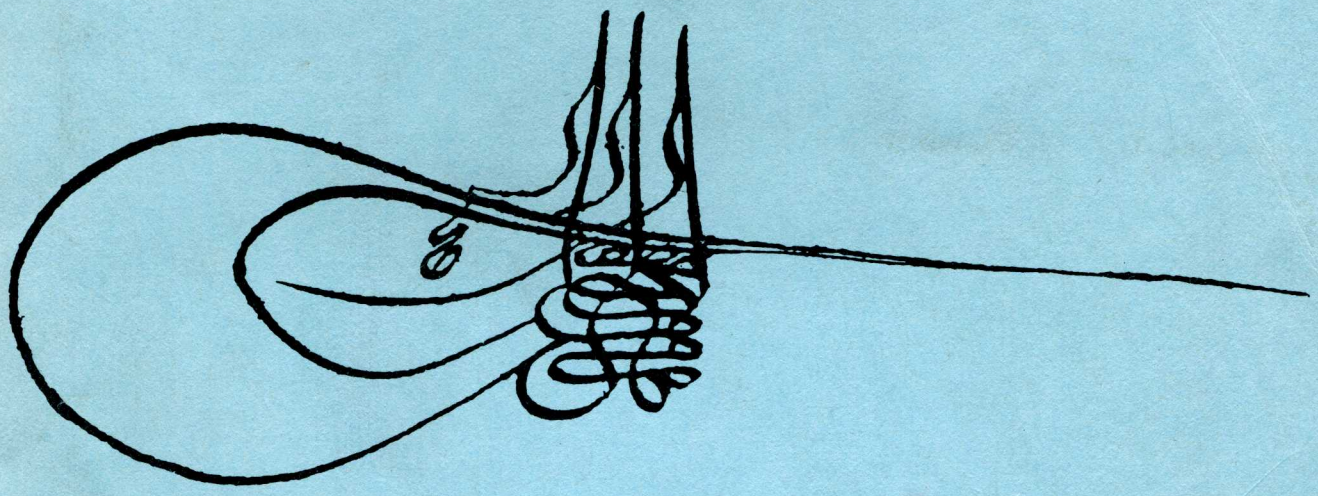

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TURKOLOGY AND THE COMPARATIVE STUDY OF ALTAIC LANGUAGES: THE SYSTEM OF THE OLD TURKIC RUNIC SCRIPT*

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1. The genetic relationship of the Turkic, Mongolian, and Tunguz languages has been the subject of scholarly debate for over one hundred and fifty years. Even today, however, despite some remarkable progress, particularly in the works of G. J. Ramstedt (1873-1950) which began to appear some seventy years ago (1907), it is impossible to obtain a consensus among scholars on the very basic question: did, in fact, an Altaic linguistic unity ever exist, or did the languages presently called Altaic develop typological similarity over long coexistence (the latter being the thesis of Władysław Kotwicz)?

The situation obliges us to restudy the available data, particularly the oldest written monuments. Our starting point must be the Old Turkic runic inscriptions dating from the first half of the eighth century, since they are the oldest written texts in any Altaic language.

As is well known, the oldest extant Mongolian texts (the so-called "Chinggis Stone" and the "Secret History of the Mongols") date back no further than the first half of the thirteenth century, and the earliest Tunguz texts date back no earlier than the fifteenth century (the Jürchen chapter in the Ming polyglotte collection "Hua-i ih-yü").

2. Vilhelm Thomsen's deciphering of the Turkic runic script in 1893[1] was one of the greatest achievements in philology, analogous to that of Jean François Champolion in Egyptology (in 1821).

Nevertheless, it requires some revision. First, the character of the script system must be determined more exactly.

The Turkic runic script consists of 37 (39)[2] signs. Vilhelm Thomsen believed (as have all scholars) that the script was an alphabetical one.

In it he distinguished:

(1) 4 vocalic signs, all ambivalent: *a/ä, y(=i)/i* in accordance with palatal harmony, and *u/o* and *ü/ö* with no distinction in script between the high and the mid rounded vowels;

(2) 27 consonantic signs, 20 of which represent 10 pairs consisting of one back (velar) row (marker 1 was introduced here) and one front (palatal) row (marker 2):

$b^1, t^1, k^1, s^1, j^1, d^1, g^1, n^1, l^1, r^1, b^2, t^2, k^2, s^2, j^2, d^2, g^2, n^2, l^2, r^2,$

and 7 signs having just one form:

m, p, ṅ (=ŋ), *z, č, š, ñ*;

(3) e "global" (ligature) signs: *ne* or *n̰t*, *l̰d* or *l̰t* and *n̰č* or *n̰ž*;

(4) and 3 "ambivalent" syllable signs:

$k^1ï/ïk^1$; k^1u, k^1o/uk^1, ok^1; $k^2ü$, $k^2ö/ük^2$, $ök^2$.

Thomsen could not propose any objective principles for the governing of the script's vowel signs. He compared their use only with the "vocalized" *(ḥarakāt)* in Ottoman Turkish texts, written in the Arabic script and believed to be right in adding vowels which were not "plainly" written. Thomsen distinguished these vowels by printing them in smaller letters, for example: $^2l^yp$ "taking"; k^ag^ank2 "to the khazhan"; $og^{ı^a}n^yn^yz$ "your soldiers"; $^ašidg^il$ "you harken!"; bud^un^ym "my people"; $küm^{ü}ş$ "silver," $^ökü si$ "numbered."[3]

2.1. Thomsen's authority has remained so inviolable that until now no Turkologist has ever undertaken to revise his system for the Turkic runic script, despite the fact that it presupposed an astonishing stability in Turkic vocalism from the 7th to 19th century.[4]

In one case only is there no *opinio communis* among Turkologists: in the treatment of the "union" vowel. Whereas Sergei E. Malov makes use of palatal harmony only, Annemarie von Gabain assumes both palatal and labial harmonies for the vowel (IE 18):

Malov:[5] *sünüšdimiz*, "we fought" = von Gabain:[6] *sünüšdümüz*.

It is amazing that no Turkologist has ever noticed the *circulus vitiosus* of this procedure: in dealing with Turkic vocalism, one begins by imposing the modern Ottoman Turkic vocalic system onto Old Turkic, ends with the modern Ottoman Turkic form, and then is astonished at the "stability" of Turkic vocalism!

2.2. Let us set aside the "No Writing (Picture)" stage to note that the "Full Writing" stage knows only three phonographic systems:[7]

(1) Word-syllabic (based on ideograms: Sumerian, Egyptian, Cretan, Hittite, Chinese);

(2) Syllabic (the further development of word-syllabic systems: Elamite, West-Semitic, Cretan Linear A and B, Japanese);

(3) Alphabetic (the most advanced stage in the West Semitic syllabic system; the Greek system and its derivations).

Since the Old Turkic runic script is clearly not "word-syllabic," the only two remaining possibilities are that it is syllabic or alphabetic.

The distinctive feature of an alphabetic script system is the introduction of special signs used as vowel marks when the abstract idea of a vowel occurs. Even from Thomsen's presentation it is clear that in the Old Turkic runic script system the use of explicit vowel marks did not occur. Therefore, the Turkic script system cannot be an alphabetical one.

2.3. As will be seen in the next paragraph, the Turkic runic script was in fact a syllabic one. One can assume that it is a derivation from a hitherto unknown West Semitic syllabary, through one or more Iranian and/or, possibly, Altaic intermediaries.[8]

It was not in Mongolia, far removed from western cultural centers, but in Turkistan that the oldest monument in that script was discovered. This was the wood-pile inscription from Ačiq-taš (the Talas valley) found in 1932 by M. E. Masson.[9]

One should remember here that the so-called Turkic runic script was also used by the Iranians, as is proved by the Middle Iranian fragments from Turfan.[10]

There are some indications that it was not the Old Turks *(Türküt)*, but another Altaic people first adopted the syllabic runic script for an Altaic language. So, for insctnace, OT *š* sign (graphically Ɣ ~ Ɣ) is nothing other than a front *l* (= l^2; graphically = Y) with a diacritical stroke (- or ˋ).

As is well known, the Turkic *š* corresponds to the Chuvash, Mongol, and Tunguz *l*. Because of the graphic development Y > Ɣ (Ɣ), the Turkic Ɣ *š* must have developed from Y *l*; the same conclusion is drawn on other grounds by partisans of Altaic linguistic unity.

3. What are the internal elements that show the Old Turkic runic script to be syllabic?

Let us start with the function of the "vocalic" sign a/ä. It does not appear in the absolute initial position (Anlaut) unless it is to mark the length of the vowel /a/, but it does always occur in the absolute final position (Auslaut). For example, the Turkic word *ara* 'between' is always written r^1-*a* (according to Thomsen: ^{a}ra), *ärti* 'he was' is always written r^2-t^2-*i* (according to Thomsen: ^{ä}rti).[11]

The conclusion is that the so-called consonantic signs are nothing but semisyllabic (syllabic) signs of the VC (vowel plus consonant) type, that is r^1-*a* is actually *ar-a*, and r^2-t^2-*i* is actually *är-t-i*.

3.1. In a fragment found in Toyoq, SE of Turfan in 1905, the Turkic runic script was explained by the characters of the Manichaean alphabet.[12] The fragment contains only semisyllabic data, i.e., d^1 is explained as */ad/*, n^1 as /an/, t^1 as *it* (*ä* > *i*), *qi/iq* as */iq/*, etc. This is certainly due to an intelligent adaptation of the West Semitic syllabary (of the *CV* type, i.e., /da/, /ta/, etc.) to the Turkic morphonological structure, which prefers closed syllables e.g., in Turkic we find /at/ and not /ta/, /al/ and not /la/, etc.[13]

From this statement one can conclude that the so-called consonantic signs of the Turkic runic script are nothing but semisyllabic signs with an inherent vowel not of the Semitic (or Japanese) – i.e., CV, e.g., /ta/ – but of the VC – i.e., /at/ – type.

This was the primary function of the Turkic syllabic sign. The signs also had the secondary function (as in Semitic systems) of designating vowelless consonants (*sukūn* of the Arabic system). These semisyllabic signs can be divided into two branches: one with "explicitly" inherent vowels, and the other with "implicitly" inherent vowels. The first branch, with "explicitly" inherent vowels, comprised ten pairs consisting of one back row (inherent vowel *a*) and one palatal row (inherent vowel *ä*).

The ten pairs can be arranged in two groups according to their distribution in the secondary (vowelless) function: *b, t, k, s, j* were the only consonantic phonemes which were allowed to occur in the initial position of a stem (word-Anlaut); *d, g, n, l, r* could appear in the initial position of a suffix (suffix-Anlaut).

Branch 1

primary function

group 1: *ab:äb; at:ät, ak:äk, as:äs, aj:äj;*
group 2: *ad:äd; ag:äg; an:än; al:äl; ar:är;*

secondary function

group 1: $b^1:b^2; t^1:t^2; k^1:k^2; s^1:s^2; j^1:j^2;$
group 2: $d^1:d^2; g^1:g^2; n^1:n^2; l^1:l^2; r^1:r^2;$

3.2. Branch two, with "implicitly" inherent vowels, also consisted of two groups: the group with "implicitly" inherent vowels proper, and the group with global signs.

The group with "implicitly" inherent vowels proper consisted of six signs, which in their secondary function designate the consonants *p, m, ŋ, z, š, č.* Typical of this group is that none of the consonants mentioned could occur in the initial stem position; typical too is that they appeared as the second element of a suffix with the union vowel to which A. von Gabain gave the symbol /°/: e.g., /°p/, /°m/, /°ŋ/, /°z/, /°š/, /°č/.[14]

3.21. What was the phonemic value of the Old Turkic union vowel? In the Manichaean script of the 8th-10th centuries (this Old Turkic dialect is closest to the Türküt of the runic script) the union vowel was usually not written at all. The examples given here are taken from the "Huastuanift"): (l.68) *yazntmz ärsär* (but not *yazïntïmïz*) 'if we have sinned'; (l.86) *tinlγγ turalγγ* (but not *tïnlïγïγ turalïγïγ*) 'living and moving beings' (Acc.); (l.200) *barmka* (but not *bar-im-ka*) 'possessions' (Dat.).[15]

The Brahmi script, which had a special *shwa*-sign (*ə*), often expressed the union vowel by that sign (TTT VIII), e.g.:[16]

āt-ləg, 'having a name' (A 10, 16);
būrhāṃ-nəm 'of the Buddha' (5);
śāsiñ-əs-təm 'from *(-taṃ)* your *(-əs-)* discipline'
skr. *śāsana* > *śāsan* (N 11).

In the "middle Ottoman" grammar by Franciscus a Mesgnien Meninski (in 1680) the union vowel is expressed by means of *ü*, regardless whether the stem vowel was front, back, or non-labial, e.g.:[17]

at-üŋ 'of the horse'
baba-nüŋ 'of the father'
oγl-üm 'my son'
olur-üz 'we are.'

Therefore, it is reasonable to accept that the phonemic value of the Old Turkic union vowel generally corresponded to that of the *shwa*-vowel, with the single qualification that it was slightly labialized. The conclusion is that the primary function of the first group (a) of Branch two was originally to designate a semisyllable consisting of the *shwa*-vowel and the respective consonant, i.e.:

əp, əm, ən, əz. əš, əč.

This was the case with regard to the suffix.

3.22. As far as the stem was concerned, the inhered vowel was either /a/ or /ä/. It was not necessary to make a distinction here, since there were no phonemical oppositions in the given environment. Existing in Old Turkic were /ap/ 'and,' /az/[18] 'few,' /ač/ '1. hungry; 2. to open,' /äm/ 'medicine,' /äŋ/[19] 'wild animal'; missing in Old Turkic, however, were */äp/, */äz/, */äč/, or, for that matter */am/, /aŋ/. It was, therefore, redundant to have front and back signs for *p, m, ŋ, z, š* and *č*.

3.3. Thomsen could not decide the phonemic value of the ligatures (global signs) M and Ü. Consequently, he just wrote *ld* or *lt*, *nd* or *nt*.[20] Some Turkologists, e.g., Johannes Benzing, suggested that *-d* in this position before *t, l, n* must be considered a spirant (δ).[21] But a language with only one spirant is unknown in linguistics. Moreover, spirantization is one of the typical phenomena in Middle Turkic, which, in fact, has, besides δ, the spirants β and þ. The entire structure of Old Turkic consonantism must be analyzed to solve this complicated problem.

As already mentioned, the Old Turkic Anlaut could contain only *b, t, k, s, j*, which means that the opposition *(p, t, k): (b, d, g)* was not used in that position. But this opposition was of great importance in the morphonology of Old Turkic, where it was used in suffixes:

Finite form (Definite past) /di/: converb (past): /ti/;
Nomen actoris /gli/: Converbum contemporale /kli/
Supine /gAli/: Converbum abtemporale /kAli/, etc.

Sometime during the Old Turkic period, a phonemic law came into being which forbade the voiced stops *(g, d)* after *(n, l, r)*. The reason was that in this position the between-word-sandhi had to occur (*n, l, r* cannot appear in the Anlaut of a stem/word). Consequently, *(n, l, r)* in that position always marked the end of a phonological syllable.

Consequently, one finds:

(a) phonological opposition (voiced:voiceless) in the Anlaut of the suffix when the stem ends in consonants other than *(l, n, r)*, e.g., /tik-dəm/ 'I put' (IE25): /tük-ti/ 'while running (blood)' (To 52);

(b) phonological syncretism in the Anlaut of the suffix when the stem ends with *(l, n, r)*, e.g.: /yärin-tä/ 'in the land' (< **yär-in-dä*), since the locative suffix was /dA/.[22]

3.31. The ligature (global sign) Ɜ could only have the phonemic value of /nč/, since there was no phoneme /Ɜ/ as distinct from /j/ in Old Turkic.[23] The special sign for /rt/ < */rd/ occurs seldom (e.g. Tonjukuk inscription l.26) because of the relatively low frequency of this consonantal group.

3.32. The global sign Ɜ was correctly deciphered by Thomsen as the ligature of *n + j*.

4. Let us now deal with Thomsen's four vowel signs: *a/ä, ï/i, u/o,* and *ü/ö*.[24]

Since the Old Turkic runic script was not alphabetic but syllabic, of the Western Semitic type, it could not have signs which designated vowels alone; rather, its vowels had to refer to the so-called *Matres*

lectionis.[25] Therefore, it seems reasonable to convert the script's so-called vowels into the well-known Semitic designations:

Aleph (for *a/ä*), Yod (for *ï/i*), Waw 1 (for *u/o*), and Waw 2 (for *ü/ö*).

4.1. The primary function of a Semitic *Mater lectionis* is a consonantic one. So, for example, in Arabic an Aleph in the initial position designates the consonantic phoneme *hamza* (glottal stop /'/).

The secondary function of the Arabic Aleph is to indicate the length of the vowel (/*ā*/).

In the non-Semitic languages that used the Arabic script system – e.g., in New Persian, which does not have the phoneme *hamza* – the sign Aleph is used to make the long /ā/ in all positions, especially in the initial (Anlaut) and absolute final (Auslaut) position.

Old Turkic runology has two distinct branches: (1) the Orkhon type runes, and (2) the Jenissei-Tuba type runes.

One characteristic difference is the existence of the sign 𐰀 or 𐰁 (/ä/; according to my terminology, Aleph 2), i.e., while the Orkhon runic script system has only one *Mater lectionis*, Āleph 1 (𐰀), the Jenissei-Tuba runic script system distinguished between the back (Āleph 1; 𐰀) and the front (Āleph 2; 𐰁).

Āleph 2 appeared there in all positions; initially (although sporadically marked), e.g., 𐰃𐰚𐰁 *'²-k²-y* /äki/ 'two'[26] medially (also sporadically) 𐰽𐰁𐰋 *b²-'²-s* /bäš/ 'five';[27] and finally: 𐰁𐰢𐰃𐰔𐰾 *s²-z-y-m-'²* /s əzimä/ 'from my you,'[28] 𐰋𐰃𐰔𐰚𐰁 *b²-y-z-k-'²* /bizkä/ 'to us.'[29] Consequently, the opposition was marked front: back Āleph (1 or 2) in the Anlaut, e.g. (Abakan inscription) *'¹-t¹-m* /ātəm/ 'my name':[30] *'²-l²* /āl/ 'people, realm.'[31]

While in the final position the front Āleph designated just the final vowel *-ä*, in both the initial and the medial position it stood for the long /ā̈/. On the other hand, in Türküt Turkic (Orkhon inscriptions) the original /ā̈/ of the root (*ā̈-* or *-ā̈-*) became /i/, e.g., **bā̈š*, cf. Turkmen *bā̈š*, Yakut *biäs* 'five' (cf. Tuba inscription /bā̈š/) ⩾ Orkhon *b²-y-s²* /bis²/ id.; *ā̈l*, cf. Turkmen *īl* < **ā̈l*, Koibal Castren *ēl* 'people' (cf. Tuba *ā̈l*) ⩾ Orkhon *y-l²* /*il²*/.[32]

This resulted in the total abandonment of Aleph 2 in the Orkhon script system. The system had no **ā̈-* nor *-ā̈-*, which made it redundant to distinguish between /a/ and /ä/ in the final position. The determining of the syllable as front or back was already made by the writing of the previous "consonantic" sign.

4.2. In its primary function the Semitic Yod designates the semi-vowel /i/, a part of the i- Diphthongs. In the secondary function, it denotes the vocalic phoneme /i/.

As can be seen from the Turfan Manichaean fragment, in its primary function the Old Turkic Yod had designated the syllable /i͡j/ (cf. the primary function of the sign for k^1 – *ak*).[33] This is also corroborated by "strange" Chuvash-Turkic correspondences like:

Otü. **id¹-* 'to send' = Chuv. *jar-* 'id';
Otü. **t¹id¹-* 'to obstruct' = Chuv. *čar-* 'id.'

Apparently the Old Turkic runic forms go back to */*i͡j-əd-*/ and */*t¹-i͡j-əd-*/.

The Chuvash forms developed from the intermediary metathetic forms:

*/ij-ad/ > */jad-/ > /jar-/,
*/t^1-ij-ad/ > */tjad/ > /čar-/

Cf. the reflexes in the modern Turkic languages:

*/ij(ə)d-/ > *id^1- most of them /ij-/ or /ī/; but Khakas has /ïs-/, and Jakut /īt-/.

4.21. According to Thomsen two high unrounded vowels, front /i/ and back (better central) /ï/, were expressed by the sign which here is called the Yōd.

But there were not *two* Yōd signs, as was the case with the two Alephs in the Jenissei-Tuba system and with the two Waws in both the Orkhon and the Jenissei-Tuba system.

If Runic Turkic scholars were able to establish two different signs for Āleph and for Wāw (although their Semitic source had only one Āleph and one Wāw), why didn't they do the same for the two distinct phonemes, front /i/ and back /ï/?

Why must we have two *i*'s for Old Turkic? It is well known that both of the direct descendants of Uighur-Karakhanid - New Uighur (Turki) and Uzbek (B) – do not have the phoneme /ï/ at all. The same situation exists in Proto-Bulgarian and Mongolian.

The so-called list of (Proto-) Bulgarian kings contains forms such as ДИЛОМ /dilom/ = Common Turkic /jilan/ 'snake,' written with an *i* (И) and not an *ï*, although the Slavic Bulgarian script had a sign for back /ï/, i.e., Ы.[34]

4.22. A study of the orthographic system of Orkhon inscriptions reveals a surprising situation: time and again, in words with back syllabic roots near a vocalic Yōd, the front (palatalized) row of the consonants appears:[35]

(IS2) t^2-y-ŋ-l^1-$'^1$ /tiŋla-/ 'to hear'
(To32) t^2-y-l^1 /til/ 'the tongue'
(To41) j^1-ab-g^1-w^1-s^2-y-n^2 /jabgusin/ 'his Yabghu' (title);
(IS5) j^1-ag-w^1-t^1-y-r^2 /jagutir/ 'he attracts'
(IN11) k^1-at-ag-d^2-y /katagdi/ 'strict'
(To1) k^5-y-l^2-n̲t-m /kil^2 ənt̲ əm/ 'I was raised,' etc.

Why are the front consonantic signs used here? A back (central) /i/ could not possibly have caused such a palatization.

Consequently, we must reject the myth of the Old Turkic back /ï/. Old Turkic had just one vocalic phoneme front /i/ which not infrequently caused the palatization of the neighboring consonant.

4.3. Our next problem is: why did the Turkic runic script have only two characters for the labial vowels, although scholars (e.g. V.Thomsen) have usually assumed that Old Turkic had four labial vocalic phonemes: /u/, /o/ (back) and /ü/, /ö/ (front)?

The script does not distinguish between the high and mid labial vowels, although it maintains clear opposition between the front and back labial vowels.

The Semitic *Mater lectionis* Wāw is used to designate both the syllable /wa/ (primary function) and /u/, the only labial vocalic phoneme in existence.

It is well known that in the living Turkic languages the vowels /o/ and /ö/ can appear only in the first (root) syllable and that the languages have no suffixes with /o/ or /ö/. The Ottoman /-yorum/ (continuous present tense) is a verbal composition, not a suffix.

The fact that we do have two Waws in the Turkic runic script points out that the primary function of Wāw (as of all "consonantic" signs) was to designate the Turkic syllable of the VC type, i.e., either the back /au/[36] (back Wāw) or the front /äu/ (front Wāw). This would mean that in their primary function both Waws stood for either the /au/ or /äu/ diphthong.

Can we prove this hypothesis?

The Old Turkic word for 'cloth' is a Śaka (Khotan-Scythian) borrowing; the Śaka form was /thauna/. If we consider that the Old Turks substituted /t/ for the spirant 𐰦 *(= th)* non-existent in their phonemic system, and that an apocope in borrowings with a final vowel (these were contrary to Turkic syllabic structure, which was (C)VC(C); e.g. /drm/ < skr. *dharma* 'doctrine'; /puš/ < skr. *puṣya* 'a star constellation'; /bodisawat/ < skr. *bodhisattva* 'the future Buddha' etc.) was a typical feature of Old Turkic, we should expect an OT form like */taun/. This is exacely what the application of the interpretation of Waw presented above yields, i.e. /t^1-au-n^1/ 'cloth' (> Turkmen *dōn* id).

Uighur words like */qoču/* (= Turfan, a placename), */toyin/*, Buddhist monk (both not attested in the runic texts) must go back to the forms */kauču/ (*/k^1-au-č-w^1/)* and **tauyin (*/t^1-au y^1-i-n^1/)* because in the 6th to 7th centuries the Chinese originals had the diphthong **au* here:

高昌 **Kâu-t's' 'iang (Kao-ch'ang)* (*AD* 308-1175; Jap. *kō* [*kau*]);

道人 **d'âu-n'z'i̯ĕn (tao-jên)* (*AD* 978-990; Jap. *dō* [*dau*]).[37]

This interpretation of the Runic Turkic Waw 1 and Waw 2 allows me to contribute a note to the solution of problems concerning the so-called primary long vowels in Turkic, and thereby to reveal the connection between some Turkic forms, on one hand, and Chuvash and Mongol forms, on the other.

Let us take as one example the Common Turkic **tōz* (cf. Turkmen *tōz*) 'dust.' This etymon has to be connected with the Mongolian SH *to'osun* 'id' < **to'ar-sun (** tauar)*; cf. mo. /toγor-aγ/ < */to'ar-aγ/ 'dust.'[38] In the Turkic runic script the form was written t^1-*au-az*, that is, */tauaz/* (< **tauar-* > *tōr* + y = *tōz*).[39]

The common Altaic form must have been **taur-* ~ **tauar-*.

The Turkic word Turkmen *ōz* "1. self; 2. river" is apparently of the same origin as the Mongolian SH *ö'er* id., Chuvash *var* and Hunnic *uar* = **uär* 'Dnieper' (< **äuär*).[40] The Common Altaic form was something like **äuär-*. The corresponding Runic Turkic form was written *äu-äz*, i.e., */äyäz/* > *äuz* ~ *ōz*.

As a final example I cite the Common Turkic word *kȫk* 'blue' (cf. Turkmen *gȫk*); in Yakut its correspondent is *küöχ*, i.e. < **küäk* < **käuäk*, and in Chuvash the word has the form *kăvak* < **käuäk*. The Runic form is nothing other than k^2-*äu-äk*, i.e., a form common with Old Yakut and Old Chuvash.

Now we can answer why the Turkic runic script had only two signs for the four vocalic labial phonemes.

In accordance with Semitic writing practice, the *Mater lectionis* Waw stood for both the syllable /au/ (primary function) and for the vowel /u/ (secondary function).

The existence of two Waws, one back and one front, suggests that Old Turkic had two oppositional rows: back /au/ and /u/, as well as front /äu/ and /ü/. Since the Old Turkic system did not distinguish vowelless consonants by any special sign (e.g., *sukūn* in Arabic), the syllabic /au/ and the vocalic /u/ were written identically, as were the syllabic /ad/ and the consonantic /d/.

We can conclude, then, that at the time the Old Turkic script system was instituted, there were still, at least from the phonemic point of view, the pair of diphthongs /au/ : /äu/ which later developed into the vowels /o/ and /ö/.

The Uighur and Manichaean scripts continued the same orthography, i.e., Aleph + Waw was used for /au/ and Aleph + Waw + Yod stood for /äu/.

It is impossible, however, to determine exactly when the diphthongs /au/ : /äu/ developed into the vowels /o/ : /ö/. Probably this did not happen before the 7th century A.D.

5. As we have seen, in the Old Turkic system all consonantic signs had the inherent vowels /a/ or /ä/. Only /k/ had three additional inherences, corresponding to the three other *Matres lectionis* (Yod, Waw 1, and Waw 2), i.e., ik^1,[41] *uk/auk* and *ük/äuk*. In their consonantic (secondary) function, the signs stood for /k/ before *i, u/au*, and *ü/äu*. Why did *k* possess this privilege of having as many *k*'s as there were *Matres lectionis* in the system? The answer lies in the occurrence of consonants in the Old Turkic texts: every eighth consonantic phonemewas either a k^1 or k^2.[42] This thus explains the coming into being of the so-called ambivalent signs in the Old Turkic writing system, i.e. the *k*- signs.

6. Now it is time to put forward the very basic question: Why did Old Turkic scholars feel it necessary to distinguish two rows of consonants according to the quality of the inherent vowel, palatalized (sharp) versus velarized (non-sharp)?

Why did they introduce as many as ten pairs of signs? According to this criterion, the Semitic script had only one pair of signs: the back *Qōf* and the front *Kāf*. Would it not have been more reasonable to use the *Mater lectionis* Aleph 2 for the palatal vowel and have only one set of consonantic signs?

In 1927, the Kazan Tatar scholar Galimžan Šaraf published a paper entitled "The palatograms of the sound of the Tatar language compared with the Russian."[43] Here he proved beyond any doubt that, along with the two pairs of vowels, Kazan Tatar also has a correlation of consonants which are differentiated according to the same criterion of palatalization (sharpness).

Two years later, Tadeusz Kowalski, in his description of Troki Karaim, established a palatal correlation for that language.[44]

In 1929, on the basis of these and other studies dealing with such diverse linguistic groups as the Romance Moldavian, West Caucasian Abkhazian and Kabardin, East Fennic Komi, Udmurt, Mordovian, Cheremiss, Ugrian Samoyed, Altaic Chuvash, Mongolian Burjat and Kalmyk, etc. , Roman Jakobson wrote and published in Paris a study expressing the view that palatal correlation was a characteristic linguistic feature in the central zone of Eurasia, that is of the Eurasian linguistic unit *par excellence.*[4 5]

6.1. Let me now present a brief description of the palatal correlation in Troki Karaim, which I also had the privilege to study personally in 1959 and 1963.

The consonants are divided into two groups:

(1) those which have the palatal correlation (14)

	t	č	k	
b	d		g	v
	s	š		
	z			
	l	r		
m	n			

and (2) consonants without palatal correlation (4):

p		
	ž	
	j	
	[ŋ]	

The vowels have three patterns:

(1) in the absolute Anlaut there occur three pairs of vowels: palatal *(ä, ö, ü)* versus velar *(a, o, u)* and the neutral vowel *i*.

In the postconsonantic first syllable there are two oppositional pairs of vowels *i : ï* and *e : a*, as well as two neutral vowels *o* and *u*.

E.g. /en'/ 'to descent' : /ana/ 'mother';
/inan-/ 'to trust' : /it'/ 'dog';
/öz' juv'un'd' / 'in his own house';
/t'oz'm'ak'/ 'the waiting';
/tik-/ 'do sew' : /ïik-/ 'to put in.'

In the non-first syllable there is the oppositional pairs *i : ï* and the vowels *a, u,* and *e*; the last as a component part of the secondary diphthong */-ei/* .

6.2. The Gagauz palatal correlation was described in 1964 by Ljudmila A. Pokrovskaja.[46] Its characteristic features are as follows:

The consonants are divided into 2 groups:

(1) consonants with palatal correlation (11) –

p		k	
b		g	v
	s		
	z		
m	n		
	l	r	

(2) consonants without palatal correlation – the palatal *č, ž, j,* and the neutral *t, d.*

The vocalic phonemes in the absolute initial position are divided into two groups:

(a) neutral vowel *i*[47]

(b) the three pairs of vowels: *a : e, o : ö,* and *u : ü.*

In the postconsonantic position of the root, there are four pairs having palatal correlation: *ï : i, a : e, o : ö,* and *u : ü;*

cf. /ilan/ 'snake'; /^{l}ič-/ 'to drink'
/^{ü}ök'üs'/ 'cow' /üz'/ '100';
b'öl'ük' 'division'
/dip/ 'bottom' : /tem'iz'/ 'clean'

6.3. It is certainly not unreasonable to suppose that Old Turkic (as represented in the runic script) was a language with palatal correlation.

If this was the case, however, then we must revise completely our views about Old Turkic, Proto-Turkic, and even Common Altaic vocalism.

It seems that, in its first stage (as reflected in the runic spelling), Old Turkic had not more than five vocalic phonemes:

i	*ü*	*u*
ä	*a*	

7. The results of our investigation can be summarized as follows:

(1) the Old Turkic runic script system was not an alphabetical system but a syllabary (or semisyllabic system), which was an offshoot of a Semitic writing convention;

(2) this system did not have plain vocalic signs, but rather the so-called *Matres lectionis*; in Old Turkic these were two (or one) Aleph's, two Waw's and one Yod;

(3) the Old Turkic vocalic system did not possess a pair of the high non-labial (non-back) vowels /ï/ and /i/, but only the one phonemically neutral, but phonetically front, vowel /i/;

(4) the Old Turkic union vowel had the phonemic value of a *shwa*;

(5) the Old Turkic /o/ and /ö/ go back to diphthongs /au/ and /ău/;

(6) the system had no vowel /ė/ (high-mid);

(7) the term "vocalic harmony" is not applicable to Old Turkic; the term syllabic "palatal correlation" must be introduced instead;

(8) Old Turkic originally had no labial harmony.

8. The Orkhon inscriptions date from the first half of the 8th century. Some of the Jenissei-Tuba-Talas inscriptions may be even older, from as early as the 7th century.

The sources do not indicate when the Old Turks first introduced their writing system. But it is very probable, however, that this happened soon after the Turks established their hegemony over the rich Central Asian lands sometime in the 540s to 560s A.D.[48] The Kül Tigin inscription dating from 731 stresses the legislative activity of the founding brothers, Bumin Qaghan (d. 552) and Istämi Qaghan (d. 575). The second, Istämi, the Western Qaghan, outlived his older brother by some 25 years; during that time the Western Qaghan had to deal with Iranian rulers, missionaries, and traders. One can well assume that this was the time, i.e., ca. 540-560 A.D. that the Turks adapted the runic script for their language. If this was so, then the Old Turkic writing convention is at least some 170 years older than the oldest extant datable monuments.

The Old Turkic scholars did an admirable job – so much so that they should be considered the precursors of modern structural phonology.

*

* *

When I received your kind invitation, I planned to discuss several Turkological problems which would be of interest to comparative Altaists and Koreologists. But in writing this paper, I realized that time and the extreme importance of problems connected with the re-studying of the Old Turkic Runic Script would require me to limit myself to just this one problem.

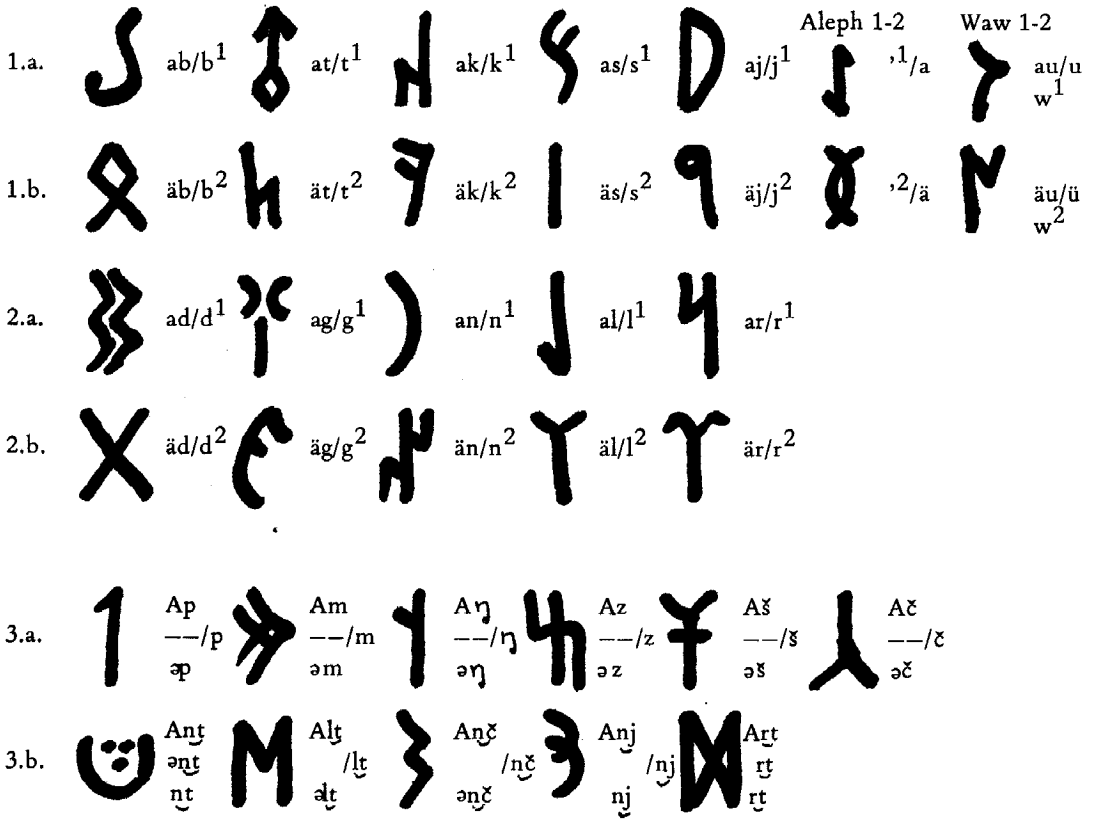
The tasks of comparative Altaists are many. In dealing with them, one must always remember that diachronical treatment should never be done in a vacuum. What is the Proto-Altaic language that we are obliged to reconstruct?

Probably we would not go wrong in seriously considering the hypothesis expressed by Robert Austerlitz in the *Shirô Hattori Festschrift* (1970). He said that the agglutinating linguistic type in Eurasia is innovating: in other words, "that it is the result of a more recent (and/or rapid?) change in type, from a non-agglutinating type to the agglutinating one."[49]

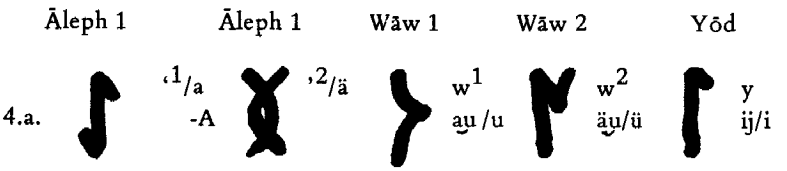
Apparently Turkic was and still is the most progressive (i.e., the most agglutinating) of all Altaic languages. However, its intermediate ancestor was probably representative of a less progressive, non-agglutinating linguistic type.

THE SYSTEM OF THE OLD TURKIC RUNIC SCRIPT

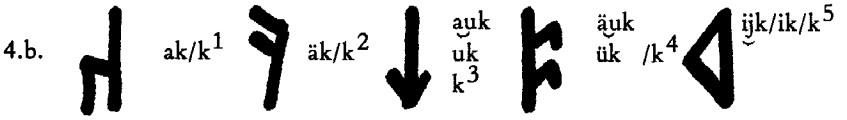
I. The Semisyllabic Signs



II. The Matres Lectionis



The Semisyllabic Signs with the K



III. The Syntagma Divider

Omeljan Pritsak

The Tonjukuk Inscription (lines 1-5)

a) Transliteration

1. b^{2}-y-l^{2}-g^{2}-': t^{1}-w^{1}-nj-k^{3}-k^{3} : b^{2}-n^{2} w^{2}-z-m : t^{1}-b^{1}-g^{1}-č y-l^{2}-ŋ-' : k5-y-l^{2}-nt-m : t^{2}-w^{2}-r^{2}-k^{2} b^{1}-w^{1}-d^{1}-n^{1} : t^{1}-b^{1}-g^{1}-c-k^{1}-' : k^{4}-w^{2}-r^{2}-r^{2}-r^{2}-t^{2}-y :

2. t^{2}-w^{2}-r^{2}-k^{2} b^{1}-w^{1}-d^{1}-n^{1} : k1-n^{1}-y-n^{2} b^{1}-w^{1}-l^{1}-m-j^{2}-n^{2} : t^{1}-b^{1}-g^{1}-č-d^{1}-' d^{1}-r^{1}-lt-y : k^{1}-n^{1}-l^{1}-nt-y : k^{1}-n^{1}-y-n^{2} k^{3}-w^{1}-d^{1}-p : t^{1}-b^{1}-g^{1}-č-k^{1}-' : j^{1}-n^{1}-' y-č-k^{2}-d^{2}-y : t^{2}-ŋ-r^{2}-y : nč-' t^{2}-m-s^{2} r^{2}-nč : k^{1}-n^{1} b^{2}-r^{2}-t^{2}-m :

3. k^{1}-n^{1}-ŋ-n^{2} : k^{3}-w^{1}-d^{1}-p : y-č-k^{2}-d^{2}-ŋ : y-č-k^{2}-d^{2}-k^{4} w^{2}-č-n^{2} : t^{2}-ŋ-r^{2}-y : w^{2}-l^{2}-t^{2}-m-s^{2} r^{2}-nč : t^{2}-w^{2}-r^{2}-k^{2} b^{1}-w^{1}-d^{1}-n^{1} : w^{2}-l^{2}-t^{2}-y l^{1}-k^{1}-nt-y : j^{1}-k^{3} b^{1}-w^{1}-lt-y : t^{2}-w^{2}-r^{2}-k^{2} : s^{2}-y-r^{2} b^{1}-w^{1}-d^{1}-n^{1} : j^{2}-r^{2}-y-n^{2}-t^{2}-' -

4. b^{1}-w^{1}-d^{1} k^{1}-l^{1}-m-d^{1}-y : y-d^{1}-' t^{1}-g^{1}-d^{1}-' : k^{1}-l^{1}-m-s^{2}y : k^{3}-w^{1}-b^{1}-n^{1}-p j^{2}-t^{2}-y j^{2}w^{2}-z b^{1}-w^{1}-lt-y : k^{2}-y w^{2}-l^{2}-g^{2}-y : t^{1}-l^{1}-g^{1} r^{2}-t^{2}-y : b^{2}-y-r^{2} w^{2}-l^{2}-g^{2}-y : j^{1}-d^{1}-g^{1} r^{2}-t^{2}-y : j^{2}-t^{2}-y j^{2}-w^{2}-z : k^{2}-y-s^{2}-y-g^{2} :

5. w^{1}-d^{1}-z-g^{1}-m-' : w^{1}-l^{1}-g^{1}-y : š-d^{1} r^{2}-t^{2}-y : j^{1}-g^{1}-l^{1} t^{2}-y-d^{2}-y : j^{1}-g^{1}-m-s^{2}-y b^{2}-n^{2} r^{2}-t^{2}-m : b^{2}-y-l^{2}-g^{2}-' t^{1}-w^{1}-nj-k^{3}-k^{3} : k^{1}-g^{1}-n^{1} m-w^{1} k^{5}-y-s^{1}-j^{1}-n^{2} t^{2}-d^{2}-m : s^{1}-k^{1}-nt-m : t^{1}-w^{1}-r^{1}-k^{3} b^{1}-w^{1}-k^{3}-l^{1}-y : s^{2}-m^{2}-z b^{1}-w^{1}-k^{3}-l^{1}-y : y-r^{1}-k^{1}-d^{1}-' :

b) Transcription

1. bilgä taûnjukuk bän âuzə m tabgač il əŋ ä k^{5}il ənt əm. Türk baûd ən tabgačka kâûr ər ärti.

2. Türk baûdə n kanin^{2} baûlmaj^{2} ən^{2}, tabgačda ad ərə lti, kanlanti. kanin^{2} k^{3}âudə p, tabgačka jana ic əkdi. täŋri äncä täməs^{2}ärənč. kan bärtəm,

3. kan əŋən^{2} k^{3}aûdəp, ičəkdəŋ. ičəkdük üč ən, täŋri âultməs^{2} ärəñč. türk baûdən âulti, alkənti, jaûk^{3} baûlti. türk sir baûdən järintä

4. baûd kalmadi. ida tagda kalməs^{2}i k^{3}âubranə p, jäti jüz baûlti. äki ülägi atlig ärti, bir ülägi jadə g ärti. jäti jüz kisig

5. ud əzə gma uləgi šad ärti. jag əl tidi. jagməs^{2}i bän ärtə m, bilgä taûnjukuk. kagan mu k^{5}əsajin^{2} tädəm, sakəntəm. turuk^{3} buk^{3}ali, səməz buk^{3}ali irakda

c) Interpretation

1. Bilgä Tonjukuk bän özəm Tabγač ilŋä q il^{2}əntəm. Türk bodən Tabγačqa körər ärti.

2. Türk bodən qanin^{2} bolmaj^{2}ən^{2}, Tabγačda adərəlti, qanlanti. Qanin^{2} qodəp, Tabγačqa jana ičəkdi. Täŋri äncä täməs' ärənč : qan bärtəm.

3. qanəŋən^{2} qodəp, ičəkdə . Ičəkdük üčə n, täŋri öltməs' ärənč. Türk bodən ölti, alqənti, joq bolti. Türk sir bodən järintä

4. bod qalmadi. Ida taγda qalməš'i qobran əp, jäti jüz bolti. Äki ülägi atliγ ärti, bir ülägi jadəγ ärti. Jäti jüz kišig

5. udəzəγma uləγi šad ärti. Jaγəl tidi. Jaγməš'i bän ärtəm, Bilgä Tonjukuk. Qaγan muq əsajin[2] tädəm, saq antəm. Turuq buqali, sämə z buqali iraqda

Footnotes

1. *Inscriptions de l'Orkhon déchiffrées* (Helsingfors, 1894); second edition in *Samlede Afhandlinger* 3 (Copenhagen, 1922).

2. Including the "front Aleph" (𐰀) sign and the ligature ⋈ r̂t.

3. Thomsen, *Inscriptions de l'Orkhon déchiffrées*, pp. 9-16.

4. This was contrary to the situation in Egyptology (or in cuneiform studies), where an army of specialists have been correcting and completing the ingenious work of Champolion (or F. Grotefendt, respectively). The first attempt at revising Thomsen's system was mine in "Das Alttürkische," *Handbuch des Orientalistik*, vol. 5, part 1 (Leiden and Köln, 1963), pp. 28-29. It was followed up partially but not developed further by Talât Tekin in his *A Grammar of Orkhon Turkic* (Bloomington and The Hague, 1968) pp. 21-24.

5. *Pamjatniki drevnetjurkskoj pis'mennosti* (Moscow and Leningrad, 1951), p. 50.

6. *Attürkische Grammatik*, 2nd ed. (Leipzig, 1950), p. 251.

7. Cf. Ignace Jay Gelb, "Writing," in *Encyclopaedia Britannica*, 1966 ed., vol. 23, pp. 813-815.

8. The Semitic origin of the basic stock of "Turkic" runes is beyond doubt, e.g., Aleph[1], b[1], p, k[1], l[1], m, n[1], t[1], j[2], Wāw[1]. Some of the runes, especially those occurring in pairs (front: back) are ideograms, e.g., b[2] = Turkic *äb*, house, tent; r[2] = Turkic *är*, 'man,' cf. also k[3] = Turkic *ok* 'arrow.'

9. See S. E. Malov, *Pamjatniki drevnetjurkskoj pis'mennosti Mongolii i Kirgizii* (Moscow and Leningrad, 1959), pp. 63-68, pl. 14.

10. Found among the ruins of the Old Uighur capital Idikut Shahri by the First German Turfan Expedition, led by Albert Grünwedel and G. Huth in 1902-1903. The three Middle Persian fragments (T. M. 339a, T. M. 339b, T. M. 330) are of Manichaean provenance. Interestingly enough, Middle Persian scribes (like the Turkic ones, see below) made use of the diacritical stroke in adapting the runes to their language, e.g., 𐭦̄ for ž (cf. Turkic 𐰚 z), 𐭢̄ for the voiced pricative γ (cf. Turkic 𐰴 g[1]). See Albert von Le Coq, "Köktürkisches aus Turfan (Manuskriptfragmente in köktürkischen 'Runen' aus Toyoq und Idiqut-Schähri [Oase von Turfan]," *Sitzungsberichte der königlich Preussischen Akademie der Wissenschaften/ Phil.-hist. Classe (= SBAW)*, vol. 41 (Berlin, 1909), p. 1048, pp. 1054-1055.

11. Thomsen, *Inscriptions de l'Orkhon déchiffrées*, p. 31.

12. Call number T.II, T20; this fragment was also found by Grünwedel's expedition. It was published by A.von Le Coq in *SBAW*, vol. 41 (1909), pp. 1048-1052 and plate IX.

13. For parallels in methodology see the paper by Jerzy Kuryłowicz, "Zur altpersischen Keilschrift," in *Esquisses Linguistiques* (Wrocław and Cracow, 1960), pp. 274-280.

14. *Attürkische Grammatik*, 2nd ed. (1950), p. xv and pp. 59-83.

15. A. von Le Coq, "Dr. Stein's Turkish Khuastuanift from Tun-Huang, being a Confession-Prayer of the Manichaean Auditors," *Journal of the Royal Asiatic Society* (London, 1911), pp. 284, 287, 292.

16. Annemarie von Gabain, *Türkische Turfan-Texte VIII* (Abhandlungen der Deutschen Akademie der Wissenschaften, Klasse für Sprache, Literatur und Kunst, Jhg. 1952 Nr. 7) (Berlin, 1952), pp. 11, 55, 69.

17. *Linguarum Orientalium Turcicae, Arabicae, Persicae Institutiones seu Grammatica Turcica* (Vienna, 1680), pp. 17, 28, 57 (l. 2 from the bottom), 68.

18-19. See the Old Turkic runic fragment with equations in the Manichaean script published by A. von Le Coq(see fns. 9 and 12), *SBAW*, vol. 41 (1909), p. 1050.

20. Thomsen, *Inscriptions de l'Orkhon déchiffrées*, pp. 40-42; cf. also p. 190.

21. "Tschuwaschische Forschungen (II)," *Zeitschrift der Deutschen Morgenländischen Gesellschaft*, vol. 94 (Leipzig,1940), pp. 395-396.

22. For details see Omeljan Pritsak, "Die Herkunft der Allophone und Allomorphe im Türkischen," *Ural-Altaische Jahrbücher*, vol. 33 (Wiesbaden, 1961), pp. 142-145. *IE* refers to the eastern part of the Kül-Tigin inscription, and *To*, to the inscription of Tonjukuk, cf. fn. 35.

23. Cf. the treatment of the phoneme *ẍ /j* in modern Kazan-Tatar (before *i, ï,* and *j* before all other vowels) and New Uighur (*ẍ* before *i, ü, u,* and *j* before all other vowels).

24. Thomsen, *Inscriptions de l'Orkhon déchiffrées*, p. 10.

25. Concerning the term *mater lectionis*, see Hans Jensen, *Die Schrift in Vergangenheit und Gegenwart*, 2nd ed. (Berlin, 1958), pp. 290-292. On the use of the *matres lectionis* in Middle Iranian, see W. B. Henning, "Mitteliranisch," *Handbuch der Orientalistik*, section 1, vol. 4, part 1 (Leiden and Köln, 1958), pp. 61-66.

26. S. E. Malov, *Enisejskaja pis'mennost' tjurkov: Teksty i perevody* (hereafter *EPT*) (Moscow and Leningrad, 1952), p. 97 = no. 49, line 3.

27. *EPT*, p. 81 = no. 45, l. 2.

28. *EPT*, p. 97 = no. 49, l. 1.

29. *EPT*, p. 66 = no. 36, l. 2.

30. *EPT*, p. 95 = no. 48, l. 7.

31. *EPT*, p. 96 = no. 48, l. 11.

32. One must dismiss any possibility of the existence in Proto-Turkic of phonemic oppositional pairs of vowels, *ä : e* and *ā̈ : ē*. The Turkmen language has only a phonetical and quantitative opposition between its two *e*-sounds, *e* and *ā̈*; it has, however, no phonemical opposition (*e : ä* and *ē : ā̈*). In Jakut there is only the diphthong *iä* (< *ā̈*), but not an opposition *iä : ā̈*.

Some scholars, especially Nicholas Poppe, have tried to use the Azeri language to substantiate the opposition of *ä/ā* and *e/ē* (see Poppe's "Türkisch-Tschuwassische vergleichende Studien," *Islamica*, vol. 1 [Leipzig, 1925], pp. 410-414). They did so on the basis of dictionaries only, since at that time the history and structure of the Azeri language was virtually unknown.

Now we know that the opposition *e : ä* in Azeri was conditioned by the environment, as was the opposition *e : ä* in Middle Turkic (Karakhanid). The recent editors and translators of Kāšġarī's "Dīwān luġāt at-turk" (from ca. A.D. 1070) write as follows: "the opposition on the phonemic level appears to be /ä : ā/ while phonetically /ā/ is realized as [ē]; but with suffixes, with the usual shortening, the vowel tends to be [ä] – hence the variation in the orthography" (Robert Dankoff, James Kelly, Omeljan Pritsak, *Kāšġarī's Dīwān* [prepared for publication]).

So, for instance, the modern Azeri *e* has two main sources: the first is the old **ā*, e.g., *el* (< **āl*) 'realm,' *beš* (< **bāš*) 'five'; the second is a result of environmental conditioning – every e sound before *-m* and *-s* must be transformed into *ä*, while before *-č*, *-š*, *-v* and after *j-* the resulting phoneme must be *e*, e.g., *äm-* 'to suck,' *äs-* 'to blow,' but *keč-* 'to pass,' *eš-* 'to dig,' *ev* 'house,' *jenä* 'again.' Cf. also fn. 40.

33. A. von Le Coq, *SBAW*, vol. 41 (1909), p. 1050.

34. See Omeljan Pritsak, *Die Bulgarische Fürstenliste und die Sprache der Protobulgaren* (Wiesbaden, 1955), pp. 43, 65, 70-74, 76, 77, 79, 91, 92.

35. The Kül-Tigin inscription (IS; IE; I N) is cited according to the so-called Finnish Atlas: *Inscriptions de l'Orkhon recueilles per l'éxpedition finnoise 1890 et publiées par la Société Finno-Ougrienne* (Helsingfors, 1892); the quotations from the Tonjukuk inscription are taken from an edition I am preparing for publication.

36. The phoneme /w/ did not exist in Old Turkic.

37. AD = Bernhard Karlgren, *Analytic Dictionary of Chinese and Sino-Japanese* (Paris, 1923): the figures refer to Karlgren's ordinal numbers.

38. See Nicholas Poppe, *Introduction to Mongolian Comparative Studies* (Helsinki, 1955), p. 161. The abbreviation SH stands for "The Secret History of the Mongols"/"Yüan-ch'ao pi-shi."

39. See Pritsak, "Der 'Rhotazismus' und 'Lamdazismus,' " *Ural-Altaische Jahrbücher*, vol. 35 (1964), pp. 337-349.

40. Cf. Omeljan Pritsak, "Ein hunnisches Wort," *Zeitschrift der Deutschen Morgenländischen Gesellschaft*, vol. 104 (1954), pp. 124-135.

One can add the following about the secondary development of /e/, /o/, and /ö/ in the Turkic languages. Already in later Old Turkic (8th-9th c.), as in Middle and New Turkic afterwards, there was a tendency sporadically to develop by means of an "Umlaut," i.e., an internal change caused by a vowel in the following syllable, a row of the higher-mid vowels /e/, /o/, /ö/ which was originally, in Proto-Turkic, nonexistent. See, for example, the sporadic change of the sequence A-U into O-U: Runic (Military pass from Miran) j^1-w^1-s^2-w^1-k^3 *(jošuk)* 'helmet' (V. Thomsen, *Samlede Afhanglinger*, vol. 3 [Copenhagen, 1922], p. 233 † pt. II, I b, line 8) < **yašuk*, cf. Ibn Muhammā (14th c.) *yašīk* (< **yašuk*) id (P. Melioranskij, ed., *Arab filolog o tureckom jazyke* [St. Petersburg, 1900], p. 71, l. 20), Ottoman (J. Redhouse) *ašīk* id. But Runic (Ongin inscription, l. 6) b^2-d^1-k^4 *(bädük)* 'big, great' > Azeri *böjük* id. (> Ottoman, already in F. Meninski, *Grammatica Turcica* [1680], p. 32) *büjük* id. But H. Magiser, *Institutionum Linguae Turcicae* (Leipzig 1612) has still *biuk* < *bäyük*) "magnus".

In New Uighur both the *o*-umlaut and the *e*-umlaut (A-I > *e-i*) are the rule, e.g.: **bariš* 'going' and **bäriš* 'giving' > *beriš*id.; **tanuš* 'acquaintance' > *tonuš* id., **tämür* 'iron' > *tömür* id.

41. As explained in the runic-Manichaean fragment from Turfan; see fns. 10 and 12.

42. Of the four volumes comprising W. Radloff's comparative dictionary of Turkic languages (*Versuch eines Wörterbuches der Türk-Dialecte*, 2nd ed. with my preface [The Hague, 1960]), one entire volume (no. 2) is devoted to words with an initial $*k^1$-/k^2 (> *k-*, *g-*, *x-* etc.).

43. "Sonornaja dlitel'-nost' tatarskix glasnyx. Cast' I," *Vestnik Naučnogo obščestva Tatarovedenija*, vol. 8 (Kazan', 1928), pp. 65-88.

44. *Karaimische Texte im Dialekt von Troki* (Cracow, 1929); see especially pp. xxviii-xxxi.

45. "K xarakteristike evrazijskogo jazykovogo sojuza," reprinted in *Roman Jakobson. Selected Writings* 1 ('s-Gravenhage, 1962), pp. 144-201.

46. *Grammatika gagauzskogo jazyka: Fonetika i morfologija* (Moscow, 1964); see especially pp. 15, 50-51.

47. Interestingly enough, both the Troki Karaim and Gagauz hold that the vowel "back I" (i.e., *ï/y*) can never occur in the absolute initial position of the stem (word).

48. The recently discovered Old Turkic inscription from Bugut in Mongolia, which until now was the oldest (ca. 570-580), was written in Sogdian. See Sergej G. Kljaštornyj and Vladimir A. Livšic, "The Sogdian Inscription of Bugut Revised," *Acta Orientalia Hung* 26, fas. 1 (Budapest, 1972), 69-102. The Liao/Ch'i-tan (907-1125), the Hsi-Hia/Tangut (1004-1226) and the Kin Jürchen (1125-1235) each created their own script system, either shortly before assuming power (Jürchen in 1119) or soon thereafter (Ch'i-tan in 920 and Hsi-Hia in 1037).

49. "Agglutination in Northern Eurasia in Perspective," in *Studies in General and Oriental Linguistics Presented to Shirô Hattori* (Tokyo, 1970), p. 4.

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