variant survives in most QG languages, the latter in Dagur. In case of **kadïar* (> **kaǰaar*) ~ **kadaar* 'horse's bit', the former is mostly found in the central languages, the latter in the QG languages and Moghol. The distribution of such variants (different for each lexeme) is often useful for classification purposes. Also compare the development of **anǰïsun* 'plough', **gadaa* 'outside', **dotaa* 'inside'.

2.7. Combinatory restrictions of the Common Mongolic consonants

For various historical reasons some sequences of consonants or of consonants and vowels are not allowed. CM **d* and **t* do not occur preceding **ï*/**i*, because they merged with **ǰ* and **č* in this vowel context. Initial **b* does not occur when the first syllable ends in a nasal, as **b-* has merged with **m-* in this environment. *rVr* sequences tend to be avoided.

All original Mongolic consonant clusters consist of no more than two elements and are restricted to positions in the middle of words on syllabic boundaries, that is, the two elements of a cluster belong to different syllables. The term 'clusters' is used here as shorthand for the strictly more appropriate term 'consonant sequences'. Apart from the abovementioned general restrictions, there are further specific limitations to the distribution of several individual consonants.

As seen above not all consonants are allowed to occur preconsonantally or postconsonantally, and even consonants that are allowed in these positions do not necessarily occur in all conceivable combinations. For instance **s* is allowed as a first cluster element and **g* as a second cluster element, but the sequence **-sg-* does not seem to occur.

There are also morphological restrictions, in that some clusters that are phonetically admissible are in practice only found on morpheme boundaries, that is, the second cluster element belongs to a suffix. For instance **b* only occurs postconsonantally after **m*, **l* and **r* in stems, but past tenses **ab-ba* 'took', **od-ba* 'went', **nïs-ba* 'flew' were apparently possible.

Some clusters (e.g. **-dm-*) are not found in native words. CM **č* (or **ǰ?*) as a first cluster member was found in Middle Mongol, but it could only be followed by **k*. Preconsonantal *š* was also followed by **k*, and in derived stems, by **l*.

Preceding **k* and **g* in monomorphemic stems, **n* cannot be distinguished from **ŋ*. **ŋ* did not occur as a second cluster member. **n* is very rare postconsonantally; *-mn-* and *-ŋn-* in modern languages stem from **ml* and **ŋl*. **r* did

[98] *dʸ* and *tʸ* also occur in Tungusic words in Dagur, such as *ardi:* 'thunder', *sarde:* 'old' (from Tungusic **agdï*, **sagdı*). Dag *dʸallə* 'late' may also be from Tungusic **dılda*, although Middle Mongol (SH) has *jïlda*.

not occur as a second cluster member. Postconsonantal **l* is very common, but only in derived stems, cases like **maŋlaï* 'forehead' and **taŋlaï* 'palate' seem to involve a petrified formans *-lAI*. Rare clusters occur in **emlig* 'untamed', **saŋmaï (?)* 'forelock'[99], **ödmeg* 'kind of bread'.

CM	*b*	*d*	*ǰ*	*g*	*t*	*č*	*k*	*m*	*n*	*s*	*l*
b	*b-b*	*bd*	---	---	*bt*	*bč*	*bk*	---	---	*b*	*b-l*
d	*d-b*	*d-d*	---	---	*d-t*	*d-č*	*dk*	*dm*	---	*d-s?*	*d-l*
g	*g-b*	*gd*	*gǰ*	---	*gt*	*gč*	---	---	---	*gs*	*g-l*
m	*mb*	*md*	*mǰ*	---	*mt*	*mč*	*mk*	---	---	*ms*	*m-l*
n	---	*nd*	*nǰ*	*ng?*	*nt*	*nč*	*nk?*	---	---	*n-s?*	*n-l*
ŋ	---	*ŋd*	*ŋǰ*	*ŋg*	*ŋ-t*	*ŋč*	*ŋk*	*ŋm*	---	*ŋs*	*ŋ-l*
s	*s-b*	---	---	---	*s-t*	*s-č*	*sk*	*sm*	---	---	*s-l*
l	*lb*	*ld*	*lǰ*	*lg*	*lt*	*lč*	*lk*	*lm*	---	*ls*	*l-l*
r	*rb*	*rd*	*rǰ*	*rg*	*rt*	*rč*	*rk*	*rm*	*rn*	*rs*	*r-l*

In monomorphemic stems there are no geminates, that is, sequences consisting of twice the same consonant (= 'doubled' or 'long' consonants). Rare double spellings in Written Mongol such as *qudduɣ* 'source', *kkir (gkir)* 'filth' (both Turkic loanwords), and *köbbü-* 'to float' are not reflected in pronunciation and cannot be reconstructed for Common Mongolic. Derived and inflected stems show that these sequences were not considered impossible, e.g. **ed-dü* 'to the goods', **ab-ba* 'took', **köl-lüe* 'with the foot'.

**b* as a first element:

-bd- : **ebde-* 'to break';

-bt- : **debte-* 'to soak', **dobtul-* 'to rush', **kabtasun* 'plank', **kabturga* 'sack', **kebte-* 'to lie down';

-bč- : **čabčï-* 'to chop', **ebčiün* 'chest', **hïbčau* 'narrow', **köbči* 'bowstring', **kubčasun* 'clothes', **nabčïn* 'leaf', **tobčï* 'button';

-bk- : **dabkur* 'double', **ebke-* 'to wrap up', **ǰabka-* 'to lose';

-bs- : **debse* 'saddle cushion', **ebsie-* 'to yawn', **tübsin* 'even', **ǰabsar* 'interval'.

**d* as a first element:

-dk- : **čïdku-* 'to pour', **čidkör* 'demon', **hadku-* 'to grab', **kadku-* 'to prick', **kudku-* 'to stir', **sedki-* 'to think', **udku-* 'to scoop'; and (partly alternating with *č, š, s*): **hedke-* 'to cut', **ödken* 'thick';

-dm- : (not in native stems?) **ödme(g)* 'bread, bun'.

**g* as a first element:

-gd- : **kagda* 'dry grass' (not listed);

-gt- : **agta* 'gelding', **bagta-* 'to sink', **hogtal-* 'to cut', **magta-* 'to praise', **nogta* 'halter', **sogta-* 'to be drunk', **ügtee-* (~ **üdkee-*) 'to uproot';

-gǰ- : **negǰi-* (~ **neŋǰi-*);

[99] Mentioned under **sančïg* 'hair on the temples' in the comparative supplement.

-gč- : **gagča* (~ **gaŋča*) ‘alone’, **nögči-* ‘to pass’;
-gs- : **agsu-* ‘to borrow’, **bögse* ‘buttocks’, **dogsïn* ‘fierce’, **ogsï-* ‘to vomit’, **tegsi* ‘even’.

**m* as a first element:
-mb- : **embüre-* ‘to collapse’, **humba-* ‘to swim’, **nembe-* (cf. **nemle-*) ‘to cover’;
-md- : **dumda* ‘middle’, **kïmda* ‘cheap’, **ömdegen* ‘egg’, **umdaas-* ‘to be thisty’, **ǰarïm.dug* ‘half’;
-mt- : **amtan* ‘taste’, **kamtu* ‘together’, **tamtul-* ‘to smash’, **temtel-* ‘grope’;
-mǰ- : **nömǰige* ‘greasy’;
-mč- : **čamča* ‘shirt’, **kamčuï* (*-n-*?) ‘sleeve’;
-mg- : **nimgen* ‘thin’, **temgü-* ‘to gather’;
-mk- : **emkü-* ‘to hold in the mouth’, **čimki-* ‘to pinch’, **kamkï-* ‘to close the eyes’ (the latter not listed);
-ms- : **amsa-* ‘to taste’, **sarïmsag* ‘garlic’;
-ml- : **emlig* ‘untamed’.

**n* as a first element:
-nd- : **anda* ‘friend’, **ende* ‘here’, **gendü* ‘male’, **köndelen* ‘horizontal’, **kündü* ‘heavy’, **möndür* ‘hail’, **mendü* ‘tranquil’, **öndür* ‘high’, **sïndasun* ‘tendon’, **sundala-* ‘to share a horse’, **ündesün* ‘root’; cf. also **kondasun* and **kondalaï* ‘buttocks’, in which *-nd-* probably goes back to **-ŋd-*);
-nt- : **unta-* ‘to sleep’, **untara-* ‘to become numb’ (perhaps from *-mt-*);
-nǰ- : **anǰïsun* ‘plough’, **ganǰuga* (not listed) ‘strap’, **könǰile(n)* ‘blanket’;
-nč- : **mončag* (not listed) ‘tassel’, **ǰančï-* ‘to pound’.

-ng- and *-nk-* see under *-ŋg-* and *-ŋk-* below.

**ŋ* as a first element:
-ŋd- : **köŋdei* ‘hollow’;
-ŋt- : **loŋta* ‘headstall’ (see **nogta*);
-ŋǰ- : **neŋǰi-* (~ **negǰi-*) ‘to search’;
-ŋč- : **gaŋča* (~ **gagča*) ‘alone’;
-ŋg- : **aŋgaï-* ‘to open’, **čïŋga* ‘tight’, **daŋgal* ‘clod’, **eŋger* ‘flap of garment’, **hoŋgu-* ‘to break wind’, **hüŋgü-* ‘to rub’, **ǰaŋgï* ‘knot’, **köŋgen* ‘light’, **köreŋge* (~ **könerge*) ‘yeast’, **maŋgus* ‘ogress’, **meŋge* ‘birthmark’, **meŋgü* ‘silver’, **mïŋgan* ‘thousand’, **moŋgal* ‘Mongol’, **oŋgača* ‘trough’, **öŋge* ‘colour’, **öŋgere-* ‘to pass’, **solaŋga* ‘rainbow’, **soŋgïna* ‘onion’, **teŋgelig* ‘axle’, **teŋgeri* ‘sky’, **uŋgasun* ‘wool’;
-ŋk- : **haŋka-* ‘to be thirsty’, **höŋkeri-* ‘to roll’;
-ŋs- : **keŋsiün* ‘burning smell’, **kolaŋsa* ‘smell of sweat’, **uŋsï-* (*-m-*?) ‘to read’.

**s* as a first element:

-*sk*- : **aska*- ‘to sprinkle’, **iskire*- ‘to whistle’, **köskele*- ‘to cut up’, **öskel*- ‘to kick’; as well as words in -*skA* such as **eŋgeske* ‘blush’, **hanïska* ‘eyelash; eyelid’, **kömeske* ‘eyebrow; eyelid’.

-*sm*- : **tasma* ‘thong’.

**š* as a first element:

-*šk*- : **auškï* ‘lungs’, **geški*- ‘to step on’, **muškï*- ‘to twist’.

**l* as a first element:

-*lb*- : -*lb*-: **belbisün* ‘widow’, **čïlbuur* ‘martingale’, **čilbö*- (~ **čilmö*-) ‘to pick’, **čolban* ~ **čolman* ‘Venus’, **delbi*- (> **debi*-) ‘to fan’, **elbeg* ‘abundant’, **ilbi*- ‘to stroke’, **kalbuga* ‘spoon’, **kïlbar* ‘easy’, **kolba*- ‘to join’, **nïlbusun* ‘tears’, **silbi* ‘shin’, **talbï*- (> **tabï*-) ‘to put’, **ǰalbarï*- ‘to beg’;

-*ld*- : **alda* ‘span’, **alda*- ‘to lose’, **bïlduur* (~ **bïlǰïur*) ‘small bird’, **böldege* ‘testicle’, **elde*- ‘to tan’, **hülde*- ‘to chase’, **ildü* ‘sword’, **kölde*- ‘to freeze’, **kömüldürge* ‘breast strap’;

-*lt*- : **altan* ‘gold’, **bültei*- ‘to stare’, **kaltarï*- ‘to slip’, **malta*- ‘to dig’, **möltel*- ‘to shed’;

-*lǰ*- : **aralǰï*- ‘to exchange’, **bïlǰïur* (~ **bïlduur*) ‘small bird’, **böelǰi*- ‘to vomit’, **elǰigen* ‘donkey’, **galǰau* ‘insane’, **galǰïr* (~ **gïlǰïr*) ‘crooked’, **haalǰïn* ‘spider’, **sïlja* ‘tick’, **sïrgolǰïn* ‘ant’, **ǰuljaga(n)* ‘young animal’;

-*lč*- : **alčaï*- ‘to spread the legs’, **belčier* ‘pasture’, **belčir* ‘confluence’, **bulčïrkaï* ‘gland’;

-*lg*- : **balgasun* ‘city wall’, **bolgan* ‘every’, **elgü*- ‘to hang’, **ïlga*- ‘to choose’, **kïlgasun* ‘coarse hair’, **saulga* ‘bucket’, **tulga* ‘prop’, **ǰalga*- ‘to connect’, **ǰalgï*- ‘to swallow’, **ǰolga*- ‘to meet’;

-*lk*- : **halku*- ‘to step’, **mölkü*- ‘to crawl’, **nïlka* ‘newly-born’, **salkïn* ‘wind’, **talkan* ‘roasted flour’, **tülki*- ‘to push’, **ǰalkau* ‘lazy’;

-*lm*-: : **ölmei* ‘instep’ (and see under -*lb*-);

-*ls*- : **čaalsun* (~ **čaarsun*) ‘paper’, **mölsün* (?**mölisün*) ‘ice’, **sölsün* ‘gall bladder’, **ǰïlsun* ‘glue’.

**r* as a first element:

-*rb*- : **arbaï* ‘barley’, **herbeekei* ‘butterfly’, **hurba*- ‘to turn’, **karbu*- ‘to shoot’, **körbe*- ‘to roll’, **sirbösün* ‘tendon’, **sorbï* ‘walking cane’, **tarbagan* ‘marmot’; and the (segmented) numerals **gurban* ‘three’, **dörben* ‘four’, **harban* ‘ten’;

-*rd*- : **kurdun* ‘quick’;

-*rt*- : **erte* ‘early; morning’, **hurtu* ‘long’, **(u)marta*- ‘to forget’, **sarta*- ‘Muslim’;

-*rǰ*- : **kïrǰaŋ* ‘perineum’, **kürǰe(g)* ‘spade’;

-*rč*- : **arča* ‘juniper’, **arčï*- ‘to clean’, **burčag* ‘bean’, **kerči*- ‘to carve’;

-*rg*- : **aǰïrga* ‘stallion’, **arga* ‘method’, **burgasun* ‘willow’, **bürge* ‘flea’, **büürge* ‘pommel’, **ergi* ‘bank’, **ergü*- ‘to lift’, **esergü* ‘opposite’,

**gorgï* ‘ring’, **hargal* ‘cow dung’, **hergi-* ‘to turn’, **irge* ‘wether’, **irgen* ‘people’, **horgu-* ‘to flee’, **hürgü-* ‘to be startled’, **kïrga-* ‘to shear’, **kïrgaul* ‘pheasant’, **kïrguï* ‘sparrow-hawk’, **korgaljïn* ‘lead’, **korgasun* ‘sheep dung’, **köerge* ‘bridge’, **köerge* ‘bellows’, **kömüldürge* ‘breast strap’, **könerge* (~ **köreŋge*) ‘yeast’, **kudurga* ‘crupper’, **nïdurga* ‘fist’, **mörgü-* ‘to bow’, **örgen* ‘broad’, **örgesün* ‘thorn’, **sïrga* ‘colour name’, **sïurgan* ‘storm’, **sirgü-* ‘to rub’, **targun* ‘fat’, **tergen* ‘cart’, **urgu-* ‘to grow’, **jïrga-* ‘to rejoice’, **jïrguan* ‘six’;

-rk- : **berke* ‘difficult’, **bulčïrkaï* ‘gland’, **burkan* ‘Buddha’, **bürkü-* ‘to cover’, **čïmarkaï* ‘temples’, **orkï-* ‘to throw’, **serke* ‘castrated billy-goat’, **sïrka* ‘wound’, **tarka-* ‘to spread’;

-rm- : **čakïrma* ‘iris’, **kormaï* ‘hem’, **örmege* ‘coarse fabric’, **teerme* ‘mill’, **turma* ‘turnip’, **ǰarma* ‘groats’;

-rs- : **boarsag* (?~ **boarčag*) ‘kind of bun’, **čaarsun* (~ **čaalsun*) ‘paper’, **gaursun* ‘quill’, **höersün* ‘pus’, **kaïrsun* ‘scale’, **kalïarsun* ‘kind of onion’, **kïursun* ‘nit’, **kölersün* ‘sweat’, **möersün* ‘cartilage’, **nïgursun* ‘spinal marrow’.

In view of the Middle Mongol and modern forms there must have been some early variation in the shapes of the clusters. Early alternations include **m* ~ **n* preceding **d* and **t*, where the **n* is likely to represent an assimilation, cf. the development of **dumda* ‘middle’, **ömdegen* ‘egg’. In case of **uŋsï-* ~ **umsï-* ‘to read’ the second variant may also be the result of assimilation by the preceding **u*. In case of **ŋ* ~ **g* it seems impossible to say which is the older alternant (cf. **gagča* ~ **gaŋča* ‘alone’, **negǰi-* ~ **neŋǰi-* ‘to search’).

An alternation **m* ~ **mb* is suggested by the development of **ham(b)ura-* ‘to rest’, **kam(b)u-* ‘to gather’, **kum(b)ï-* ‘to fold’, **ǰum(b)aran* ‘ground squirrel’. Alternations **lb* ~ **lm* and **rb* ~ **rm* also occur, cf. **čilbö-* (~ **čilmö-*) ‘to pick’, **sirbösün* ~ **sirmösün* ‘tendon’.

Some of the cluster alternations *čk* ~ *šk* ~ *dk* that can be documented from Middle Mongol onwards, may ultimately go back to **ǰk*.